

Final Albuquerque Comprehensive On-Street Bicycle Plan



Prepared for:



City of Albuquerque

Submitted by:

TRANSCORE

Adopted November 6, 2000

CITY OF ALBUQUERQUE

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1 ***Walking Study*** to increase trips made by bicycling for both the region and
2 nation, respectively; and

3 **WHEREAS**, the ***Albuquerque Comprehensive On-Street Bicycle Plan***
4 identifies the deficiencies in the existing bikeway system and recommends
5 improvements to these facilities; and

6 **WHEREAS**, the ***Bicycle Plan*** develops a comprehensive bikeway network
7 composed of on-street bikeways and off-street trail network that
8 interconnects, eliminates missing links, and provides access to and from
9 origins and destinations; and

10 **WHEREAS**, the ***Bicycle Plan*** develops an improved bikeway network that
11 interconnects to transit routes to create an intermodal transportation system;
12 and

13 **WHEREAS**, the ***Albuquerque Comprehensive On-Street Bicycle Plan***
14 creates a bikeway network that encourages a more balanced transportation
15 system that benefits the Albuquerque community, including but not limited to
16 transportation, economic, environmental, health and quality of life benefits;
17 and

18 **WHEREAS**, the “4-E” approach to bicycle safety (engineering, education,
19 encouragement and enforcement) is addressed to encourage bicycling in the
20 Albuquerque Metropolitan area; and

21 **WHEREAS**, the Environmental Planning Commission has held a public
22 hearing on the ***Albuquerque Comprehensive On-Street Bicycle Plan*** and has
23 recommended adoption of the plan.

24 **BE IT RESOLVED BY THE COUNCIL, THE GOVERNING BODY OF THE CITY OF**
25 **ALBUQUERQUE THAT:**

26 **Section 1.** In order to further detail and implement the concepts of the
27 ***Albuquerque/Bernalillo Comprehensive Plan***, the ***Albuquerque Comprehensive***
28 ***On-Street Bicycle Plan*** attached hereto and made a part hereof, is adopted as
29 a Rank Two Facility Plan for the area within the City of Albuquerque.

30 **Section 2.** The ***Albuquerque Comprehensive On-Street Bicycle Plan*** is
31 commended to the Middle Rio Grande Council of Governments for adoption
32 and inclusion into the ***Long-Range Bikeway System*** (regional map) and the
33 ***Metropolitan Transportation Plan*** to be eligible for Federal funding.

1 **Section 3. SEVERABILITY CLAUSE.** If any section, paragraph, sentence,
2 clause, word or phrase of this resolution is for any reason held to be invalid or
3 unenforceable by any court of competent jurisdiction, such decision shall not
4 affect the validity of the remaining provisions of this resolution. The Council
5 hereby declares that it would have passed this resolution and each section,
6 paragraph, sentence, clause, word or phrase thereof irrespective of any
7 provisions being declared unconstitutional or otherwise invalid.

8 **Section 4. EFFECTIVE DATE AND PUBLICATION.** This resolution shall
9 become effective five or more days after publication in full when a copy of the
10 resolution is filed in the office of the County Clerk.

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1 PASSED AND ADOPTED THIS 6th DAY OF NOVEMBER, 2000
2 BY A VOTE OF: 9 FOR 0 AGAINST.

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10 Michael Brasher, President
11 City Council
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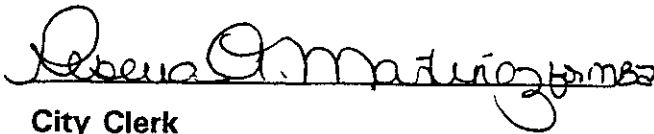
14 APPROVED THIS 27th DAY OF November, 2000 PC

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17 Bill No. R-115

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20 Jim Baca, Mayor
21 City of Albuquerque
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23 ATTEST:

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26 City Clerk
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RATIONALE STATEMENT

RATIONALE FOR A COMPREHENSIVE ON-STREET BICYCLE PLAN

In the early 1990's, the need for a Comprehensive On-Street Bicycle Plan became apparent during the development of the Trails and Bikeways Facility Plan (TBFP). To respond to the public's concerns, the adopted TBFP recommended a trail/bikeway transportation system to serve both recreational and commuting trips and the development of an on-street bikeway plan. The last comprehensive planning effort for the on-street bikeway system occurred over 25 years ago and needed to be revisited.

Over ten years ago, federal transportation professionals realized the ability to fund and maintain an expanding roadway network could not keep pace with the constant roadway demand. This resulted in passage of the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991. Provisions within this act required States and Metropolitan Planning Organizations (MPOs) to incorporate bicycle facilities into all annual and long-range Transportation Improvement Programs (TIP). It also provided a number of Federal funding sources to support these activities. Bicycling was recognized and supported as a transportation mode for traveling to and from employment, shopping, school, community, and recreational destinations.

In 1994, non-motorized transportation was given a considerable boost by the Congressionally-mandated National Bicycling and Walking Study. That study challenged the U.S. Department of Transportation to: 1) double the percentages of total trips made by bicycling and walking from 7.9 to 15.8 percent; and 2) simultaneously reduce the number of bicyclists and pedestrians killed or injured in traffic crashes by 10 percent. The Federal Highway Administration (FHWA) is committed to achieving these goals. This commitment was again reinforced with the Transportation Equity Act for the 21st Century (TEA-21).

In 1998, the Metropolitan Transportation Plan (MTP) for the Albuquerque area was adopted and noted the current trend of relying upon the automobile, the predominant mode of transportation, must be shifted to embrace transportation alternatives, including bicycling. The MTP states the following:

- Population in the metropolitan area will increase approximately 33% to 748,000 people between 1995-2020.
- Employment is expected to increase by 55% to 494,000 employees during the same time period.
- Current vehicle miles traveled per day are over 12 million miles. Based upon today's trends, 2020 forecasts are 22 million vehicle miles traveled.
- In reviewing the available roadway capacity and density, the future level of vehicle miles traveled will result in more traffic congestion, poor air quality, loss of mobility, and a decrease in quality of life.

The plan later states that "addressing the anticipated demand on the system involves reducing future congestion levels using a variety of strategies. It is clear that ***building more and more roadways is not a viable, sustainable solution.***" The provision of bicycle facilities and encouragement of bicycling is one of these strategies.

MEETING THE GOALS AND POLICIES

Since Federal and regional goals include increasing the use of bicycling as a mode of transportation -- how does the Albuquerque area successfully meet these goals? Local survey results indicate that the public would bicycle more if additional safe, and direct bikeways, secure bicycle parking and employee shower facilities were available. Measures to overcome impediments to bicycling are identified in three

categories: 1) facility deficiencies; 2) information or knowledge deficiencies; and 3) motivational deficiencies.

Facility Deficiencies

- **Lack of safe, direct and convenient routes** - Bicyclists, like motorists, want to use the most direct route for transportation bicycling. An on-street bikeway and off-street trail system exists, but the overall bicycle network is not well connected. With relatively little money in comparison to other transportation needs, the bikeway system can be improved to provide connections to employment, shopping, schools and other community destinations. Improvements can occur within the existing roadway by reallocating space through narrowing travel lanes, reducing travel lanes that are not needed, or removing on-street parking on one or both sides where demand is minimal. The bigger challenges are addressing physical barriers such as crossings of the Interstate systems, the Rio Grande, and drainage channels.

Approximately one quarter of all trips are commuting trips. Of the ten employment centers, only the University of New Mexico, Kirtland Air Force Base/Sandia National Laboratories, Lovelace and Winrock Mall have designated bikeway access. However, other destinations must be served to provide a viable bicycle network and reduce vehicle miles traveled.

The provision of bicycle facilities is institutionalized in current planning, design, and operations of the transportation system. The City is incorporating bicycle facilities when roadways are resurfaced, rehabilitated, or reconstructed by using the existing curb-to-curb width more efficiently, as well as when roadways are newly constructed. More funding, planning, and coordination are needed to ensure that access to destinations is provided; missing links are completed; trails and on-street bikeways are interconnected; physical barriers are eliminated; and the bicycle system is safe and direct, not circuitous.

- **Lack of end-of-trip facilities (secure bicycle parking and shower/locker facilities)** Bicycle parking should be provided at employment centers and other major destinations in highly visible areas (i.e., preferably near the building entrance) for bicycle security and bicyclist safety. Both short-term and long-term parking needs to be available to serve the bicyclist needs. Long-term is defined as two hours or more. The provision of lockers and showers at employment sites needs to be expanded and can easily be incorporated into a company’s wellness program, thus benefiting the employee and employer.

Recently, Federal funds were allocated to begin a Bicycle and Pedestrian Transportation Demand Management Program which will work with employers to encourage their employees to bicycle to work. Information on types of bicycle parking facilities will be made available through this program. Additionally, bike parking programs will be developed to increase bicycle parking at public destinations.

Information or Knowledge Deficiencies

- **Perception that bicycling is dangerous** - Safe bicycle facilities, with wide curb lanes or bike lanes, need to be constructed to provide for safer bicycle travel. Novice bicyclists feel intimidated when space is not provided, especially when bike lanes terminate short of the intersection and they need to merge into a travel lane. Similar concerns arise at multi-lane intersections without all-way traffic control (4-way stop or signal) for approaching traffic. It is essential that bicyclists be educated so they do not make erratic movements which cause conflicts with motorists, thus ensuring their safety. Education will minimize the perception that cycling is unsafe.

The City of Albuquerque is unique in that it has two bicycle safety education programs, a Kids Rodeo Program and an Effective Cycling Course, to educate elementary school students and adults,

respectively. These programs provide essential safe bicycling practices, will help eliminate the perception that bicycling is unsafe, will improve bicycling skills, and can educate existing and future motorists to have a better understanding of bicyclists needs.

The addition of the proposed Bicycle Transportation Demand Management Program will have an impact by approaching employers and employees on a one-to-one basis. Employees will have assistance in identifying safe, direct, and convenient bikeways to their destinations. By working with employers, bicycle parking, showers, and lockers can be provided at employment sites to encourage employees to bicycle. A public relations campaign to inform transportation users, both motorists and bicyclists, how to share the road is an ongoing program activity.

Motivational Deficiencies

- **Weather and terrain** - Albuquerque's mild temperatures, low precipitation, and relatively flat terrain should not be considered impediments, but actually are incentives to try bicycling.
- **Time required to bicycle and the distance to a destination** - A direct and interconnected bikeway network can minimize time and distance. Additionally, integrating land use planning with transportation needs is essential to ensure origins and destinations are developed within bicycling distances of 5 miles or less. When developing employment, shopping, activity centers or schools, bicycle access should be incorporated into these developments. The City of Albuquerque is currently endeavoring to coordinate bicycle facilities with all new developments.

Albuquerque provides bike racks on all buses to encourage bicycling by minimizing travel time and distance. INTEL bicycle commuters who reside in the Four Hills area ride the bus to work and bicycle home. During the morning peak hours, bikes can be seen on many of the buses. The demand has steadily increased so that the provision of more racks on the buses may become an issue.

BENEFITS

The provision of a more balanced transportation system, including bicycling, provides numerous benefits for the greater Albuquerque community.

Transportation Benefits

- Roadway improvements to increase bicycle safety and attractiveness enhance motorists' safety as well. Bike lanes or bikeway shoulders minimize traffic flow impacts by providing bicyclists with a designated space and decrease degradation of the roadway edge, thereby increasing roadway life and decreasing roadway maintenance costs.
- Vehicle speed differential is the primary cause in a large percentage of roadway crashes and a deterrent to potential bicyclists. A traffic calming approach being used successfully in local communities is the striping of bike lanes to create narrow travel lanes.

Economic Benefits

- An economic benefit to cycling is a reduction in traffic congestion in which annual congestion costs have been estimated at over \$100 billion nationally. These costs result from lost production time while stopped in traffic. The economic impacts of traffic congestion also affect the business community through slower delivery times, diminished employee morale, and an inability of patrons to easily access businesses.

Environmental Benefits

- Bicycling could have a significant impact by replacing motor vehicles for short trips of less than 5 miles. This represents trips that are less fuel-efficient and generate the highest emission rates per mile traveled. Because Bernalillo County is a maintenance area for carbon monoxide (CO), an air quality

conformity analysis must be completed and approved before Transportation Improvement Programs are approved. If the conformity analysis exceeds the mobile source emissions budget, then Federal funds may be jeopardized. Transportation alternatives, including bicycling, are viable solutions to reducing vehicle miles traveled and air quality impacts.

- Bicycling does not consume petroleum products, thereby providing energy conservation and emission reductions.

Health Benefits

- Regular physical activity has a beneficial impact on health through its role of prevention of various diseases and health conditions and of protection against injury and disability. Tangible benefits include an improved mental outlook and enhanced well being (i.e., improved self-image and social relationships, etc.). Bicycling as a transportation mode is an ideal form of exercise to maintain or improve one's health which will eventually impact the national goal of reducing health care costs.

Quality of Life Benefits

- In the end, a more balanced and flexible transportation system will give greater choice and independence to more members of the community. Neighborhoods will experience fewer environmental and transportation impacts from traffic congestion. Like the motor vehicle, the bicycle provides personal mobility. The public, of all ages, will feel safer and more at ease in using the transportation system, whether bicycling or walking in their neighborhood, due to the traffic calming impacts of bikeways. As more and more people use the streets, the sense of community will be strengthened.

SUMMARY

Albuquerque has a great opportunity to meet a vision – to create transportation system that provides options that are real choices and meet the needs of individuals and the community as a whole. The myth that bicycles are outgrown when a person obtains a drivers license or that they are only for recreational use is passé. The majority of residents have bicycles stored in their garages, however, they perceive that roadways are unsafe for bicycling. A principal component missing from the current bicycle system is a direct and continuous bikeway network that satisfies the public's transportation needs. In 1994 and 1995, City Council and the community made the commitment to expand the bikeway/trail system through dedicated transportation funds. The City of Albuquerque has made great progress through various planning and construction activities within the last several years in developing an improved bikeway/trail system. This effort to encourage bicycling as a safe, healthful transportation mode continues.

EXECUTIVE SUMMARY

Executive Summary

A sustainable quality of life includes a sustainable transportation system. This sustainable transportation system must include on-street bicycling as a prominent travel mode. It is incumbent upon the City of Albuquerque to encourage bicycling and develop a continuous, seamless bikeway network. This plan describes the framework for developing a comprehensive on-street bikeway system by 2020. This on-street bicycle network will connect all quadrants of the city by eliminating barriers and providing access

Vision Statement: Provide safe and convenient access for bicyclists to all areas of Albuquerque, so that bicycling is a viable transportation option that results in an improved quality of life in the Albuquerque Metropolitan Area.

Goals:

1. Achieve a bicycle commute mode share of 5% by Year 2005 and 10% by Year 2020.
2. Achieve a bicycle mode share of 5% of all trips by Year 2020.
3. Reduce by 10% the number of bicycle fatalities and injuries by Year 2020.

to residential neighborhoods, employment centers, shopping, schools and parks. The Comprehensive On-Street Bicycle Plan recognizes bicycling as a viable, sustainable, cost effective solution to traffic congestion and air quality in the Albuquerque Metropolitan Planning Area.

On-street bicycle facilities consist of bicycle lanes or bicycle routes designated along the roadway. Bicycle lanes are a portion of the paved roadway, approximately 4 to 6 feet in width, designated by striping, pavement markings and signing for the exclusive or preferential use of bicyclists. Bicycle lanes are appropriate along most urban arterials and collectors. Bicycle routes are roadways shared by both bicyclists and motorists and are typically found on neighborhood streets with low traffic volumes. Where higher volume roadways have physical constraints that prohibit bicycle lane striping, bike route signing is a feasible alternative. These higher volume roadways that are signed as bike routes accommodate the bicycles by constructing a wider outside travel lane for a vehicle to safely pass a cyclist. Where on-street bikeways are provided, they should be installed along each side of the roadway to ensure that cyclists travel in the same direction as the motor vehicles.

An efficient bikeway system is a transportation system that encourages commuting and long distance travel and includes connectivity to other transportation modes. Transit is an integral component of the bikeway system by providing bicycle racks for transport on buses. Transit allows bicyclists to extend their trip length by creating a shared multi-modal trip. This is further extended to transit-related end-of-trip facilities such as secure bicycle parking at transit centers or park-and-ride lots, eliminating the need for a motorized passenger vehicle during the trip.

Business should embrace bicycling as an alternative transportation mode. To promote bicycling, employers must develop provisions for cycling such as end-of-trip facilities that include employee showers, lockers and bicycle parking. Zoning changes will be proposed to implement end-of-trip facilities in new building construction.

The bicycling community uses the 4-Es – Education, Encouragement, Enforcement and Engineering – to promote and develop safe cyclists, motorists and facilities. Education begins with elementary school

children and requires reinforcement during secondary education. All adults should have bicycling education; riders need to learn the rules of the road and make predictable movements around motorists and motorists need education to better understand and appreciate bicyclists. Bicycling is encouraged through promotional activities and the construction of a safe, efficient, continuous bikeway network. Enforcement must be applied to both the cycling and motoring community to promote safe travel. Engineering guarantees safe, consistently designed facilities which create a safer environment for both motorists and bicyclists.

Data concerning the current state of bicycling in Albuquerque were gathered through public input via public meetings, meeting with local bicycle committees, a public opinion survey, and the project steering committee. These inputs established the system needs. A comprehensive inventory of the existing bikeway network, including the entire collector/arterial roadway system, was performed to determine which roads could feasibly be designated as bikeways. The selected roadways were included in the recommended bikeway network if cost effective facilities could be built or if required for system connectivity. The cost of each network link was estimated and a list of all links, improvements, and costs are contained in the plan document appendices.

This plan does not specifically address opportunities to provide a wide outside travel lane shared by both bicyclists and motorists on principal and minor arterials. When roads are resurfaced or reconstructed, the inclusion of wide curb lanes will be considered on a case-by-case basis.

The recommended on-street bicycle network, shown in Figure ES-1, will contain 507 miles of bike routes, bike lanes and sidewalk trails. The existing system contains 256 miles of lanes and routes, exclusive of the 55-mile off-street trail system. The estimated costs and bikeway mileage improvements are shown in Table ES-1. The project costs represent the planning level cost estimate of bikeway and roadway (overlay, rehabilitation or reconstruction) improvements. The bikeway costs are the planning level costs that are directly attributable to bicycle facility improvements.

**Table ES-1
Recommended Bikeway Network Summary**

	Route Miles*	Lane Miles	Bikeway Costs**
Existing Bikeways	56.1	47.7	
Improvements	30.2	120.1	\$17,500,000.
Proposed Bikeways			
Improvements	78.2	174.2	\$26,000,000.
Totals	164.5	342.0	\$43,500,000.

* Includes sidewalk trails.

**Estimated costs in 1998 dollars.

Currently, the on-street program’s annual budget comes from a 5% set aside from the Public Works Department (PWD), General Obligation Bond, Transportation budget. This 5% set aside funds both the on-street bikeway program and the multi-use trails program, with a designated portion for each established by the appropriate City of Albuquerque agencies. The Obligation Bond funding is adjusted on a biennial basis.

To implement the plan by 2020, an annual budget of \$2,175,000 would be required starting in 2000. Alternative funding sources will be required therefore, and these could include the ¼ cent sales tax (non-

dedicated to the on-street program), an increased set aside from the PWD Transportation budget, State funding or Federal funding. Federal funding of \$14,000,000 was made available for 1998 New Mexico projects in categories that include bicycle facility implementation. It should be noted however, that these same Federal funds are eligible for roadway, transit, and other transportation improvements; therefore, only a portion is ultimately committed to the bicycle program. The preparation of grants to secure Federal funding through the NMSHTD will be the responsibility of the Public Works Department Bicycle/Pedestrian Planner.

Implementation of bicycle improvements can be grouped into two categories: system connectivity and safety. System connectivity refers to the elimination of “missing links” between existing on-street facilities or between on-street and trail facilities. Connectivity may also refer to the connection of bicycle facilities to activity or employment centers, schools or parks. These connections may be either on-street or trail connections. Safety improvements refer primarily to spot improvements at geometrically deficient intersections or along bikeways with a high number of documented collisions. Recommended actions and strategies are further identified in Chapter 5.

Some of these improvements will be implemented with the available funding. The majority of the improvements for the on-street bikeway system will be constructed as part of larger capital improvements or as part of a maintenance activity. Roadway widening and reconstruction projects along streets with designated bicycle facilities, per this plan, will incorporate bikeways into the design. Similarly, when roadways designated for bicycle lanes are overlaid, they will be restriped with bicycle lanes. These projects will be funded by sources other than the on-street bicycle program.

Systematic and responsive maintenance of bicycle facilities will provide higher utilization and a safer network. Maintenance – clean bicycle lanes, smooth pavement, and legible signing and striping – was a frequent response to the survey question “What factors would make bicycling more attractive to you?”. The public must perceive that bikeways are safe and well managed to increase their usage. Addressing maintenance concerns, including traffic control during maintenance, utility, and construction activity, will create a safer riding environment.

In conjunction with implementation, new design standards are proposed for the City of Albuquerque’s Development Process Manual. These new standards reflect recent design guideline changes. Similarly, a zoning change will be proposed to regulate the inclusion of end-of-trip facilities in all new construction. These zoning regulations will apply to all new buildings, regardless of their proximity to the bicycle network.

To summarize, the following items are required for a successful bikeway network in Albuquerque:

- *Bicycling must be considered a transportation mode, not just a recreational activity;*
- *A safe, direct, continuous bikeway network must be planned, designed, and implemented;*
- *Maintenance must be systematic, frequent and responsive;*
- *Bicycling must be promoted as a safe transportation alternative between all destinations;*
- *Bicyclists must be educated in the ‘rules of the road’ to safely interact with motorists;*
- *Funding must be procured to implement this Comprehensive On-Street Bicycle Plan.*

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A CRONYMS AND DEFINITIONS

Acronyms and Definitions

AASHTO	American Association of State Highway and Transportation Officials.
Advanced Bicyclists (Class A)	These are experienced riders who can operate under most traffic conditions. They comprise the majority of the current users of collector and arterial streets.
Arterial	A street designated to carry traffic, mostly uninterrupted, through an urban area to different areas or neighborhoods within an urban area.
Basic Bicyclists (Class B)	These are casual or new adult and teenage riders who are less confident of their ability to operate in traffic without special provisions (i.e., bike lanes or bike paths) for bicycles. Some will develop greater skills and progress to the advanced level.
Bicycle	A vehicle having two tandem wheels, either of which is more than 16” in diameter or having three wheels in contact with the ground any of which is more than 16” in diameter, propelled solely by human power, upon which any person or persons may ride.
Bicycle Boulevard	A bicycle boulevard is a concept wherein a street (typically local) is designed to facilitate the through movement of bicycles while maintaining local access for motor vehicle travel by utilizing traffic calming and traffic control devices to minimize potential conflicts.
Bicycle Facilities	A general term denoting improvements and provisions made to accommodate or encourage bicycling, including bikeways, parking facilities, bicycle loop detectors, mapping of all bikeways, and shared roadways not specifically designated for bicycle use.
Bike Corridor	Areas where a bikeway is being considered, but the type and feasibility have not yet been determined.
Bike Lane	A portion of a roadway that has been designated by striping, signing and pavement markings for the preferential or exclusive use of bicyclists.
Bike Route	A segment of the bikeways system designated by the jurisdiction having authority with appropriate directional and informational markers, with or without a specific bicycle route number. Bicycle routes are primarily used on local streets and sometimes on low-volume, low-speed collector streets.
Bikeway	Any road, way, or trail which in some manner is specifically designated as being open to bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes.
Children Bicyclists (Class C)	These are pre-teen riders whose roadway use is initially monitored by parents. Eventually they are accorded independent access to the system.
CIP	Capital Improvement Program.

Collector	A street designated to carry traffic between local streets and arterials or from local street to local street.
Crosswalk	The portion of the roadway, striped or unstriped, designated for pedestrian and/or bicycle crossing where a sidewalk, walkway or multi-use trail intersects a street.
DPM	Development Process Manual: A compilation of City zoning and design criteria and procedures. This manual includes both street and bicycle facility design criteria.
FHWA	Federal Highway Administration.
GABAC	Greater Albuquerque Bicycling Advisory Committee.
GARTC	Greater Albuquerque Recreational Trails Committee.
Grade	A measure of roadway or bikeway slope, expressed as a ratio of vertical rise per horizontal distance. For example, a 5% grade equals a 5 foot rise over a 100 foot horizontal distance.
Legend	Words, phrases or numbers appearing on all or part of a traffic control device.
Mode of Travel	Means of travel such as automobile, transit, bicycle, or walking.
Mode Split	Process of separating total person trips into modes of travel.
MRGCOG	Middle Rio Grande Council of Governments: An association of local governments in Bernalillo, Sandoval, Tarrant and Valencia counties. The Urban Transportation Planning Policy Board (UTPPB) is a special body established by the MRGCOG Board of Directors to adopt policies for the long range transportation systems planning process in the Albuquerque Urban Area. The UTPPB considers recommendations from several technical subcommittees and approves the Transportation Improvement Program which is the basis for allocation of federal transportation funds.
Multi-Use Trail	A bikeway physically separated from motorized vehicular traffic by an open space or barrier and either within the street right-of-way or within an independent right-of-way.
MUTCD	Manual on Uniform Traffic Control Devices: A national standard for placement and selection of all traffic control devices on or adjacent to all highway open to public travel.
NMSHTD	New Mexico State Highway and Transportation Department.
Overcrossing (Bridge)	A structure used to traverse barriers (e.g., rivers, interstates, arroyos) to bicycle travel.
Pavement Marking	Painted or applied line(s) or legend placed on any bikeway surface for regulating, guiding or warning traffic.
Peak Hour	That hour during which the maximum amount of travel occurs. Generally, there is both a morning and afternoon peak hour.

Primary Trail	A type of trail designated in the Trails and Bikeways Facility Plan which is of primary importance to the regional transportation network. Primary trails coincide with “Trail/Path” designated on the Long Range Bikeway System Map.
Right-of-Way	(1) A general term denoting land, property or interest therein, usually in a strip, acquired for or devoted to transportation modes. (2) The right of one vehicle or pedestrian to proceed in a lawful manner in preference to another vehicle or pedestrian.
Roadway	The portion of the highway, including shoulders, intended for vehicle use.
Secondary Trail	A type of trail designated in the Trails and Bikeways Facility Plan which supplements the primary trail system and may provide access to it. Separation of recreational users from commuter cyclists is encouraged if right-of-way is available.
Shared Roadway	Any roadway upon which a bicycle lane is not designated and which may be legally used by bicycles regardless of whether such facility is specifically designated as a bikeway.
Shoulder	A portion of a highway contiguous to the roadway that is primarily for use by pedestrians, bicyclists and motor vehicles with problems.
Sidewalk	The portion of a highway designed for preferential use by pedestrians. Sidewalks usually have a hard, smooth surface, separated from the roadway with a curb or a curb and planting strip.
Sidewalk-bikeway	Any sidewalk signed and/or striped to permit cyclists to share the travel right-of-way with pedestrians.
Traffic Control Devices	Signs, signals or other fixtures, whether permanent or temporary, placed on or adjacent to a travelway by authority of a public body having jurisdiction to regulate, warn, or guide traffic.
Traffic Volume	The given number of vehicles that pass a specific location in a given amount of time (hour, day, year).
Transportation Improvement Program	A transportation planning and programming document developed by MRGCOG for the Albuquerque area which identifies the capitol transportation activities for a 6-year period, updated annually.
Undercrossing (Tunnel)	A structure used to traverse barriers (e.g., rivers, interstates, and arroyos) to bicycle travel.
Vehicle	Any device in, upon or by which any person or property may be transported or drawn upon a public highway, including vehicles that are self-propelled or powered by any means.
Wide Curb Lanes	Wide curb lanes are desired along shared roadways and preferably should be 14 feet in width (measured from lane stripe to edge of gutter pan or edge of pavement).

CHAPTER 1

INTRODUCTION

Introduction

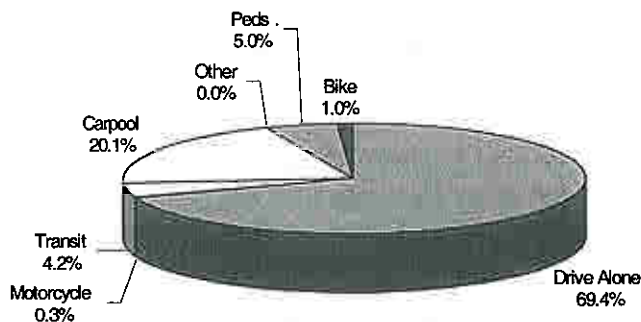
Bicycling is a low-cost means of transportation that is non-polluting, energy-efficient, healthy, and fun, which can also help to reduce traffic congestion and air/noise pollution, and improve the quality of life within the Albuquerque community. Bicycles offer an efficient form of transportation to all socioeconomic levels including the non-driving public at a low-cost. Other benefits of bicycling include improved physical fitness and health, and a reduced requirement for roadway and parking space per traveler.

A historical and current trend in American cities, including Albuquerque, is a continued outward growth through suburban development. This suburban growth pattern is fueled by the convenience of the automobile, giving people the ability to travel greater distances to their destinations. Analysis of the 1990 National Personal Transportation Survey (NPTS) revealed that “the Federal Highway Administration has realized that the ability to fund and maintain a growing road system cannot keep pace indefinitely with consumer demand”¹. National statistics indicate that between 1969 and 1990 the number of households, drivers, workers and vehicles grew at a faster rate than the population. This trend confirms that the demand for personal mobility is increasing, potentially beyond the ability to accommodate the demand through new roadway construction alone. Both public and private interests desire to give increased priority to alternative travel modes, including bicycling.

Adults are rediscovering bicycling as both transportation mode and a health enhancing activity. A 1990 Harris Poll² revealed that:

- 82 million adults have ridden a bicycle in the past year (46% of American adults);
- 87% of the adult cyclists indicated that they rely upon the street system for travel; and,
- Over 41 million adult cyclists indicate that they would occasionally commute to work by bike if safe bike lanes or other designated bicycle facilities were available.

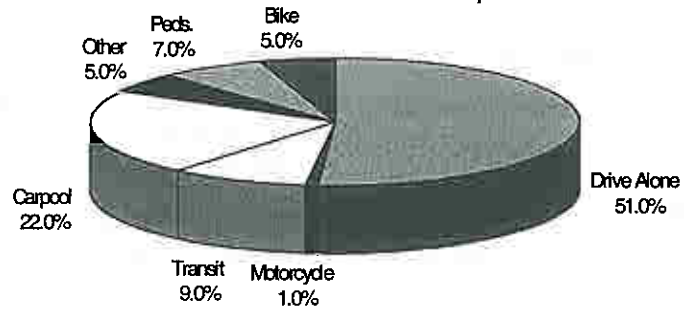
Bicycling in Albuquerque is often perceived as dangerous due to the perceived lack of proper and safe bicycle facilities. Although many good bicycle facilities are available in Albuquerque; a system of continuous, interconnected bikeways does not yet exist. To encourage Albuquerqueans to shift to bicycling, it will be necessary to provide space on the road for bicyclists. This provision will improve bicycle travel for shopping, school and work trips, reduce motor vehicle-bicycle conflicts, and reduce traffic congestion by removing road users from single occupant vehicles.



1990 Albuquerque Mode Split for All Trips

Because of great weather year-round, relatively level terrain, a large population of environmentally aware, and outdoor-oriented citizens, bicycling in Albuquerque has growth potential, despite suburban growth. According to the 1990 U.S. Census Survey about 1.2% of Albuquerque’s workforce currently commutes to work by bicycle, while 1% of all trips (e.g., work, shopping, school) in the metropolitan area are made by bicycle, illustrated in the chart to the left. There are approximately 2.8 million daily trips in this community and about 28,000 of those trips are made by bicycle. The current long-range bicycle policy for the Albuquerque Metropolitan

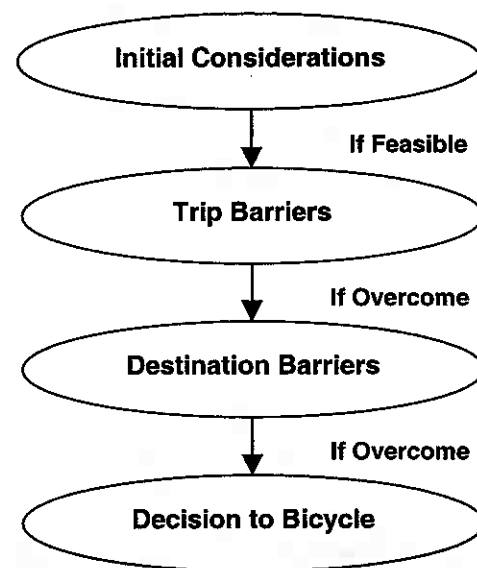
Planning Area (AMPA), as stated in the 2020 Metropolitan Transportation Plan³ (MTP), predicts a 33% and 200% increase in bicycle trips by the years 2010 and 2020, respectively. By 2020, this 200% increase would yield approximately 84,000 daily bicycle trips. The 1994 Long Range Transportation Plan (LRTP) Citizens Advisory Committee³ recommended that a mode split for all trips in the year 2015 includes 5% by bicycle, illustrated in the chart to the right. Note: this recommendation was never officially adopted as part of the 1994 LRTP. This plan is asking the citizens of Albuquerque to alter their travel choices to make 1 out of every 20 trips by bicycle or as few as 1 trip per week.



CAC Year 2015 Mode Split Recommendation

National research has found that more than a quarter of all trips are one mile or less; almost half were three miles or less, and approximately two-thirds are five miles or less.⁴ Studies have shown that most bicycle trips fall in the two to five mile range. Moreover, approximately half of all people nationwide live less than two miles from the closest public transportation route, making an intermodal bicycle-transit trip more attractive. Recent advances in bicycle design have made them more durable, efficient, and user-friendly, increasing the likelihood of making the two to five mile bicycle trip. A 5-mile bicycle trip for example will take approximately 20 minutes at 15 mph. While it may not always be possible to shift work trips from automobile to bicycle, only 21% of all trips involve travel to or from work.⁴ Targeting trips to schools, parks, shopping centers or other major destinations may also provide considerable benefit for the community.

Figure 1-1
Bicycle Decision Factors



For the Albuquerque Comprehensive On-Street Bicycle Plan to be successful, it is important to understand the factors that influence a person’s choice of travel mode. Before choosing to use a bicycle for a particular trip a person will likely need to overcome the following three factors: 1) initial consideration, 2) trip barriers, and 3) destination barriers. The issues associated with each of these three factors are listed below. This process is illustrated in Figure 1-1.

- Initial Considerations
 - Seriously consider bicycling as a viable transportation option.
 - Distance and/or time factor.
 - Safety concerns (nighttime travel).
 - Perception that bicycling requires a high level of physical exertion.
 - Situational constraints such as needing a car

Source: *The National Bicycling and Walking Study: Transportation Choices for a Changing America*

for work or dropping kids off at daycare.

- Trip Barriers
 - Perception of safety and actual safety problems associated with traffic.
 - Existence of adequate bicycle facilities.
 - Presence or absence of physical barriers (e.g., directness of bikeway, narrow bridges, or complex intersections).
 - Presence or absence of environmental factors (e.g., hilly terrain or extreme weather).
- Destination Barriers
 - Presence or absence of end-of-trip facilities (e.g., secure bicycle parking or showers).
 - Support from employers (e.g., reimbursed parking fees, less formal dress code, or “flextime”).

Before bicycle usage can be increased, a number of issues must be addressed as part of the Albuquerque Comprehensive On-Street Bicycle Plan, including:

- The provision of a comprehensive bikeway network that consists of direct, continuous, convenient, and a safe system of bicycle facilities.
 - Improving existing bicycle facilities to safely accommodate bicycles.
 - Implementing new bicycle facilities to provide route connectivity and remove barriers.
 - Providing adequate space on roadways to accommodate bicycles by modifying street standards.
 - Implementing a maintenance program for bicycle facilities.
- The provision of adequate bicycle end-of-trip facilities (e.g., bicycle parking and showers) at trip destinations.
- The promotion of bicycling through encouragement and education campaigns.
- The promotion of bicycle safety through education and enforcement efforts.
- The promotion of intermodal bicycle-transit trips to increase the effectiveness of both transportation modes.
- The identification of funding sources to pay for bicycle facilities and programs, including maintenance.

A renewed interest in bicycling as a viable transportation mode, at a national level, was generated by public demand. This demand resulted in the non-motorized provisions in the 1991 Intermodal Surface Transportation Efficiency Act (ISTEA) and subsequently the Transportation Equity Act for the 21st Century (TEA-21). Both ISTEA and TEA-21 represent a significant change in national transportation policy, allowing states and communities to invest in bicycle projects leading to a more balanced multimodal transportation system. The Federal Highway Administration (FHWA) has stated that they “strongly support the use of these [bicycling and walking] travel modes as essential elements of a more balanced Intermodal Transportation System. The FHWA will continue taking a strong leadership role in promoting both the use and safety of these modes of travel.”⁵

Under ISTEA, all states and large communities were required to develop transportation plans that incorporate programs and facilities for bicycling. In Albuquerque, bicycling and related facilities have been an important issue since the early 1970's.

Albuquerque Bicycle System History

In 1972, the City of Albuquerque began work on its bicycle facilities network. A team effort involving an ad hoc Bikeway Advisory Committee and the City of Albuquerque Planning Department developed The Bikeway Study, which was published in March 1974. This study led to the advent of the Long Range Bikeway System (formerly called the Bikeways Master Plan), which establishes policy regarding bikeways in the Albuquerque Metropolitan Planning Area. The BMP was first included in the 1974 Transportation Program.

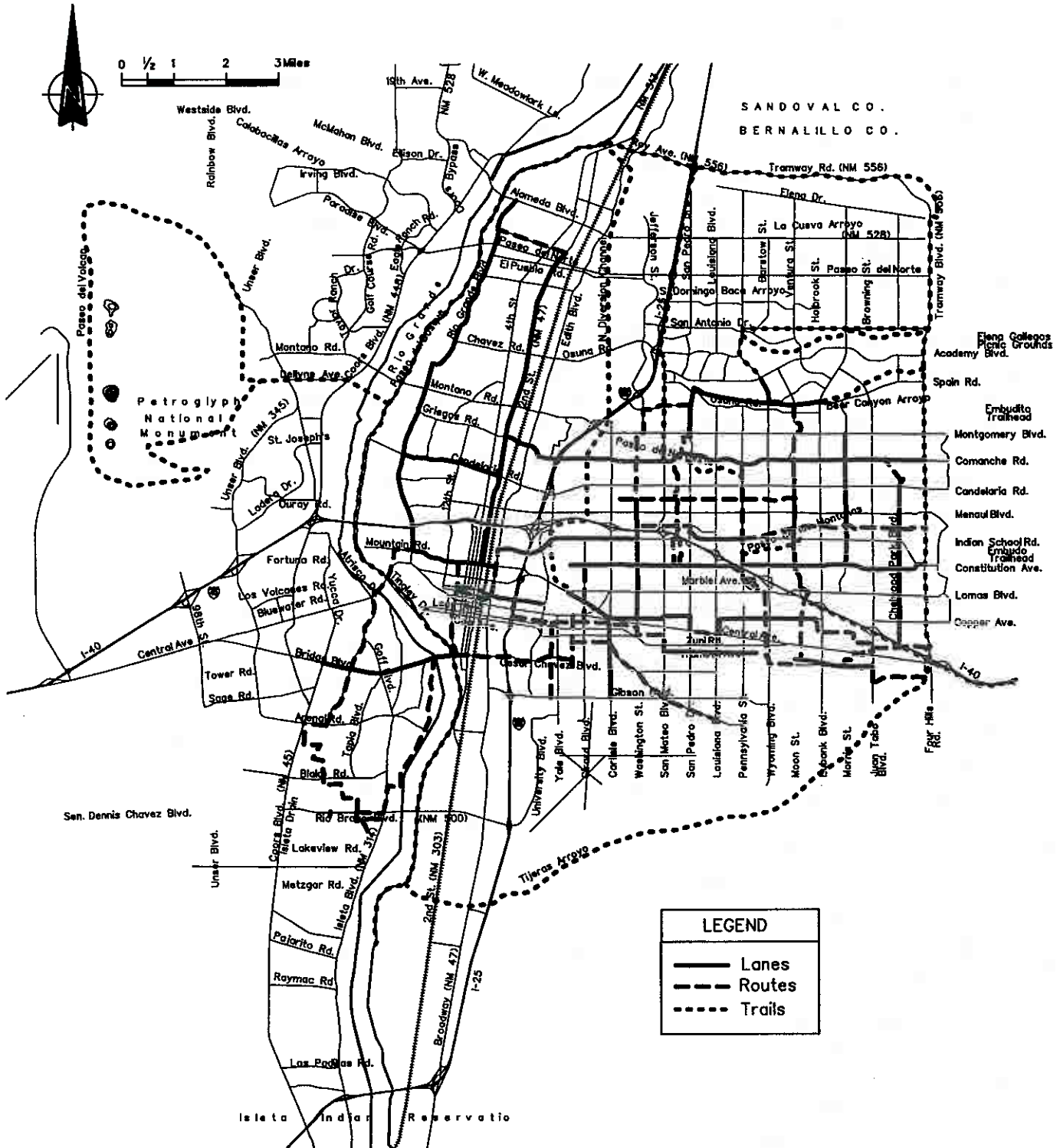
This 1974 study proposed a bicycle facilities network consisting of approximately 88 miles of bike trails, 60 miles of bike lanes, and 54 miles of bike routes (Figure 1-2). This network shows a circumferential beltline of off-street trails on the east side of the city which is bisected by the on-street system. The beltline consists of the Tramway trails (north and east), Tijeras Arroyo trail (south), and Paseo del Bosque (west). The North Diversion Channel trail creates a backbone with other bikeways connecting into it. The total proposed network (i.e., bike trails and bike lanes), originally targeted for completion in 1978, has yet to be realized.

A more recent planning effort undertaken by the City of Albuquerque was the Trails and Bikeways Facility Plan, completed in 1993. This plan established long-range policies for off-street trails and bicycle facilities within the Albuquerque Metropolitan Planning Area. A proposed trail system that serves both recreational and commuting bicyclists was the primary purpose of this plan. The plan did recommend the creation of two positions, a Bicycle/Pedestrian Coordinator and a Trails Coordinator, to oversee the development of the on-street and off-street bikeways respectively. Recommended elements of this study are currently being implemented as funding becomes available.

In addition to the City of Albuquerque, the State of New Mexico and the Middle Rio Grande Council of Governments (MRGCOG) have both been active in bicycle planning. The Long Range Bikeway System (LRBS), presented in Figure 1-3, is part of the long-range transportation plan (2020 Metropolitan Transportation Plan) for the urban area. Opportunities to update the LRBS are provided twice per year through a MRGCOG transportation planning process. The LRBS is included in the Transportation Program, which is reviewed and approved annually by elected officials. Local jurisdictions, including Bernalillo County and the cities of Albuquerque and Rio Rancho provide input for the LRBS.

At the state level, the New Mexico Bicycle-Pedestrian-Equestrian Transportation Plan was completed in 1996. This plan provides goals, recommended actions, and planning and design guidelines to improve and accommodate non-motorized transportation modes. The Bicycle-Pedestrian-Equestrian Advisory Committee stated that "the citizens of this state support providing facilities for, and encouraging the use of, non-motorized transportation alternatives."

The original ad hoc Bikeway Advisory Committee has been replaced by the Greater Albuquerque Bicycle Advisory Committee (GABAC) and the Greater Albuquerque Recreational Trails Committee (GARTC). Each of these citizen committees was established by ordinance and are charged with representing bicyclists and advising governmental agencies on projects affecting bicyclists. The difference between these two advisory committees is that GABAC is responsible for providing input regarding on-street



TRANSCORE

Figure 1-2
Proposed Bike Network from The Bikeway Study (1974)

bikeways and GARTC provides input regarding off-street trails. These committees also participate in updating the Long Range Bikeways System.

This current project reviewed and considered these previous studies and will integrate the appropriate recommendations. The Albuquerque Comprehensive On-Street Bicycle Plan was initiated, based on a recommendation included in the Trails and Bikeways Facility Plan, to investigate on-street bikeways more closely. In late 1996, this project was initiated with a project steering committee meeting. The project steering committee, consisting of members from bicycle advisory and advocacy groups, public agencies, and other parties, has provided guidance throughout this process. Public participation has occurred throughout this process and the input received has been integrated into this Comprehensive On-Street Bicycle Plan.

Summary of Local Plans and Policies

This summary provides a discussion of the major plans and policies which have guided the development of the existing Albuquerque bicycle network. Many plans and policies are currently in place which pertain to one or more of the following issues: 1) bicycle related policies, 2) funding for bicycle facilities, 3) bicycle related standards, and 4) guidelines for locating bicycle facilities. A list of relevant plans is provided in Table 1-1, and the relationship between the various plans is shown as Figure 1-4. A brief summary of the bicycle-related issues discussed in many of these plans is also provided.

**Table 1-1
Local Planning and Policy Documents that Guide Bicycling in Albuquerque**

Document	Bicycling Issue			
	Policy	Funding	Standards	Location
Albuquerque/Bernalillo County Comprehensive Plan	X			
2020 Metropolitan Transportation Plan	X	X		
Long Range Bikeway System Map	X			X
Trails & Bikeways Facility Plan	X		X	X
Future Albuquerque Area Bikeways and Streets				X
New Mexico Bicycle-Pedestrian-Equestrian Transportation Plan	X		X	
City of Albuquerque Ordinances			X	
Development Process Manual			X	
City of Albuquerque Decade Plan: Capital Improvement Program		X		
Bernalillo County Capital Improvement Program		X		
Albuquerque Metropolitan Planning Area Transportation Program		X		
Statewide Transportation Improvement Program		X		

Albuquerque/Bernalillo County Comprehensive Plan

The Comprehensive Plan is a long-range plan that establishes how the urban form of the Albuquerque/Bernalillo County planning area should evolve and establishes the city/county position

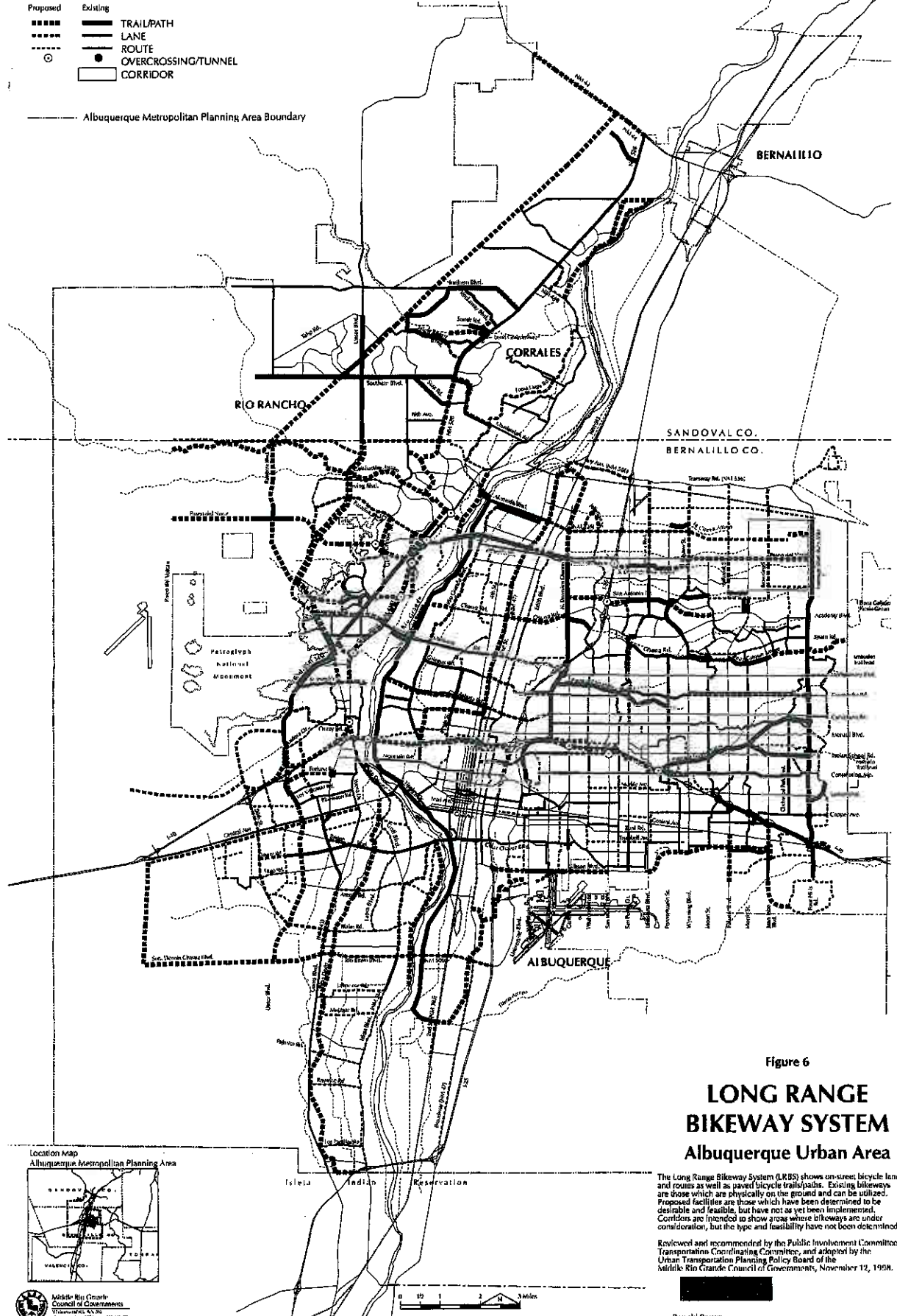


Figure 6
**LONG RANGE
 BIKEWAY SYSTEM**
 Albuquerque Urban Area

The Long Range Bikeway System (LRBS) shows on-street bicycle lanes and routes as well as paved bicycle trails/paths. Existing bikeways are those which are physically on the ground and can be utilized. Proposed facilities are those which have been determined to be desirable and feasible, but have not as yet been implemented. Corridors are intended to show areas where bikeways are under consideration, but the type and feasibility have not been determined.

Reviewed and recommended by the Public Involvement Committee and the Transportation Coordinating Committee, and adopted by the Urban Transportation Planning Policy Board of the Middle Rio Grande Council of Governments, November 12, 1998.

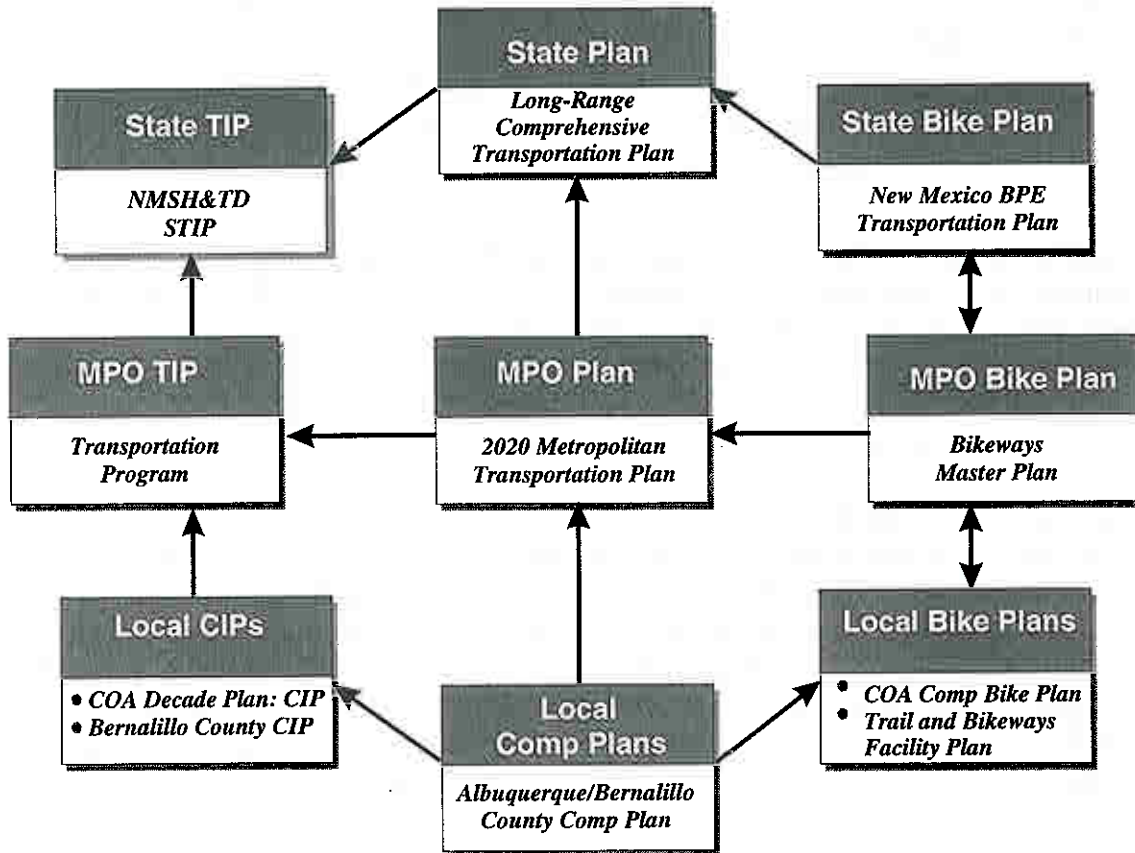
Ronald Brown
 Chair, MRCCOG/UTPB

04/4/99

Figure 1-3
 Existing Long Range Bikeway System Plan

supporting bicycling as an alternative to automobile travel. This document provides guidance in the development of all other lower ranking plans. Lower ranking area plans and sector plans usually include a discussion that encourages bicycling, and some of these plans have identified specific bicycle facilities to be included in the Long Range Bikeway System.

**Figure 1-4
Bicycle Planning Process**



2020 Metropolitan Transportation Plan for the Albuquerque Metropolitan Planning Area

The 2020 Metropolitan Transportation Plan (MTP) is a document, developed by the Middle Rio Grande Council of Governments (MRGCOG), which guides the development of the transportation system for the Albuquerque Metropolitan Planning Area (AMPA). Implementation of the 2020 MTP requires a reduction in single occupant vehicle trips by increasing bicycling, walking, carpooling, vanpooling, and transit trips. To accomplish these modal shifts away from single occupant vehicles, the 2020 MTP recommends that additional funding be provided to expand pedestrian, bicycle, and transit systems and to encourage the use of these alternative modes. Some of the key bicycle related items discussed in the 2020 MTP are summarized as follows:

- The goals established for bicycling in the 2020 MTP include a 33% increase in bicycle trips by 2010 and a 200% increase by 2020.

- Increase bicycle ridership through improved and new bicycle facilities, connectivity to transit, bicycle end-of-trip facilities (e.g., parking and shower/lockers), and educational efforts. An education program not only encourages more people to bicycle; it also improves safety.
- Provide a bicycle network that consists of safe on-street and off-street bicycle facilities that connect major destinations and connect to transit facilities. This will require improvements for some existing bicycle facilities and the addition of many miles of new bicycle facilities.
- Funding for bicycle projects will come from roadway construction, rehabilitation, and reconstruction; Congestion Mitigation/Air Quality (CMAQ); and Surface Transportation Program – Enhancement funds; and dedicated local bikeway funds.
- The 2020 MTP discusses the Comprehensive On-Street Bicycle Plan in the context that, once it is approved, it will provide the basis for revising the Long Range Bikeway System and the identification of future construction projects.

Long Range Bikeway System Map (formerly known as the Bikeways Master Plan)

The Long Range Bikeway System (LRBS) establishes long-range policies for bicycle facilities within the Albuquerque Metropolitan Planning Area (AMPA). The LRBS map is shown in Figure 1-3. Revisions to this map may occur twice a year through the Future Albuquerque Area Bikeways and Streets process, with input from MRGCOG and the Greater Albuquerque Bicycle Advisory Committee (GABAC). The LRBS is also included in the annual AMPA Transportation Program.

Trails and Bikeways Facility Plan

The Trails and Bikeways Facility Plan, developed by the City of Albuquerque Planning Department, establishes long-range policies for off-street trails and bicycle facilities within the Albuquerque Metropolitan Planning Area. The result of this plan is a trail system that not only serves recreational purposes, but also commuting purposes. A hierarchy of trail types is included in this plan with secondary trails primarily used for recreation, which could be paved or unpaved, and primary trails used for both commuting and recreation. The primary trails from this plan are included in the LRBS to show trail and on-street connectivity.

This plan made the recommendation that a separate on-street bikeways evaluation study be conducted. It further recommended that two new full-time positions be established in the City with responsibility for implementing bicycle and pedestrian planning and improvements. This recommendation has been implemented and the Bicycle/Pedestrian Planner and Trails Coordinator positions exist today.

Future Albuquerque Area Bikeways and Streets

The Future Albuquerque Area Bikeways and Streets (FAABS) document contains the streets and bikeway facility planning maps for the AMPA. These planning maps, including the LRBS, are updated twice a year, spring and fall, as part of the FAABS review process. This is a formal process that allows local governments, agencies, and bicycling advisory committees the opportunity to provide their input on bicycle planning within the AMPA.

New Mexico Bicycle-Pedestrian-Equestrian Transportation Plan

The New Mexico Bicycle-Pedestrian-Equestrian (BPE) Transportation Plan is a planning document, developed by the New Mexico State Highway Commission and the State Highway and Transportation Department, which provides guidelines for accommodating non-motorized transportation alternatives. This plan identifies goals, recommended actions, and planning and design standards to improve and

accommodate non-motorized transportation modes. The primary bicycle related recommendations of the BPE Transportation Plan include the following:

- A statewide bicycle transportation system should be developed which is based on connectivity to destinations, safety of routes, scenic value, and demand. State bikeways should be continued through towns and urban areas by the responsible governmental entity.
- Shoulders, bicycle lanes or wide curb lanes should be included on all new roadway construction and reconstruction projects.
- Design standards for bicycle facilities (AASHTO) must be established and followed.
- One person in each NMSHTD district should be responsible for BPE issues.

Revised Ordinances of Albuquerque, 1974 (R.O. 1974)

This compilation of City ordinances includes legislation regulating development. Ordinances pertaining to bicycles deal with bicycle parking and proper riding skills. More specifically, the bicycle parking ordinance specifies the location of bicycle parking, type of bicycle parking to be used, and the minimum number of parking spaces required for residential units and non-residential developments. A complete list of applicable bicycle laws is included in Appendix A (under separate cover).

Development Process Manual (City of Albuquerque)

The Development Process Manual (DPM) outlines the procedures and design criteria used during the development process. Its intended users include City staff, property owners, developers, and their agents. Its general purpose is to carry out the goals and policies of the Albuquerque/Bernalillo County Comprehensive Plan and the City Ordinances by encouraging high quality, innovative design; a variety in choice of neighborhoods and lifestyles; preservation of natural features and resources; and ensuring the health, safety, and welfare of the community.

A chapter of the DPM is devoted to transportation design issues, including bicycle location and design guidelines. New design guidelines are recommended by AASHTO and other agencies; therefore, the DPM bicycle design criteria require updating. One component of this plan's development was review of these bikeway-related guidelines, and revisions will be forwarded to the DPM committee for adoption.

City of Albuquerque Decade Plan: Capital Implementation Program

The Decade Plan documents the budgeted capital improvement projects for the City of Albuquerque over a ten-year period. This plan is updated every two years, and funding comes from the General Obligation Bond Program which is approved by the voters. Bicycle projects are funded through a variety of departments, including parks and general services, planning, and public works.

In 1995, the Albuquerque City Council passed a resolution which set aside five percent of the Public Works street funding in the Capital Implementation Program for trails and bikeways. This bicycle project funding is administrated jointly by the Public Works, Planning, and Parks and Recreation Departments. In accordance with the resolution, this funding has primarily been used for off-street trails that were recommended as part of the Trails and Bikeways Facility Plan. Bernalillo County passed a similar resolution, setting aside the same funding level for bicycle projects.

Albuquerque Metropolitan Planning Area Transportation Program

The Metropolitan Transportation Program (MTP) summarizes transportation planning and programming activities in the Albuquerque Metropolitan Planning Area for 20-year intervals. This document includes a six-year Transportation Improvement Program (TIP) which only includes projects that will implement the Metropolitan Transportation Plan. A crucial element of the MTP is the Long Range Bikeway System, which is updated bi-annually.

New Mexico State Highway and Transportation Department:

Statewide Transportation Improvement Program (STIP)

The New Mexico STIP documents the budgeted transportation improvement projects for the state of New Mexico over a six-year period. The STIP distributes both state and federal funding to the six districts of the NMSHTD. Often local agencies are asked to provide matching funding for projects within their communities. Federal funding is primarily provided by the Transportation Equity Act for the 21st Century (TEA-21). Funding programs under TEA-21 from which bicycle projects can receive funding include the Surface Transportation Program, the Congestion Mitigation and Air Quality Improvement Program, and the Transportation Enhancements Program.

Albuquerque Comprehensive On-Street Bicycle Plan Report Organization

The Comprehensive On-Street Bicycle Plan identifies actions needed to make Albuquerque a bicycle-friendly community. The contents of each chapter of this document are summarized below:

- *Chapter 2: Objectives and Policies* – Defines the vision statement, the goals, the objectives, and the action items that will guide the implementation of the Albuquerque Comprehensive On-Street Bicycle Plan. The relationship between the Comprehensive On-Street Bicycle Plan and other major plans and policies is also discussed.
- *Chapter 3: Background Information* – Provides a summary of the current status of bicycling in Albuquerque looking at such issue as the existing bikeway network, educational and encouragement efforts, bicycle collisions, and bicycle usage.
- *Chapter 4: Bikeway Network* – Describes the existing and recommended bikeway networks with information provided on types of improvements required to implement bicycle facilities and the associated project costs.
- *Chapter 5: Implementation Plan* – Describes the steps necessary for a successful implementation of the Albuquerque Comprehensive On-Street Bicycle Plan.

Appendices

- *Appendix A: Bicycle Laws* - New Mexico State Statutes and City of Albuquerque Ordinances that relate to bicycling.
- *Appendix B: Bicycle Counts* – Tabulation of base line bicycle counts conducted for the Comprehensive On-Street Bicycle Plan.
- *Appendix C: Public Opinion Survey* – Tabulation of responses to public opinion survey distributed for the Comprehensive On-Street Bicycle Plan.
- *Appendix D: Open House* – A summary of events and comments associated with the Comprehensive On-Street Bicycle Plan’s first open house (public meeting).
- *Appendix E: Existing Bicycle Facilities Scores* – Summary of scores assigned to each roadway segment that has an existing bikeway.

- *Appendix F: Improvement Costs for Existing Bicycle Facilities* – Tabulation of estimated project improvement costs for existing bikeways.
- *Appendix G: Improvement Costs for Proposed Additional Bicycle Facilities* – Tabulation of estimated project improvement costs for proposed bikeways.

This plan is intended to be a 20-year guide to make Albuquerque a more bicycle-friendly community. Its success is dependent upon policy maker's, bicyclists', and other resident's support in recognizing the benefits of providing an interconnected bikeway system that links employment and shopping sites, schools, and parks. These benefits are related to quality of life, reduced traffic congestion and improved air quality.

References:

- ¹ *National Bicycling & Walking Study, Case Study 4*, 1992. References FHWA Publication No FHWA-PL-92-018, Summary of Travel Trends: 1990 Nationwide Personal Transportation Survey.
- ² *National Bicycling & Walking Study, Case Study 10*, 1990. References Louis Harris & Associates, *Commuting by Bicycle*, Rodale Press, Emmaus, PA, 1990.
- ³ *2020 Metropolitan Transportation Plan*, 1998. Middle Rio Grande Council of Governments, Albuquerque, NM.
- ⁴ Zegeer, C. et al, 1994. *The National Bicycling and Walking Study: Transportation Choices for a Changing America*. U.S. Department of Transportation, Washington, D.C.
- ⁵ Burgess, B. et al, 1994. *NHI Course No. 1535: Bicycle and Pedestrian Planning Under ISTEA*. U.S. Department of Transportation (Bicycle Federation of America), Washington, D.C.

CHAPTER 2

OBJECTIVES AND POLICIES

Objectives and Policies

This chapter defines the vision statement, goals, objectives, and action items that will guide the implementation of the Albuquerque Comprehensive On-Street Bicycle Plan. A project steering committee consisting of members from public agencies and citizen groups spent considerable time reviewing Goals and Objectives for bicycling published in the MRGCOG Long Range Transportation Plan and the Trails and Bikeways Facility Plan. In addition, the steering committee also reviewed Goals and Objectives from the state of Oregon and the following cities: Portland, Phoenix, Seattle, Tucson, Denver, and LaCrosse, Wisconsin. Members of the project steering committee were asked to consider the following primary issues as part of their review.

- What are the current bicycling goals and objectives for the Albuquerque Metropolitan Area, especially with regard to the on-street bicycle system and connections to the off-street system?
- Which of these goals and objectives may have already been or are in the process of being achieved?
- Which goals and objectives should be retained and possibly modified, expanded, and/or clarified?
- What are the measures of effectiveness or benchmarks for these goals and objectives?
- What goals, objectives, and/or strategies from other bicycle plans across the U.S. can be incorporated reasonably into the Albuquerque Comprehensive On-Street Bicycle Plan?

With input from the steering committee members, a vision statement was prepared along with supporting goals, objectives, and action items, which are provided.

Vision Statement

Provide safe and convenient access for bicyclists to all areas of Albuquerque, so that bicycling is a viable transportation option that results in an improved quality of life in the Albuquerque Metropolitan Area.

Goals and Objectives

Goals

1. Achieve a Bicycle Commute Mode Share of 5 percent by Year 2005 and a 10 percent Bicycle Commute Share by Year 2020.
2. Achieve a Bicycle Mode Share of 5 percent of All Trips by Year 2020.
3. Reduce by 10 percent the Number of Bicycle Fatalities and Injuries by Year 2020.

Objective 1: Develop and promote Metropolitan Albuquerque as a Bicycle-Friendly Community.

- A. Achieve the League of American Bicyclists “Bicycle Friendly Communities” designation and Bicycling Magazine’s “Top Ten Best Cities for Cycling” award by institutionalizing bicycling as a legitimate form of transportation in all planning and programming efforts and public awareness campaigns.
- B. Provide full-time staff positions dedicated to bicycle transportation and appropriate office budgets to promote bicycling within the Albuquerque metropolitan area.
- C. Support the establishment of designated personnel and appropriate office budgets in other Albuquerque Metropolitan Planning Area jurisdictions to address bicycling concerns.

- D. Maintain the dedicated local funding source for construction and maintenance of bikeways and establish specific budget line items in the Albuquerque budget to support the provision of on-street bicycle facilities and programs.
- E. Institutionalize bicycling as a legitimate form of transportation through bicycle-friendly roadway design practices and through consistent, routine training of City of Albuquerque, MRGCOG, and other jurisdiction's staff on bicycle transportation planning and design. Work with University of New Mexico and New Mexico State University to develop curricula for bicycle-friendly transportation system design.
- F. Support efforts of the Greater Albuquerque Bicycling Advisory Committee (GABAC) to promote bicycling and improve bicycle safety through effective response to GABAC concerns. Provide staff liaisons from the City of Albuquerque, Bernalillo and Sandoval Counties, and other area jurisdiction departments of transportation to attend GABAC meetings and to work on GABAC issues on a routine basis.

Objective 2: Develop and maintain a continuous, interconnected and balanced bikeway system.

- A. Develop an interconnected network of bikeways on 1) local streets (bike routes), 2) arterial streets (bike lanes), and 3) along limited access arterials (separated multi-use trails) and 4) along arroyos or abandoned railway corridors. Encourage developers of walled subdivisions to provide connectivity between their developments and adjacent bikeways.
- B. Improve bicycle connections between schools (elementary through college) and neighborhoods to encourage bicycling by children, teenagers, and young adults.
- C. Provide bicycle facilities at ½-mile spacing intervals on average throughout the metropolitan area. Increase on-street bikeway mileage from 90 (1996) to 130 (year 2000), 330 (year 2010), and 500 (year 2020).
- D. Give priority to achieving connectivity of the bikeway system when planning and programming all roadway and bikeway improvements.
- E. Plan, program, and implement special provisions for crossings of high-volume, multi-lane streets. Review successful treatments utilized within other communities for difficult crossings.
- F. Concentrate bicycle improvements for a five-mile radius ("hub and spoke") around major employment centers, schools, parks, and other activity centers.
- G. Coordinate and develop interconnected bikeway improvements and standards between the City of Albuquerque and adjacent jurisdictions including Bernalillo County, Sandoval County, Los Ranchos, Rio Rancho, Corrales, and Kirtland Air Force Base.
- H. Monitor the implementation of elements within the Albuquerque Comprehensive On-Street Bicycle Plan and update the Plan at five year intervals.

Objective 3: Use bicycle-friendly standards and procedures for bicycle facilities and roadways.

- A. Restripe all collector and arterial roadways (where practical) to provide bike lanes, or to maximize the outside lane width.
- B. Provide a striped bicycle lane or shoulder of at least four feet wide along a collector and five feet wide along an arterial per the AASHTO design guidelines, on all new, rehabilitated, or reconstructed roadways. Note: width excludes gutter pan.
- C. Provide striped lanes/shoulders of at least five feet on all new or reconstructed bridges, underpasses, and overpasses.

- D. Plan and design for bicycle travel with all intersection improvements - include 5-foot bike lanes or minimum curb lane widths of 15 feet through intersections.
- E. Modify existing or install new traffic signal detection equipment (i.e., loop or video detectors) to make all traffic signals bicyclist-responsive without requiring the operator to dismount or cross an exclusive right-turn lane or sidewalk.
- F. For other design considerations, refer to the current versions of the AASHTO Guide for the Development of Bicycle Facilities, the New Mexico Bicycle-Pedestrian-Equestrian Transportation Plan, the State of Oregon Bicycle and Pedestrian Plan, or other appropriate design reference guidelines.

Objective 4: Provide a high-standard of maintenance along roadways with on-street bicycle facilities.

- A. Improve and fully fund the street maintenance and sweeping program. Establish the highest priority for allocation of street sweeping resources to sweeping all bike lanes at least once per month and bike routes on local streets a minimum of four times a year.
- B. Maintain street surfaces on designated bikeways and multi-use trail linkages to a high standard, including elimination of potholes and maintenance of bicycle-safe railroad crossings, drain grates and cattleguards. Avoid use of pea-gravel sealcoating wherever practicable.
- C. Maintain bicycle pavement markings and signing to enhance safety and to assure both driver and bicyclist visibility both during daytime and nighttime hours.
- D. Maintain arterial and collector street surfaces not designated as bikeways on a routine basis to reduce hazards (e.g., potholes, debris) for bicyclists who use these roadways to access destinations.
- E. Establish timely responsiveness to maintenance requests from citizens through the use of a telephone “hotline” or web page or other means for citizens to report concerns. Establish an agency goal of 48 hours to address these inquiries.
- F. Maintain bicycle routes and lanes to high standards through construction projects, and maximize curb lane widths (i.e., provide lane widths of 14 feet or greater) through construction projects on roadways which do not have bike lanes. Where this is not feasible, provide appropriate bicycle-friendly and reasonably direct detours and detour signing.
- G. Encourage a bottle deposit system in order to discourage littering of roadways and bike facilities with hazardous broken glass.

Objective 5: Implement a comprehensive program to increase public awareness of bicycling.

- A. Develop and utilize video and audio Public Service Announcements (PSAs) and other means, such as billboards, to promote general public awareness and acceptance of bicycling and to promote bicycle safety. Target use of PSAs on television/local radio stations for specific community events, especially during the annual Bike Month.
- B. Provide specific line item agency funding to support public bicycling awareness programs and “Share the Road” campaigns.
- C. Encourage wide-spread support and participation by bicycle shops, bicycle clubs, the Greater Albuquerque Bicycling Advisory Committee, and other bicycle interest groups in efforts to promote public awareness of bicycling.

- D. Increase public outreach efforts, including video and audio PSAs to educate motorists on bicyclists' rights and responsibilities. Include bicycling-related questions in motor vehicle driving license tests as a means to raise awareness of bicyclists' rights and responsibilities.
- E. Heighten public awareness of bicycle planning efforts and ensure on-going citizen participation and support for bikeway development. Provide periodic news releases for bicycle planning and bicycle system development and actively solicit public input.
- F. Work with major employers throughout the Albuquerque Metropolitan Area to encourage commuting by bicycle among their employees and to increase motorists' awareness to share the road.

Objective 6: Educate all bicyclists on legal, safe, and predictable behavior.

- A. Develop, distribute, and update annually an improved, user-friendly bicycle map of the Albuquerque Metropolitan Area including the communities of Albuquerque, Los Ranchos, Rio Rancho, Corrales, Kirtland Air Force Base, the Sandia Indian Nation, and metropolitan areas of Bernalillo County and Sandoval County.
- B. Distribute a user-friendly Bicycle Commuter Handbook which includes commuting and safety tips and laws related to bicycling.
- C. Develop and fully support a Bicycle Education program in Albuquerque's elementary and secondary schools as part of current physical education requirements.
- D. Encourage and support head injury awareness and helmet usage through educational brochures and programs and through the distribution of low-cost helmets.
- E. Provide full support for the Bicycle/Pedestrian Safety Education Program staff in their work on bicycle education, and in developing and overseeing a program for bicyclist education.
- F. Continue development and use of video and audio PSAs, as well as short instructional safety videos to promote proper and legal bicyclist behavior.
- G. Continue and expand Police Bicycle Patrols, and dedicate a distinct percentage of their time to educational efforts on proper bicycling behavior.
- H. Develop and test a bike offender diversion program (i.e., community service program) to complement the enforcement efforts under Objective 8.
- I. Provide specific line item funding to support bicyclist education.

Objective 7: Promote bicycling as a non-polluting and cost-effective mode of transportation and recreation.

- A. Continue and expand marketing efforts to promote bicycling as an alternate mode of transportation, especially through cooperative efforts with a regional Travel Reduction/Rideshare Program. Work with businesses to provide bicycle commuting information to employers and employees and to learn how bikeways to and from their locations can be improved.
- B. Provide outreach and personal travel cost information which shows how bicycle transportation can be beneficial to both employees and students.
- C. Prioritize implementation of recreational bicycle facilities which contribute key linkages to the on-street bikeway system, including interim trail improvements where needed and spot safety trail improvements.

- D. Promote air quality benefits of bicycling through public outreach efforts to major public and private sector employers, such as the University of New Mexico (UNM), Kirtland Air Force Base (KAFB), Sandia National Laboratories, Intel, and area schools.
- E. Develop and support cash incentive programs to promote bicycling such as parking cash-out allowances (i.e., cash payments to bicyclists in lieu of employer-provided parking) for City of Albuquerque, UNM, KAFB, and other employees who work for public or private sector employers.
- F. Develop and implement bicycle parking ordinances where they do not currently exist. Monitor and fine-tune existing local bicycle parking ordinances based in part on bicyclist and business feedback and recommendations.
- G. Continue and expand the interface between bikes and buses, including such features as bicycle racks on all buses and bicycle racks and lockers at park-and-ride lots. Promote bike/bus programs through Sun Tran literature and PSAs.
- H. Develop and implement specific incentive programs to encourage existing businesses and other entities to provide facilities for bicycling, such as bicycle racks and lockers, showers, clothes lockers, and guaranteed ride home programs.
- I. Develop and distribute to employers short videos which promote bicycle commuting, demonstrate bicycle commuting tips, show legal and safe riding techniques, and promote bicycling awareness and acceptance.
- J. Promote organized bicycle racing on city streets as a means of increasing public awareness of bicycling as a viable sport for public viewing and participation.

Objective 8: Develop and implement a traffic law enforcement program for bicyclists and motorists, linked with education program efforts.

- A. Update or develop materials for use by law enforcement personnel to support their education and enforcement efforts.
- B. Commit appropriate police time (bicycle and motor vehicle patrols) to target bicyclist and motorist enforcement efforts.
- C. Develop and implement a consistent, balanced traffic law education program for law enforcement personnel for improving motorist and bicyclist compliance with traffic laws.

Objective 9: Develop and maintain databases useful for bicycle planning, prioritization of bicycle improvements, and accident prevention.

- A. Periodically conduct community-wide public opinion surveys to: 1) determine reasons why people do or do not ride bicycles; 2) develop bicycle trip patterns and purposes; and 3) gain input on bicycle projects and programs which could improve bicycling in the Albuquerque metropolitan area.
- B. Routinely conduct and update bicycle counts to estimate usage levels and to help determine progress toward achieving future bicycle mode split goals. Conduct before and after bicycle counts for roadways which are reconstructed or restriped to have bicycle lanes and for other improvements to bikeways to gauge the effect of prioritized improvements.
- C. Maintain and update the bikeway inventory developed as part of the Albuquerque Comprehensive On-Street Bicycle Plan in order to gauge the success of meeting Objective 2B.
- D. Maintain and update the bicycle accident database developed as part of the Albuquerque Comprehensive On-Street Bicycle Plan. Utilize the database to identify high accident locations

and/or high accident severity locations to help in the prioritization of bicycle project and program improvements. Review each bicycle collision/accident in a timely manner to identify system deficiencies and potential improvements.

The action plan included in Chapter 5 identifies the responsible and supporting parties for implementing and tracking progress towards the goals, objectives, and action items identified as part of this Plan.

CHAPTER 3

BACKGROUND INFORMATION

Status of Bicycling in Albuquerque

An important element in a comprehensive plan is to review its progress in meeting the stated goals and objectives within a specific time period to determine its status and future direction. In 1974, the first bikeway plan for the metropolitan area was adopted which identified a specific number of bicycle trails, lanes and routes for implementation. Many of these proposed facilities have yet to be implemented and have been incorporated into the current bikeway map. The regional bikeway map is a comprehensive map of the on-street and trail system. This document evaluates this current, regional bikeway system in relation to current bikeway design standards and local/regional destinations and develops the future direction for not only the bikeway/trail system, but also for the bicycle education, promotion and enforcement.

This planning effort includes a review of 1) the existing on-street bicycle network, 2) bicycle usage, 3) bicycle education programs and encouragement efforts, and 4) bicycle collisions. Information regarding bicycling was solicited from the general public, bicycle advocacy groups, neighboring communities, and both the private and public sectors.

Existing Conditions

On-Street Bikeway Network

A field inventory of existing on-street bicycle facilities was conducted to document the physical characteristics of these roadways/bikeways. Components of the City's on-street bicycle network are shown in Figure 3-1. Approximately 200 miles of bicycle routes and 44 miles of bicycle lanes were inventoried, see Figure 3-2. An important finding of this inventory is that many bike routes are located on roadways with high traffic volumes and/or high vehicle speeds, without adequate width for bicycles. While evaluating the existing bikeway network, it was determined that 64% of the existing on-street bicycle facilities require improvements to meet the minimum design standards. Removal of on-street facilities that require improvement would result in a disjointed network, as shown in Figure 3-3.

There are constraints in the existing bicycle system, primarily east-west travel across the Rio Grande and I-25. A limited number of river crossings exist which are spaced at approximately 5 mile intervals north of Central Ave, at Montañó Rd and Alameda Blvd, and 1½ and 3 miles spacing to the south, at Bridge Blvd and Rio Bravo Blvd. In addition, a trail parallels the Paseo del Norte corridor. These 6 river crossings are the only east-west access points across the Rio Grande.

A second constrained area is east-west travel across I-25, north of I-40. This is a concern because each of the east-west roadways are in a developed environment with high motor vehicle volumes. These roadways are principal arterials without bicycle accommodations, with the exception of Comanche/Griegos Rd. This severely limits access across I-25, especially north of Griegos Rd.

On-Street Bikeway and Trail Connectivity

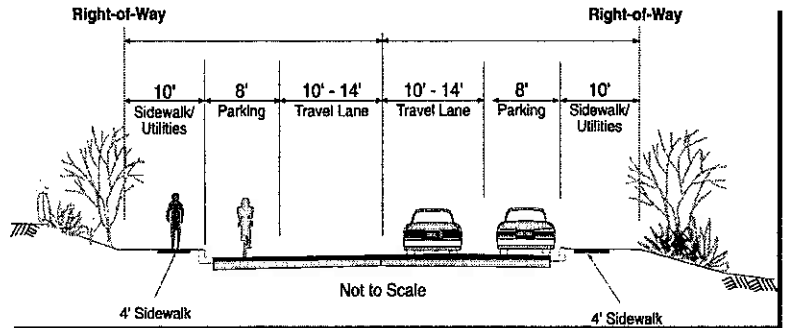
An inventory of the bicycle network in Albuquerque would not be complete without mentioning the non-motorized trail network. This system, developed and maintained by the Parks and Recreation Department, is not under the jurisdiction of the Public Works Department; however, it provides vital links in the existing bicycle network. There are 3 major north-south corridors, 2 east-west corridors, and numerous short/neighborhood trails. The Paseo del Nordeste/North Diversion Channel system connects



BIKE ROUTE

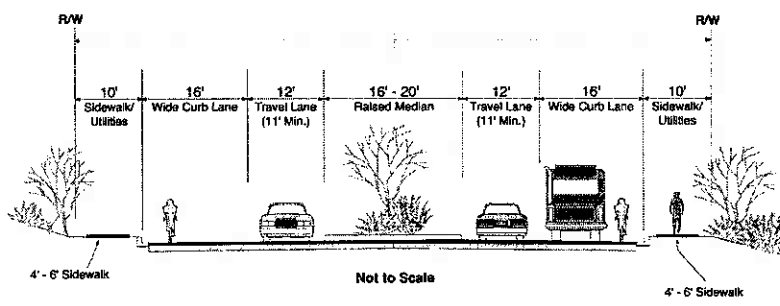
A Bicycle Route is a segment of a system of bikeways designated by the jurisdiction having authority with appropriate directional and informational markers. Bicycle routes are primarily used on low-volume, low-speed collectors and local streets when alternative direct bikeways on arterial streets are not feasible and safe.

**Typical Cross Section
2-Lane Local Street with Bike Route
(No Striping)**



Note: Illustration purposes only. Widths vary throughout the city. Parking lane includes gutter width.

**Typical Cross Section
4-Lane Roadway with Bike Route/Wide Curb Lanes**



Note: Illustration purposes only. Widths vary throughout the city. Curb lane includes gutter width.

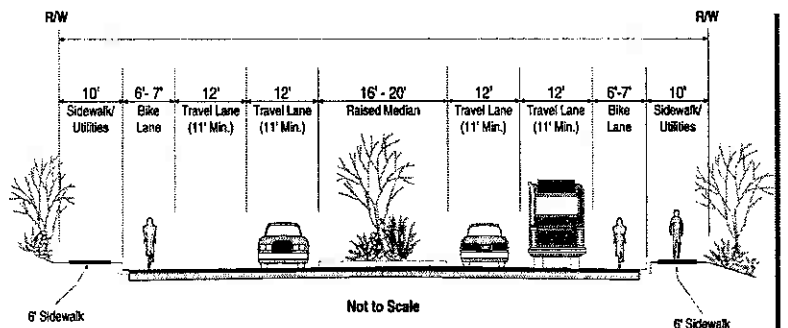


BICYCLE LANE

A Bicycle Lane is a portion of a roadway which has been designated by striping, signing, and pavement markings for the preferential or exclusive use of bicyclists.



**Typical Cross Section
4-Lane Roadway with Bike Lanes**



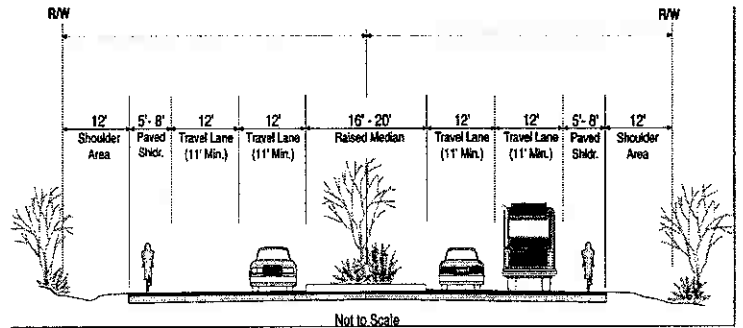
Note: Illustration purposes only. Widths vary throughout the city. Bike lane includes gutter width.

Figure 3-1
Components of the City of Albuquerque
On-Street Bicycle Network



A paved shoulder can be used for on-street bicycling.

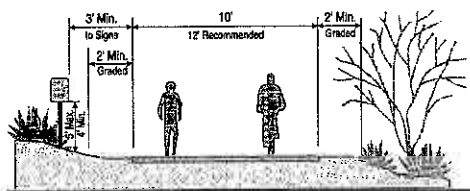
Typical Cross Section
4-Lane Roadway with Paved Shoulders/Emergency
Breakdown Area



The On-Street Bicycle Network
is Supplemented by the
Multi-Use Trail System

A multi-use trail is physically separated from motorized vehicular traffic by an open space or barrier and can be located either within the highway right-of-way or within an independent right-of-way.

Typical Multi-Use Trail



Trail connection to an on-street bicycle facility.



Trail crossing at a major street.



Figure 3-1(continued)
Components of the City of Albuquerque
On-Street Bicycle Network

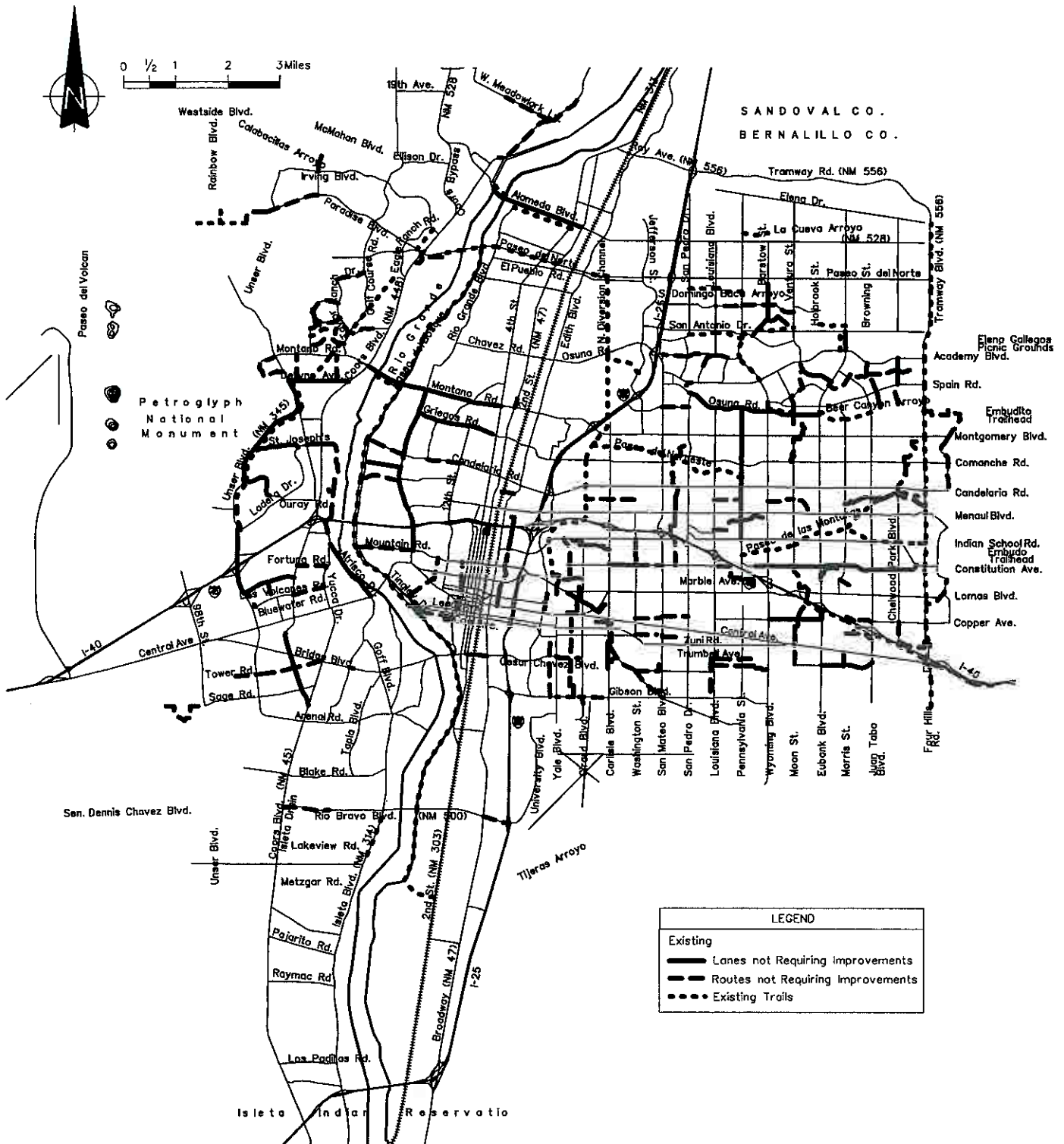


Figure 3-3
Existing On-Street Bicycle Facilities
No Improvement Required

the northeast heights residential area with the UNM and Journal Center employment areas. Increasing on-street connections to these trails may stimulate additional bicycle commuting. The trail corridors do not provide access throughout Albuquerque, however, in conjunction with the on-street system, they allow riders to traverse the city. See Figure 3-2 for the on-street/trail non-motorized network.

Bicycle Usage

Bicycle Counts

A total of 16 bicycle counts were conducted as part of the Albuquerque Comprehensive Bicycle Plan. The purpose of these counts was to obtain information on the magnitude of bicycling throughout the City of Albuquerque. A list of the bicycle count locations, shown in Figure 3-4, and the basis for choosing them is provided below.

Duplicate a Previous Count

Tramway Blvd/Paseo de las Montañas Trails
2nd St (south of Griegos Rd)

High Bicycle Usage Areas

KAFB/Sandia Labs

Eubank Gate

Wyoming Gate

Truman Gate

UNM Area

Yale Blvd (North of UNM Campus)

Stanford Dr (South of UNM Campus)

Yale Blvd (South of UNM Campus)

Dr Martin Luther King Blvd (West of UNM Campus)

Campus Blvd (East of UNM Campus)

Rio Grande Crossings

Montaño Rd/Bosque Trail

Central Ave/Bosque Trail

Before/After Improvement Studies

Louisiana Blvd/Constitution Ave (Jerry Cline Park)

Comanche Rd/Paseo del Nordeste Trail

General Count Locations

Bridge Blvd/Goff Rd (South Valley)

Osuna Rd/Bear Canyon at Wyoming Blvd

Atrisco Dr at I-40 (gas pipeline) crossing

During September 1997, counts were collected by Project Steering Committee members (GABAC, GARTC, and the Sandia Bicycle Commuter Group), City, and consultant staff for two to three hours during the morning peak (between 6:30 a.m. and 9:30 a.m.) and for three hours during the afternoon/evening peak (between 2:30 p.m. and 6:30 p.m.). A summary of the bicycle counts is presented in Table 3-1. In addition to counting the number of bicyclist at their location, each volunteer was asked to observe the following: 1) helmet usage, 2) bicyclists who appeared to be younger than sixteen years of age, 3) bicyclists riding on the sidewalk, and 4) bicyclists who commit a traffic violation. Examples of bicyclists traffic violations include riding against traffic (either on-street or on the sidewalk) or disregarding traffic control (traffic signal or stop sign).

Due to the high bicycle traffic around UNM, additional data on campus bicycle usage is presented in Table 3-2 which summarizes the five locations. These counts provide a basis for monitoring the change in bicycle usage over time.

A discussion of key observations from the bicycle counts follows. Spreadsheets showing hourly counts at each location are provided in Appendix B (under separate cover).

- A comparison of the Tramway Blvd/Paseo de las Montañas Trail count with a previous count conducted in August 1991 indicates that more bicyclists are using the Tramway Blvd and Paseo de las Montañas Trails today than six years ago. Observations in the field show high usage of the trails by walkers, joggers,

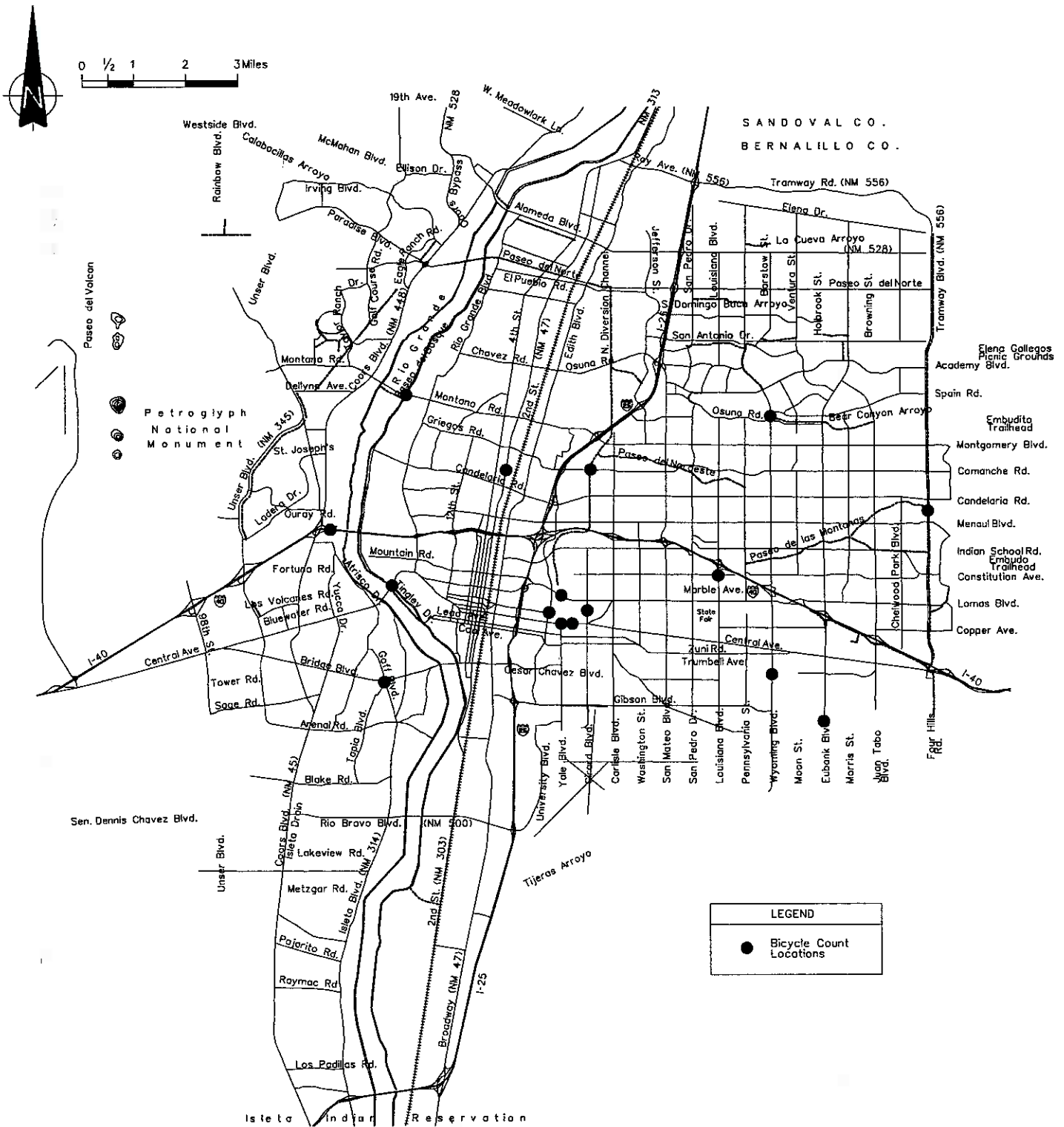


Figure 3-4
Location of Bicycle Counts (1997)

**Table 3-1
Summary of Bicycle Counts (1997)**

No.	Bike Count Location	Bikeway Type	Bicycle Volumes			Wear Helmet	Rider <16	On Sidewalk	Vltns
			AM Peak	PM Peak	Total				
1	2 nd St south of Griegos Rd	Dirt Trail	11	16	27	30%	11%	4%	1
2	Atrisco Dr south of I-40	Lane	5	22	27	63%	4%		8
3	Bosque Trail @ Central Ave	Trail	36	103	139	50%	6%	18%	5
	Central Ave @ Bosque Trail	None	28	39	67	50%	6%	18%	5
4	Bosque Trail @ Montañío Rd	Trail	52	121	173	72%	1%		
	Montañío Rd @ Bosque Trail	Lane	20	48	68	72%	1%		
5	Bridge Blvd @ Goff Rd	Lane	19	14	33	30%	4%	1%	24
	Goff Rd @ Bridge Blvd	None	42	23	65	30%	4%	1%	24
6	Comanche Rd @ N. Diversion Trail	Route	10	13	23	61%			1
	N. Diversion Trail @ Comanche Rd	Trail	60	68	128	61%			1
7	Constitution Ave @ Louisiana Blvd	Route	10	6	16	66%		11%	1
	Louisiana Blvd @ Constitution Ave	None	20	21	41	66%		11%	1
8	Osuna Rd @ Wyoming Blvd	Lane	15	17	32	82%	3%	38%	15
	Wyoming Blvd @ Osuna Rd	Lane	17	13	30	82%	3%	38%	15
9	Paseo de las Montañas @ Tramway Blvd	Trail	11	26	37	78%	8%		2
	Tramway Blvd @ Paseo de las Montañas	Trail/Shldr	50	106	156	78%	8%		2
10	Campus Blvd @ Girard Blvd	Route	158	185	343	39%		1%	49
	Girard Blvd @ Campus Blvd	None	35	50	85	39%		1%	49
11	Central Ave @ Stanford Dr	None	82	125	207	20%	1%	21%	89
	Stanford Dr @ Central Ave	Route	134	142	276	20%	1%	21%	89
12	Central Ave @ Yale Blvd	None	55	160	215	24%	2%	36%	37
	Yale Blvd @ Central Ave	None	99	146	245	24%	2%	36%	37
13	Dr Martin Luther King Blvd @ University Blvd	Route	10	112	182	42%		16%	18
	University Blvd @ Dr Martin Luther King Blvd	None	11	36	47	42%		16%	18
14	Lomas Blvd @ Yale Blvd	None	3	8	11	37%		2%	4
	Yale Blvd @ Lomas Blvd	Route	107	120	227	37%		2%	4
15	Eubank Gate – KAFB	None	49		49	100%			0
16	Wyoming Gate – KAFB	None	72		72	100%			0

Lane – Bike Lane, Route – Bike Route, Trail – Paved Trail, Shldr – Shoulder. Vltns – Violations
 Note: AM Peak is 2 hours, PM Peak was 2½ to 3 hours. (See Appendix.)

roller bladers, and recreational bicyclists. In addition, more bicyclists (approximately 1/3 of total observed) were using the shoulders on Tramway Blvd.

- A comparison of the 2nd St count with a previous count conducted in May 1991 indicates that bicycle volumes have increased slightly over the six-year period.
- The Eubank Blvd and Wyoming Blvd gate counts indicate that numerous KAFB/Sandia Lab personnel commute to work by bike. These counts correspond to mode splits of 1.2% and 2.4% respectively.
- The UNM area counts indicate a fairly significant amount of bicycle traffic. These bicycle volume levels reflect several trends typically associated with college campuses: 1) students normally live close to campus, 2) there is a lack of parking on campus, and 3) it is easy to get around campus on a bike.
- Bicycle counts with the highest volumes, other than those associated with UNM, involved off-street paved trails. This is especially true in the evening periods when more recreational cyclists are using the trails.

Table 3-2

Summary of Bicycle Traffic Entering/Exiting the UNM Campus

Time	Yale @ Lomas		Yale @ Central		Stanford @ Central		Stanford @ University		Campus @ Girard		Totals
	#	%	#	%	#	%	#	%	#	%	
7:30 AM	48	68%	9	13%	14	20%	71	32	1	11	16
7:45 AM	82	74%	17	15%	12	11%	111	46	0	12	9
8:00 AM	41	75%	9	16%	5	9%	55	19	0	7	11
8:15 AM	44	65%	11	16%	13	19%	68	32	0	9	13
8:30 AM	48	66%	9	12%	16	22%	73	28	0	14	13
8:45 AM	82	71%	16	14%	18	16%	116	36	0	21	21
9:00 AM	47	71%	11	17%	8	12%	66	15	0	11	5
9:15 AM	56	81%	7	10%	6	9%	69	11	0	4	13
AM Peak	448	71%	89	14%	92	15%	629	217	1	89	101
Totals								34%	0%	14%	16%
2:30 PM	16	27%	27	46%	16	27%	59	13	0	10	6
2:45 PM	28	39%	20	28%	24	33%	72	22	1	14	14
3:00 PM	17	27%	29	45%	18	28%	64	18	0	16	8
3:15 PM	18	22%	47	57%	17	21%	82	17	0	29	13
3:30 PM	13	25%	26	50%	13	25%	52	15	0	10	6
3:45 PM	31	44%	20	29%	19	27%	70	19	0	26	10
4:00 PM	24	30%	40	49%	17	21%	81	29	1	23	15
4:15 PM	17	27%	26	41%	21	33%	64	9	0	20	15
4:30 PM	22	32%	26	38%	20	29%	68	26	0	14	8
4:45 PM	16	22%	37	51%	19	26%	72	23	1	16	11
5:00 PM	30	29%	51	49%	23	22%	104	35	7	28	12
5:15 PM	33	32%	45	44%	24	24%	102	29	0	15	11
PM Peak	265	30%	394	44%	231	26%	890	255	10	221	129
Totals								29%	1%	25%	14%
Totals	713	47%	483	32%	323	21%	1519	472	11	310	230
								31%	1%	20%	15%

Notes:

* - UNM counts include: 1) Yale @ Lomas, 2) Yale @ Central, 3) Stanford @ Central, 4) Dr. MLK, Jr. @ University, and 5) Campus @ Girard

a - A pass-by bicycle trip occurs when a bicyclist rides along the street adjacent to UNM and does not enter UNM (e.g., riding east or west along Lomas)

- The bicycle counts collected over 2 miles from major employment centers (2nd St, Osuna Rd/Wyoming Blvd, and Atrisco Dr/I-40) had the lowest bicycle traffic volumes.
- Helmet usage varied widely among the count locations, ranging from 100% at the KAFB gates (regulation) to 20% at Stanford Dr/Central Ave (UNM counts in general had low helmet usage).
- The number of riders less than 16 years of age was low for the count locations chosen.
- The number of bicyclists riding on the sidewalk was high at three of the UNM count locations and also at Osuna Rd/Wyoming Blvd. Both Central Ave and University Blvd lack on-street bicycle facilities. Many bicyclists ride along Wyoming Blvd on the sidewalk between the Bear Canyon Arroyo trail and the bike lanes on Osuna Rd.
- High numbers of traffic violations occurred in the UNM area, at Bridge Blvd/Goff Rd and Osuna Rd/Wyoming Blvd. Typical traffic violations included disregarding traffic control (i.e., traffic signals, and stop signs) and riding against traffic (on-street or on the sidewalk). There appears to be a lack of bicycling education in these areas.

Census Data (1990)

A second source of bicycle utilization information for Albuquerque is the "Journey to Work" category of the 1990 U.S. Census survey. This survey category is targeted toward trips to and from work, excluding trips to school, shopping, and recreational activities. It is important to note that only the predominant transportation mode is requested as part of the census, so that occasional bicycling trips, as well as bicycle trips made to access transit, are not recorded. The census data is further limited because the data was collected during March, potentially biasing the data due to cold temperatures.

Current journey to work modal splits for Albuquerque are provided in Figure 3-5. A comparison of bicycle modal shares for Albuquerque with other regional communities and communities respected for their bicycle programs is provided as Figure 3-6. These graphics show that Albuquerque's bicycle modal share for commuting is higher than the national average and comparable to many cities in this region. Many of these communities report higher bicycle modal shares when taking into consideration all trip purposes (i.e., work, school, shopping and recreational), see box at right. However, for Albuquerque the bicycle modal share goes down when factoring in all trips. This is important because, according to the Nationwide Personal Transportation Survey, only about one out of every five trips is made for work purposes.

Tucson:	3.5%
Phoenix:	2.4%
Seattle:	2.3%
Portland:	2.0%
Albuquerque**	1.0%

Source: * FHWA Case Study No. 3, 1992
 ** MRGCOG 1994 LRTP

With the cooperation of the Middle Rio Grande Council of Governments (MRGCOG), additional information on bicycle journey-to-work activity in Albuquerque was taken from the 1990 census data. Some of the findings are provided below:

- Time spent by bicyclists riding to work ranged from 2 to 70 minutes, with an average of 15.8 minutes. This corresponds to an average commute distance of 2 to 3 miles.
- Most trips were from residences in the Northeast and Southeast Heights. Fewer trips originated from the North Valley and West Side.
- Bicycling was concentrated around the University of New Mexico and Kirtland Air Force Base / Sandia National Laboratories.
- The "nucleus" of bicycle activity seemed to be primarily bounded by Interstate 40 on the north, Interstate 25 on the west, and the Airport/KAFB/Sandia on the south.

There was no significant bicycling activity in the central business district.

Figure 3-5
Journey to Work Modal Splits for Albuquerque
(1990 U.S. Census Data)

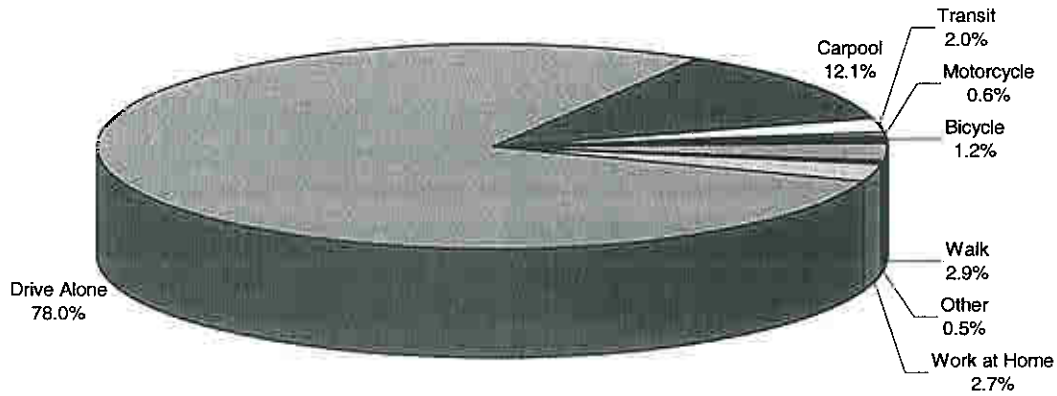
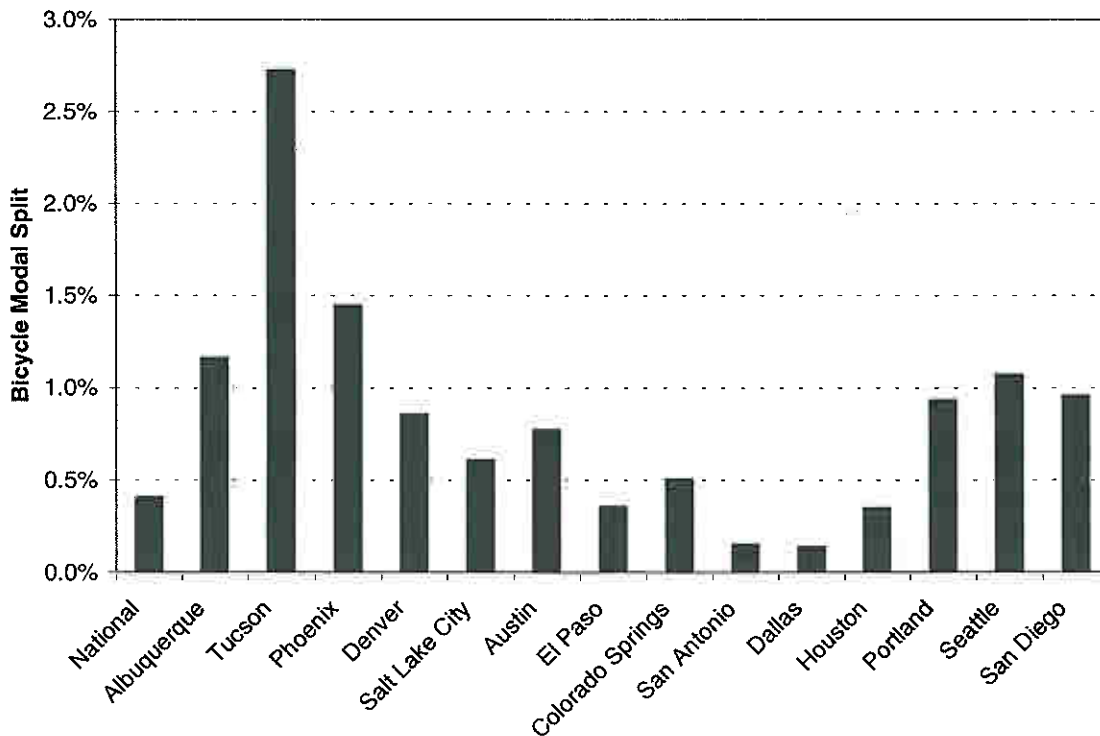


Figure 3-6
Comparison of Bicycle Modal Splits for Journey to Work Trips



Bicycle Collisions

Collision data were gathered and analyzed to help identify high accident locations, understand why collisions occur and aid in deciding which safety measures to implement. Bicycle collisions for the years 1994 through 1996 were reviewed as part of the Albuquerque Comprehensive On-Street Bicycle Plan.

The bicycle collision data primarily includes collisions involving bicycles with motor vehicles, as well as collisions involving bicycles with fixed objects. Three complete years of collision data from Albuquerque Police Department reports and two complete years (1994 and 1995) from the New Mexico State Highway and Transportation Department, Transportation Statistics Bureau database, were reviewed for bicycle collisions located within the Albuquerque metropolitan area. The NMSHTD database was used to supplement the bicycle collision data from the Albuquerque Police Department; however it provided limited detail on collisions, and collision reports were not available.

A map showing the locations of bicycle collisions is provided as Figure 3-7. Figure 3-8 depicts a summary of bicycle collision data. A summary of the key observations from this bicycle collision review is as follows.

- 724 bicycle collisions occurred over the three-year period.
 - 1994 – 237
 - 1995 – 264
 - 1996 – 223
- Of the top six roadways with the highest number of collisions (by total collisions, not by rate), none are designated as on-street bicycle facilities on the current Albuquerque Bicycle Map. These six roadways account for 33% of all 724 bicycle accidents during the 3-year study period. This lack of on-street facilities demonstrates the need for additional bikeways in Albuquerque.

- Central Ave	95 collisions
- San Mateo Blvd	36 collisions
- Lomas Blvd	34 collisions
- Wyoming Blvd	28 collisions
- 4th St	26 collisions
- Tramway Blvd	22 collisions
- Adolescents and young adult bicyclists disproportionately accounted for the highest number of collisions.

- 7 – 15 years old:	164 collisions	23%
- 16 - 24 years old:	116 collisions	16%
- Injury collisions represent a majority of the collisions by severity types (81 percent of total).
- On average, two fatal bicycle collisions occurred per year in New Mexico from 1986-1995. The average fatality rate per million population in New Mexico is just slightly above the national average: 3.6 fatalities per million versus 3.4 fatalities per million.¹
- The majority of collision types involve right angle collisions (54 percent). Two-thirds of all collisions are accounted for when left angle collisions are added. Only 5 percent of collisions were rear end collisions.

The majority of collisions occurred in the April/May and July/August time frames (22 percent and 27 percent, respectively).

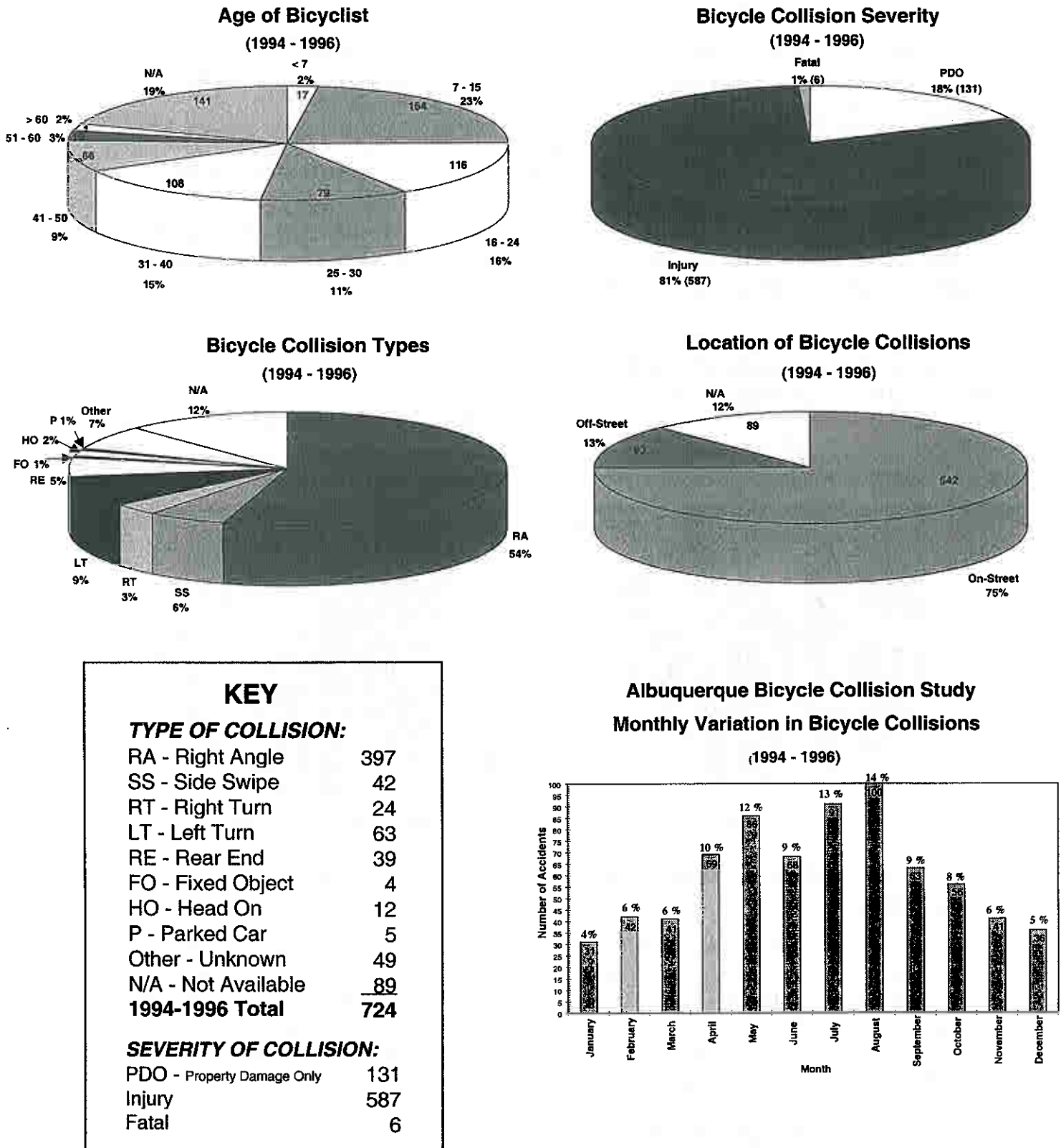
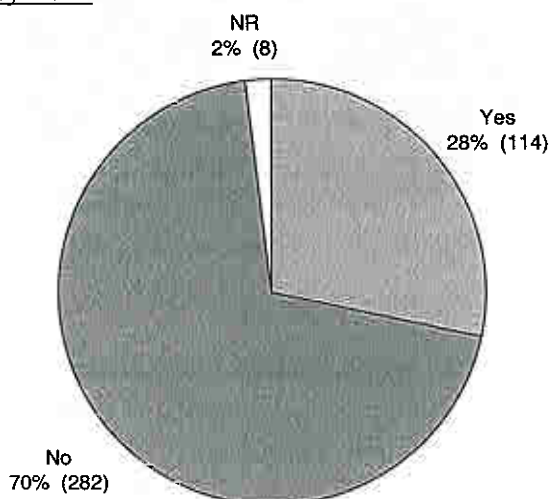


Figure 3-8
Summary of Bicycle Collisions (1994 - 1996)

- Collision frequency on weekdays varied little from Monday through Friday. Collisions occurred less frequently on Saturday and Sunday.
- The majority of collisions occurred on-street (75 percent) and during the day (81 percent).
- Off-street collisions occurred on sidewalks, multi-use trails, or in an intersection crosswalk. A majority of the off-street collisions occurred on sidewalks at driveways.
- Citations are infrequent on collision reports. The most common citations were for driving with an expired license or registration, or lack of insurance. A general observation from the collision data is that the “fault” was nearly equally distributed between the bicyclist and motorist.

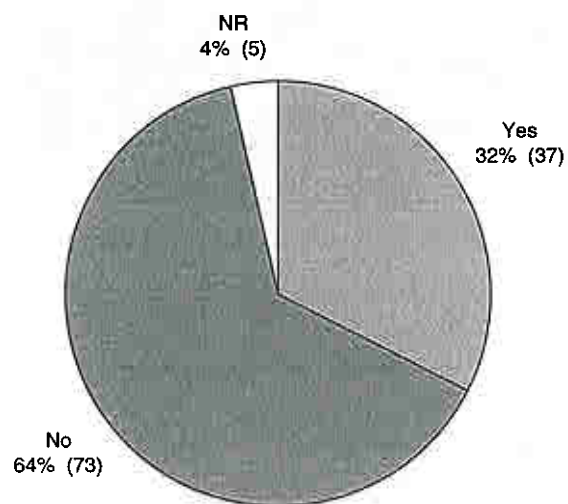
Additional information concerning bicycle collisions in the Albuquerque metropolitan area was obtained through a public opinion survey (discussed later in this chapter). Respondents were asked the questions shown below, and a summary of the responses follows.

Have you ever been involved in a bicycle accident or a bicycle/motor vehicle collision within the Albuquerque metro area as a bicyclist?



404 responses to question

If yes, was the accident reported to the police?



115 responses to question

There has been considerable research done nationwide on bicycle collisions, and some key observations are provided below:

- A study in North Carolina found that only 10 percent of bicycle accident injuries that were treated in emergency rooms showed up in police reports. This study also found that: 1) approximately 60 percent of bicycle collisions involved a motor vehicle, and 2) virtually none of the bicycle accidents not involving a motor vehicle were reported to the police.² (*Applying these statistics to Albuquerque would mean that there were approximately 1200 bicycle/motor vehicle collisions and approximately 6000 bicycle accidents over a three-year period.*)
- A study in Palo Alto, California had the following results:³
 - The risk of having a bicycle accident is 1.8 times higher for cyclists traveling on the sidewalk or an off-street path as opposed to traveling on-street.

- The risk of having a bicycle accident is 3.6 times higher for cyclists traveling against traffic as opposed to traveling with traffic.

Many of the high accident locations (e.g., Central Ave and San Mateo Blvd) in Albuquerque also had a high number of off-street bicycle collisions (i.e., riding on sidewalks). None of these streets have designated bikeways. Field observations show that this is especially problematic along Central Ave between UNM and Nob Hill.

- A Federal Highway Administration study yielded the following results.⁴
 - Bicyclists account for approximately 2 percent of all highway fatalities.
 - Determination of fault for bicycle/motor vehicle collisions:
 - * 53% - Fault of Bicyclists * 14% - Fault of Both
 - * 31% - Fault of Motorists * 2% - Unknown

It is important to note that three-year period is a "snapshot" of bicycle collision data for Albuquerque; yet, patterns emerge between each of the three years. By maintaining and updating this database, progress towards achieving Goal 3 and Objective 9D (i.e., reduction in fatality and injury accidents) in future years can be assessed. This collision review indicates the need for further data collection by local/state agencies and more in-depth analysis of causal factors (e.g., wrong-way riding, helmet usage) for bicycle collisions. The data indicate that bicyclists are riding along streets without bikeways to access their destinations. Direct, continuous, and safe bikeways are needed to reduce accidents and improve bicycle mobility.

Major Employment Centers

The 1997 Transportation Evaluation Study identified ten major employment centers in the Albuquerque Metropolitan Planning Area (AMPA)⁵. These employment centers are shown in Figure 3-9. Existing and projected employment figures for these centers are provided in Table 3-3. The ten major employment centers (combined) currently account for 37% of the employment in the AMPA. Existing Albuquerque employment is wide spread throughout the city and downtown employment accounts for only 5.2% of AMPA jobs (1995 data). Table 3-3 contains two scenarios of the year 2020 employment projections, a "low" projection based on current trends and a "high" projection based on revised land use

**Table 3-3
Albuquerque's Existing and Projected Employment Base**

Employment Center	1995 ^a	2020 Projections	
		Low ^a	High ^b
North I-25 (<i>Journal Center</i>)	24,463	46,388	39,500
Univ. New Mexico / Technical Vocational Institute	21,277	25,368	34,037
Kirtland Air Force Base / Sandia Nat'l Labs	20,302	18,378	18,378
Downtown	17,702	19,269	46,777
Uptown	12,833	18,485	32,324
Airport / UNM Research Park	11,800	19,596	19,053
Intel	8,198	10,745	10,745 ^c
Lovelace / VA Hospitals	4,119	4,892	4,892
Seven Bar / Cottonwood	3,346	12,869	12,869
Atrisco Business Park	2,787	7,395	7,395
Total in Employment Centers	126,827	183,385	215,225
Total in Albuquerque Metropolitan Area	339,146	439,726	461,474^c

Notes:

a – Year 1995 and 2020 employment figures came from MRGCOG Publication TR-125: 2020 Socioeconomic Forecasts

b – Year 2020 "high growth" employment figures came from Transportation Evaluation Study

c – Estimated values

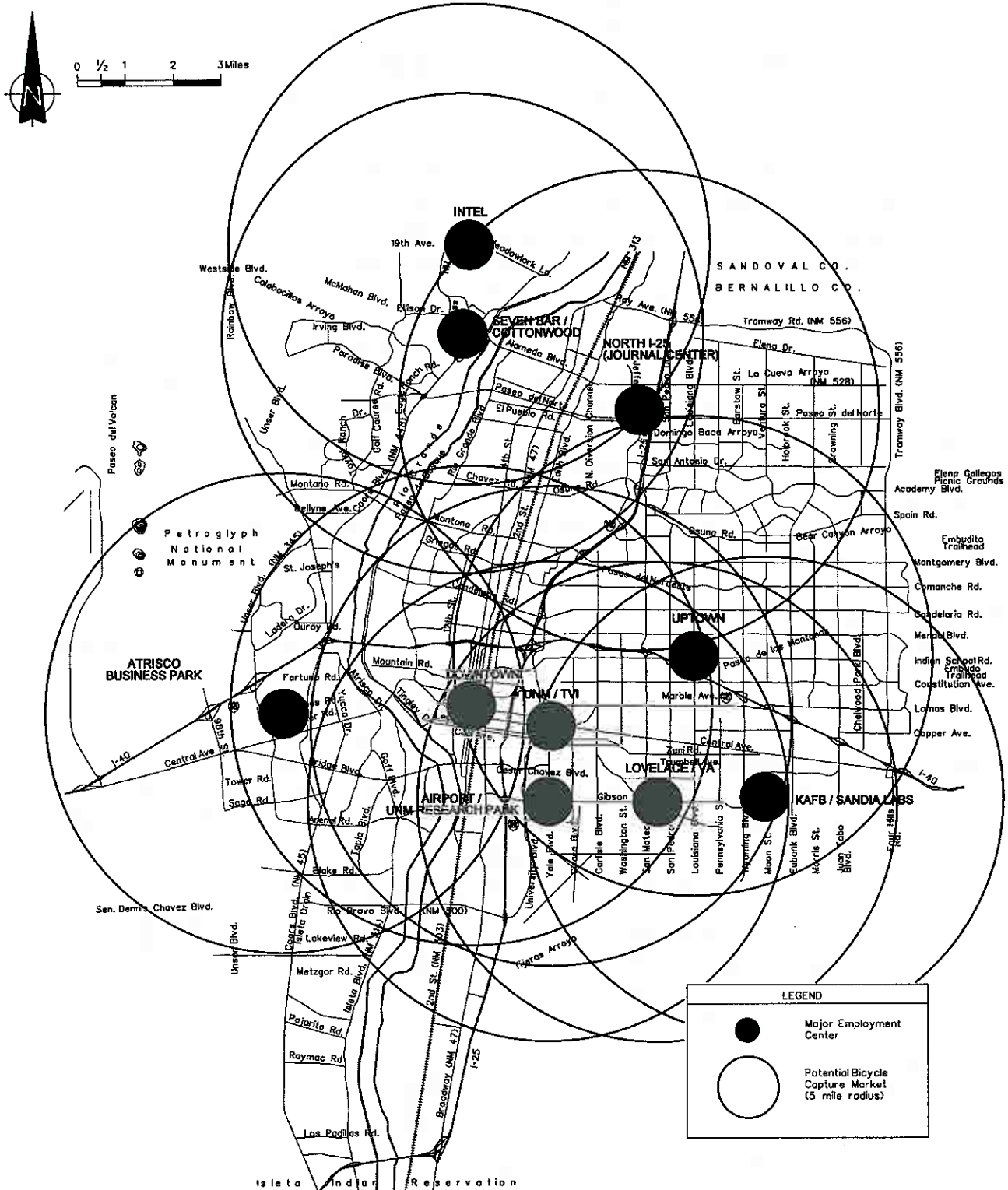


Figure 3-9
Major Employment Centers

patterns. With the year 2020 “low” and “high” growth scenarios these ten major employment centers increase their share to 42% and 47%, respectively.

The lack of a centralized employment area requires that the on-street bicycle network uniformly traverse the entire city. It is just as likely that a resident living in the center of the northeast heights will work at the Journal Center, Kirtland Air Force Base, Uptown or Downtown. This requires that bicycle facilities run east-west and north-south, with significant frequency (1 mile or less spacing) in order to adequately serve commuter demand. Providing access to these employment centers via bicycling requires bikeways that are assessable and safely designed. In Figure 3-10, the Uptown employment center is shown with a one-, three-, and five-mile radius’ to illustrate the level of access provided to bicyclists. This figure also illustrates that many of the existing bikeways bringing employees from other areas of the city lack continuity. Not only is it difficult to reach the Uptown area, especially from the south and west, but it is difficult to travel within the Uptown area.

Education, Encouragement, Enforcement and Engineering (“4-Es”)

The “4-Es” of cycling safety are education, encouragement, enforcement, and engineering. Each of these components, if properly applied, leads to better understanding and respect for motorists and cyclists alike. A systematic approach to each of these concepts will result in a safer roadway environment for all. Table 3-4 below contains a synopsis of the 4-E approach to bicycling.

**Table 3-4
4-E Approach to Bicycling⁶**

Education	Enforcement	Encouragement	Engineering
Bike Safety Classes & Bike Rodeos	Police Training	Bikeway Maps	Updated Design, Signage and Striping Standards
Share the Road Campaign	Ticketing Campaign	Yes to Interstate No to Sidepath Law	Connectivity
Driver's Education	Accident Awareness	Public Awareness	Maintenance
Trucker Outreach	DWI Enforcement	Bike to Work Day	Safety Engineering

Safer roadways are created through education of both the motoring and cycling community. Cyclists and motorists may safely coexist if each fully understand the traffic laws. The lack of cycling safety is frequently cited as a reason for not commuting or traveling via a bicycle, however, many of the safety concerns result from a lack of knowledge, not a lack of safety. Many safety problems would be resolved if bicyclists and motorists better understood each other. Education will lead to a better understanding and appreciation by each group.

Comprehensive bicycle safety education programs should be designed for the elementary, secondary and adult age groups. These programs can focus on cycling errors commonly made by bicyclists in those age groups and teach safe riding techniques. Bicycle education should promote legal compliance, on-bike training, and personal safety considerations. Key safety considerations are helmet usage and defensive cycling. It should also be stressed that motorists require this same training so that all road users know the laws and have similar expectations.

Bicycling should be encouraged throughout the Albuquerque area. “Bike to Work Day”, held in May, is an event that encourages single occupant drivers to try cycling for at least one day. This encouragement

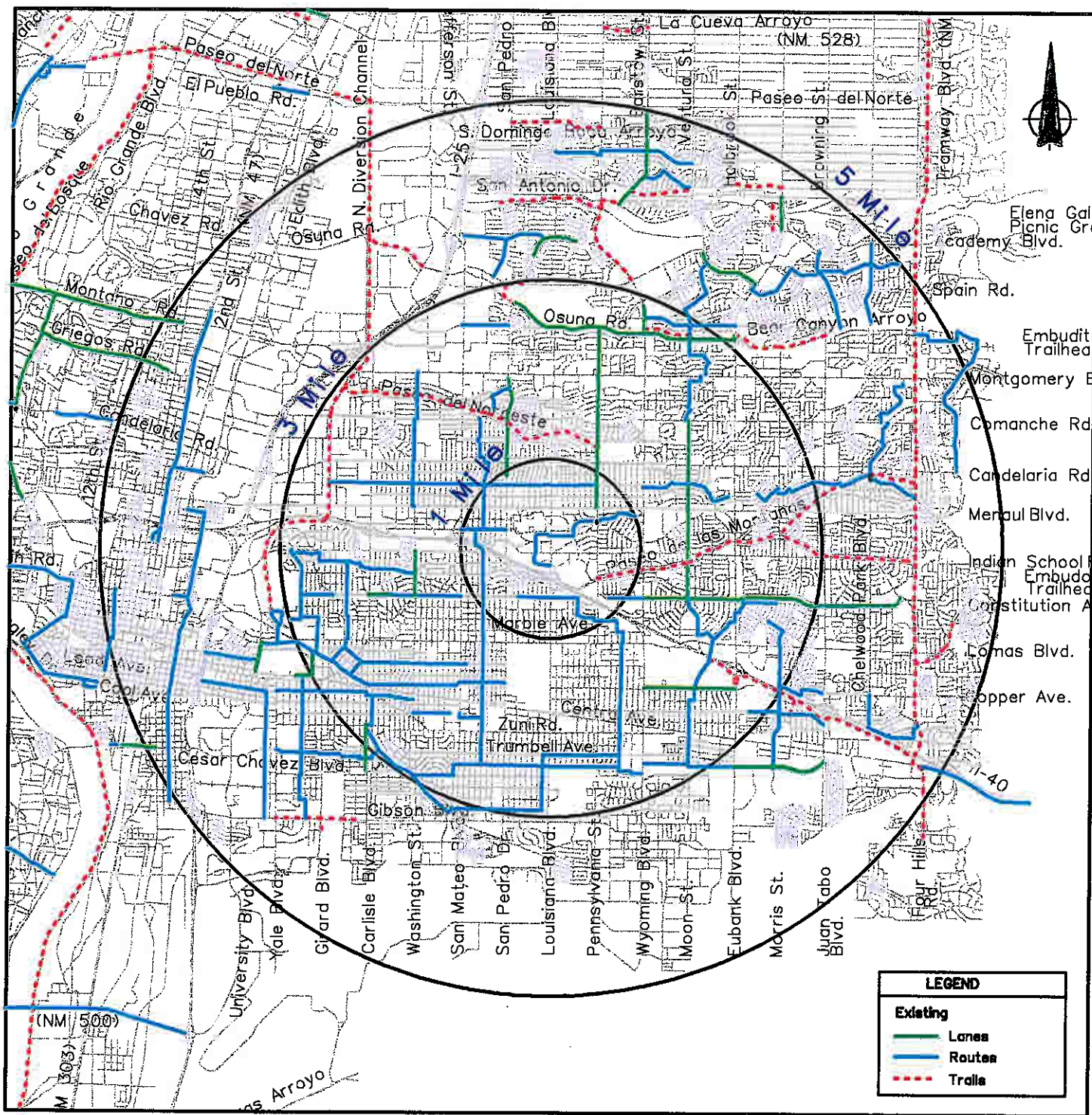


Figure 3-10
Existing Bikeway Conditions for Uptown

could be expanded to a greater frequency to help increase cycling awareness. Cycling can be further encouraged by providing free bike maps with route, lane, and trail locations, and identifying bicycle friendly destinations with end-of-trip amenities. These maps can be distributed through employer incentive programs, bicycle shops, bicycle clubs and organizations. The year-round good weather provides significant bicycling incentive.

Enforcement starts with police training and the equitable application of enforcement to both cyclists and motorists. It is the responsibility of all roadway users to respect the traffic ordinances. Important enforcement issues include writing tickets, accident awareness and DWI enforcement.

Engineering is a critical component of the bicycle network. Safety is enhanced if all on-street facilities are properly and consistently signed and striped and receive periodic maintenance. Development of a systematic inventory of the on-street network will ensure the legibility of signing and markings. A system in poor repair is not well respected by either cyclists or motorists, resulting in increased confusion and conflict. Finally, engineers and planners must examine the network and work toward system connectivity and completion.

Bicycle and Pedestrian Safety Education Program

The City of Albuquerque currently has educational programs in place to teach proper bicycle riding skills and has also undertaken several promotional efforts to encourage more people to commute by bicycle. These activities are primarily administered through the City of Albuquerque Bicycle & Pedestrian Safety Education Program (B&PSEP). A list of the types of educational programs provided by the B&PSEP is shown below:

- Effective cycling courses for adult cyclists;
- Bike Rodeos for all 4th and/or 5th graders in the Albuquerque Public School (APS) system and for other groups by arrangement;
- Helmet usage promotion for all cyclists; and
- “Share the Road” media campaigns showing the proper techniques for joint roadway use by bicyclists and motorists.

The B&PSEP also promotes bicycling through activities described below:

- Distribution of bicycle maps showing on-street and off-street bicycle facilities;
- Distribution of literature and materials promoting bicycling;
- Media campaign (i.e., TV and radio) showing cycling as a viable transportation mode;
- Promotional events like “Bike-to-Work” day on the downtown mall and numerous employment sites; and
- Teaching bicycle maintenance classes.

Advocacy and User Groups

Advocacy and user groups play a role in encouraging the citizens of Albuquerque to use bicycles for recreational and commuting purposes. A partial list of these organizations is provided below:

- Greater Albuquerque Bicycling Advisory Committee (GABAC)
- Greater Albuquerque Recreational Trails Committee (GARTC)

- Greater Albuquerque Spokes People (GASP)
- Sandia Bicycle Commuter Group (SBCG)
- New Mexico Touring Society (NMTS)
- Corrales Cycling Club
- Lobo Cycling Club

Both GABAC and GARTC were formed by City and/or County resolution to serve as advisory committees for plans and programs related to bikeways and bicycle usage within the Albuquerque Metropolitan Area. GASP is an advocacy group promoting all aspects of bicycling in Albuquerque. The NMTS and Corrales and Lobo Cycling Clubs are bicycle user groups that periodically sponsor group rides.

Transit

Albuquerque Transit Department offers bicycle-transit opportunities for commuters. Sun Tran, the City bus system, provides bicycle racks on their buses that can hold up to two bicycles at a time. The bus schedule includes a map that shows bus and bike facilities along with instructions on how to use the bicycle racks. Transit also produces a newsletter that promotes bicycling to employers as part of a Traffic Demand Management program. Several recently designed park and ride facilities will incorporate bicycle lockers and/or covered bicycle parking. Additional coordination is needed in joint use ventures to incorporate bike parking.

Public Involvement

The contents of this Comprehensive On-Street Bicycle Plan are based upon input from the public. Ideas for this plan were collected from the following sources:

- A project steering committee was formed to assist the consultant in completing the Albuquerque Comprehensive Bicycle Plan.
- An informational public opinion survey was distributed to bicyclists and non-bicyclists.
- A public meeting was held where participants were given information about the Comprehensive On-Street Bicycle Plan and had an opportunity to provide input.

Project information has been disseminated to the general public through articles included in Neighborhood Newsletters published by the City of Albuquerque. Project staff have also attended several meetings (e.g., GABAC and Sierra Club) to provide updates on the Comprehensive On-Street Bicycle Plan.

Steering Committee

A project steering committee was formed in 1996 to work with the consultant in completing the Albuquerque Comprehensive Bicycle Plan. Meetings were held beginning in November 1996 to review milestones in the plan development. Representatives from the following agencies/groups participated on the Steering Committee and provided valuable input which was incorporated into this plan.

- Greater Albuquerque Bicycling Advisory Committee (GABAC)
- Greater Albuquerque Recreational Trails Committee (GARTC)
- City of Albuquerque Planning
- City of Albuquerque Public Works
- City of Albuquerque Capital Improvement Program
- City of Albuquerque Bicycle/Pedestrian Safety Education Program

- Bernalillo County Public Works
- Bernalillo County Parks & Recreation
- City of Rio Rancho
- Village of Los Ranchos de Albuquerque
- Village of Corrales
- New Mexico State Highway and Transportation Department (NMSHTD) - Planning
- NMSHTD Bicycle/Pedestrian/Equestrian Program
- Middle Rio Grande Council of Governments (MRGCOG)
- MRGCOG Public Information Committee (PIC)
- New Mexico Touring Society
- Sandia Bicycle Commuter Group
- Albuquerque Police Department
- Sierra Club
- Ad Hoc Citizens Group

Public Opinion Survey (1997)

A sixteen question survey of bicycling issues was developed and distributed in early 1997 through a number of sites and organizations. Distribution occurred at the first public meeting, the Montañño bridge opening, bike shops, UNM, Neighborhood Association newsletters, the Sandia Bicycle Commuter Group, the Albuquerque Chapter of the Institute of Transportation Engineers, and MRGCOG. This survey was a non-scientific sampling of the citizens of the metropolitan area. Rather, it was an informal survey to gain a feel on issues the Project Steering Committee felt were important to bicycling.

Five hundred surveys were completed. Nearly half of those received their form from local bike shops. Over 90 percent were completed by adults (age 25 and over). A summary of the results is presented in this section. The questionnaire and a tabulation of responses for each question is included in Appendix C (under separate cover).

- 96% of respondents indicated they ride a bike.
- Two primary reasons were given by the 4% who said they do not ride a bike; 1) they don't own a bike, and 2) streets/drivers are too dangerous.
- The two primary purposes for riding are for recreation (73%) and exercise (69%). Many also ride to provide transportation to work (38%), to school (8%), and as a means of general transportation (19%).
- Approximately 92% of the respondents indicated that, on average, they ride during three or more seasons a year.
- 80% of respondents indicated that they ride a bike at least once a week, with 48% riding 4-7 times a week.
- Respondents indicated that they ride on-street more than 50% of the time, and they use off-street paved trails about 25% of the time.
- Respondents were asked to indicate their satisfaction with various aspects of the on-street bikeways system. Results indicate that they are satisfied with pavement markings and route signing, unsatisfied with debris removal, and split on pavement condition.
- Respondents were also asked to indicate their most important and least favorite on-street bikeways they use for their bicycle trips. The findings indicate that many of the important bikeways tend to

also be among the least favorite routes. The two primary reasons for disliking a bike route were traffic conditions/driver behavior and inadequate bicycle facilities.

- For the respondents who indicated that they do not use their bike to commute, the most common reason given is street conditions/drivers are too dangerous.
- Respondents indicated that more bicycle lanes (65%), bicycle trails (59%), and better street maintenance (29%) would make bicycling more attractive to them.
- Approximately one out of every four respondents indicated that they had been involved in a bicycle collision within the Albuquerque metro area as a bicyclist. A majority of the respondents indicated that bicycle collisions were either the motorist's fault or roadway conditions/weather were a contributing factor in their collision.
- The majority (78%) of the respondents indicated they are 31 years of age or older.
- Approximately half of the surveys were collected from respondents who obtained their survey from a bike shop. This would seem to be a good indication that cyclists in the metropolitan area are interested in the City of Albuquerque's bicycle system.

First Public Meeting

An open house public meeting was conducted for the Albuquerque Comprehensive On-Street Bicycle Plan on August 16, 1997 from 9:00 a.m. to 12:00 noon in the west parking lot of Coronado Mall. The public meeting was held in conjunction with a bicycle safety rodeo. Both city and consultant staff were present to discuss the plan and bicycle issues.



Participants of this public meeting were asked to sign-in and were given a public opinion survey and a comment sheet to solicit their input. A total of 26 persons attended the open house.

Presentation material for the open house included a set of display boards which graphically presented bicycle issues and concerns. The boards are described below.

1. **Introduction:** A summary board which described the purpose of the project and the work tasks completed to date.
2. **Bicycle Network:** These graphics illustrated the components of the existing Albuquerque metropolitan area bicycle network. The different types of bicycle facilities were defined and graphically illustrated with pictures and typical cross-sections.
3. **Goals and Objectives:** This board included the key points of the *draft* goals and objectives for the Albuquerque Comprehensive On-Street Bicycle Plan. Handouts were also provided with the goals and detailed objectives.
4. **Bicycle Collision:** One board included summary statistics of bicycle collisions occurring in the City of Albuquerque over a three-year period (1994 through 1996). Two boards contained key

observations from the City of Albuquerque bicycle collision review and additional statistics on bicycle safety issues from national research studies.

5. **Bicycle Facilities Inventory:** These boards graphically illustrated some of the common deficiencies identified during the inventory of Albuquerque's on-street bicycle facilities.
6. **Bikeways Master Plan (recently renamed the Long Range Bikeway System):** A map of all existing and proposed bicycle facilities for the Albuquerque metropolitan area. The Bikeways Master Plan is maintained by the Middle Rio Grande Council of Governments (MRGCOG).
7. **Off-Street Trails Map:** A map which showed all existing and proposed bicycle trails for the metropolitan Albuquerque area.

In addition to the presentation boards, three stations were set up. Each station had a modified Metropolitan Albuquerque Bicycle Map to show problem locations for on-street bicycle facilities. Participants were encouraged to identify their normal bicycle trips and locations where they perceived problems with the bicycle facilities. Presentation materials for the public meeting and participant's comments, either written or spoken, are provided in Appendix D (under separate cover).

Corporate Involvement

A number of public and private sector individuals were contacted to discuss what is being done to encourage bicycling in Albuquerque. A summary of these discussions is presented in this section.

Albuquerque Transit Department

All Albuquerque Transit Department buses are equipped with bike racks. Bicyclists are using buses for one-way cross town trips and riding their bicycles on the reverse trip, or to by-pass high volume arterials and then continue with their trip.

University of New Mexico

In 1986, UNM created a dismount area on campus to minimize bicycle/pedestrian conflicts. Today that dismount area has been scaled back due to the higher bicycling demand and to encourage bicycling. Strategic bicycle parking is located near the classrooms, student union, athletic facilities and dorms. UNM also offers student discount transit passes.

Sandia National Laboratories/Kirtland Air Force Base

The SNL/KAFB area provides bicycle racks at all major buildings. Shower and locker facilities are maintained at 11 of their buildings and they maintain a compressed air station.

Intel

As one of the largest employers in the Albuquerque metropolitan area, Intel is currently developing a comprehensive employee incentive program to encourage use of alternative transportation. Incentives include discount transit passes, existing bike racks, proposed bike lockers, access to lockers/showers, rideshare matching, vanpool program, and preferential parking for carpools.

City of Albuquerque

The City of Albuquerque encourages its employees to use alternative transportation modes. The City provides bike lockers (42 existing lockers) at no cost, as well as the availability of bike racks, discount transit passes, and shower/lockers. As part of development review/approval, the City is pushing for more bicycle incentives (bike parking, lockers/showers, transit pass programs, pathway connections to bikeways/trails) to be incorporated into commercial developments for employees and patrons.

Others

In general, businesses in the Uptown Area haven't pursued incentives for bicyclists. However, they are providing shuttle service from 11:00 a.m. to 2:00 p.m. for shoppers and employees. The City's Planning Department is currently working on a development plan for the area, which incorporates bicycling incentives.

Agency Coordination with Neighboring Communities

The neighboring communities of Corrales, Los Rancho de Albuquerque, and Rio Rancho were contacted, as well as Bernalillo County. All indicated that they support bicycling and use the Long Range Bikeway System (LRBS) in developing their local system. A brief summary of each community bicycle facilities is provided below.

- The Village of Corrales existing bicycle facilities consist entirely of on-street bicycle routes, with many of these routes located on roadways with narrow lanes. This community has a strong cycling presence that is spearheaded by the Corrales Cycling Club.
- The only existing bicycle facilities located within the boundaries of the Village of Los Ranchos de Albuquerque are the multi-use trail that runs parallel to Paseo del Norte and the bicycle route on El Pueblo. New bicycle facilities planned for the Village of Los Ranchos de Albuquerque include bicycle lanes on Rio Grande Boulevard and a bicycle route on Guadalupe Trail
- The existing bicycle network for the City of Rio Rancho consists primarily of off-street bicycle trails with a few on-street bike lanes and routes. Proposed bicycle facilities for this community will also primarily consist of off-street bicycle trails.
- Bernalillo County has a bikeway system which consists of on-street lanes and routes and separated trails. Much of the existing County system is along State highways. The County expressed concern about providing wider facilities along residential roadways because of limited right-of-way and was concerned that roadway widening may lead to higher travel speeds along those roads.

References

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CHAPTER 4

BIKEWAY NETWORK

Albuquerque Bikeway Network

The Comprehensive On-Street Bicycle Plan provides guidance for the development of an on-street bikeway network to accommodate bicycling throughout metropolitan Albuquerque. A number of national and local surveys cite that safe, well maintained bicycle facilities would act as an incentive to increase daily bicycle trips. To support this assertion, the survey conducted as part of this study found that the two most important factors to make bicycling more attractive are 1) providing additional bicycle facilities (bicycle lanes - 65%, bicycle trails - 59%) and 2) improved maintenance (29%). Albuquerque currently has an on-street bicycle network which contains 256 miles of bicycle lanes and routes, and through implementation of this plan, will achieve a fully interconnected system.

The development of an on-street bikeway network for Albuquerque involved the identification of roadways that could both accommodate bicycling and provide connections to employment, shopping, schools, and parks. An initial inventory was conducted to gather information on existing bike lanes and routes. These existing bicycle facilities were evaluated, and improvement recommendations were developed. A supplemental inventory that included all remaining collectors, arterials, and some local streets was conducted to identify other potential bicycle facilities. A recommended on-street bikeway network was formulated based on work conducted during the inventories, from public input, and from the project steering committee.

Existing Bikeway Network

An initial evaluation of the existing bikeway network was conducted as part of the Comprehensive Bicycle Plan. This initial evaluation covered 243 miles of existing bicycle facilities and consisted of the following steps:

- All streets with designated bike lanes or bike routes in the metropolitan area were inventoried.
- A Bicycle Facility Score was calculated for each inventoried roadway segment.
 - An improvement plan was identified for those roadway segments that require modification(s) to better accommodate bicycling.
- A cost estimate was developed for each roadway segment that required improvements.

A summary of the existing bikeway network data collection is discussed below.

Inventory

A field inventory of existing on-street bicycle facilities was conducted between November 1996 and January 1997. All of the streets shown on the Metropolitan Bicycle Map (October 1996) as having a bike lane or bike route were included in the inventory. In addition, bike routes and lanes that were not included on the bike map, but were designated by signs, were also inventoried.

The initial inventory covered approximately 198 miles of bike routes and 45 miles of bike lanes. A supplemental inventory of collector and arterial roadways identified an additional 13 miles of existing bicycle facilities. These inventories were conducted to document the physical characteristics of each street on which a bicycle facility has been designated. Each street was divided into segments with similar physical characteristics. A field data inventory form was completed for each segment. This form contained information collected on roadway geometrics, pavement conditions, parking, type and

Pavement Conditions

Traffic Lane/Bikeway Width



Inadequate Width for Shared Use on Major Roadway



Inadequate Bike Lane Width

Deteriorating Pavement (e.g., potholes, cracks)



Pavement/Gutter Pan Seam (e.g., uneven, deteriorating)



Signing/Pavement Markings

Poor Condition of Signing



Poor Condition of Pavement Markings

Intersection Geometry



Lack of Bike Lanes on Intersection Approaches

**Figure 4-1
Common Deficiencies Identified During Inventory**

**Figure 4-1 (continued)
Common Deficiencies Identified During Inventory**

Roadway Debris



*Glass, Gravel
or Sand
in Roadway*

Signalized Intersections



*Loop Detectors
not Sensitive Enough
to Detect Bicycles*



*Bike Buttons that
are Inaccessible*

condition of bicycle facilities, traffic volumes, roadway right-of-way, and street classification. Roadway deficiencies were identified through this inventory, as illustrated in Figure 4-1. The results of this inventory were compiled in the Albuquerque Bicycle System Inventory and Assessment Report that was provided to both the City of Albuquerque and Bernalillo County.

Bicycle Facility Scores

A scoring system was developed to describe the “bike friendliness” and effectiveness of each on-street bicycle facility in accommodating bicycles. This scoring system evaluated each roadway segment using criteria such as lane width, side street and parking conflicts, pavement conditions, posted speed limits, traffic volumes, and the presence/absence of bicycle barriers. Examples of barriers to bicycle travel included bridges or complex intersections with inadequate space for bicycles, indirect bikeways, or unsignalized crossings of major streets. A “score” sheet, shown as Figure 4-2, was prepared for each segment that was inventoried.

This scoring system awarded a maximum of 100 points, and roadway segments that had a score of 70 or above would adequately accommodate bicycling. Roadway segments that scored between 50 to 70 normally require minor improvements, and those segments scoring below 50 require significant improvements. Definition of the improvement project types that are considered minor or major is provided in the next section. In addition to individual roadway segment scores, an average score was calculated for each bicycle corridor. A summary of scores, by bicycle corridor and by individual roadway segment is provided in Appendix E (under separate cover).

**Figure 4-2
Bicycle Facility Score Sheet**

STREET:
From:
To:
Distance (mi):
ROUTE ID:

FACILITY:
TYPE:
of LANES:

MEASURE	CRITERION	POINTS POSSIBLE		POINTS SCORED	
		Dir.1	Dir.2	Dir.1	Dir.2
Bicycle Facility Provided¹ Maximum value = 40	6' to 8' Bike Lane	20	20		
	4' to 5' Bike Lane or ≥16' Outside Lane	15	15		
	14' to <16' Outside Lane	10	10		
	13' to <14' Outside Lane	0	0		
	<13' Outside Lane	-5	-5		
Conflicts Maximum value = 30	<i>Commercial/Multifamily Residential</i>				
	<i>Driveways and Sidestreets:</i>				
	<10 per mile	5	5		
	<20 per mile	2.5	2.5		
	≥20 per mile	0	0		
	<i>On-street Parking:</i>				
	No Parking	2.5	2.5	2.5	
	Parking	0	0		
	<i>Visibility Along Facility:</i>				
	Good		5		
	Fair		0		
	<i>Barriers Along Facility²:</i>				
	No Barriers		10		10
Minor Barriers		5			
Major Barriers		-5			
Pavement Condition Maximum value = 10	Good	10		10	
	Fair	5			
	Poor	0			
Posted Speed Limit Maximum value = 10	Posted Speed 30 mph or less	10		10	
	Posted Speed 35 mph or 40 mph	5			
	Posted Speed > 40 mph	0			
Traffic Level of Service Maximum value = 10	LOS A or B	10		10	
	LOS C	5			
	LOS D, E or F	0			
TOTAL:		100		42.5	

Notes:

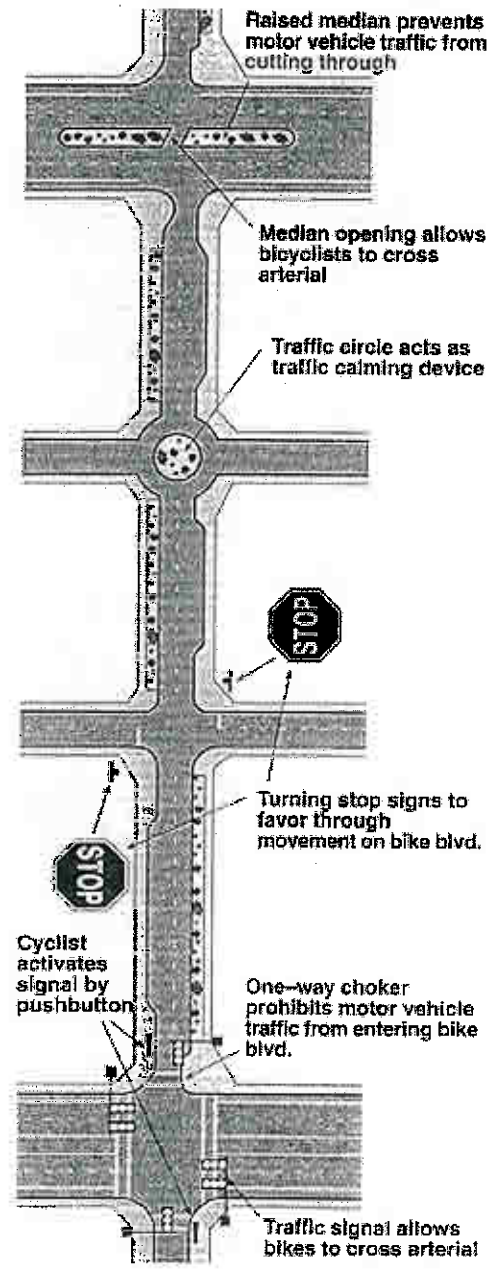
- Streets with undelineated on-street parking:
Collectors and above: subtract 7 feet from outside lane width
Local/Residential: use full outside lane width or minimum score of 20 points
- Barriers to bicycle travel may include:
Minor Barriers - 3 to 4 stop signs per mile, typical signalized intersection, perpendicular railroad crossing, bridges with sidewalk only, unsignalized crossing of a 2-lane street or a 4-lane street with a raised median, grades of 5% or more, or indirect bike routes.
Major Barriers - 5 or more stop signs per mile, complex signalized intersection, skewed railroad crossing, bridges with no bicycle accommodations, unsignalized crossing of a 4-lane street with no raised median or a 6-lane street, narrow sections of roadway for a short distance.

Improvement Types and Cost Estimates

The field inventory conducted for existing bike routes and bike lanes found a large number of roadway segments requiring improvements in order to meet minimum criteria (70 or more points) established for this project. Roadway segments requiring improvement are shown in Figure 4-3 and are detailed in Appendix F (under separate cover). The existing bicycle network is made up of approximately 256 miles of bike routes and lanes. Of these, approximately 104 miles will not require improvements to reach the desired standard, 127 miles will require improvements, and 22 miles will require roadway reconstruction before they are wide enough to be suitable for bicycling. Additionally, 2.8 miles of the existing bicycle facilities are being recommended for removal. These bicycle facilities are recommended for removal because better alternatives are provided as part of the Recommended On-Street Bikeway Network. To reach desirable standards throughout the Recommended On-Street Bikeway Network, improvement projects have been proposed. A list and explanation of the different types of improvement projects is provided below:

Minor Improvements

- Route Signing – provide signing to designate a bicycle route.
- Parking Removal – remove parking to provide adequate roadway space for bicycles.
- Pavement Overlays – roadways requiring a pavement overlay to improve poor riding surfaces.
- Traffic Calming – physical devices (e.g., speed humps, traffic circle, and traffic diverters) used to reduce speeds, accidents, or alter route choice for automobiles. Traffic calming is often associated with bicycle boulevards.
- Bicycle Boulevards – a physical environment along through residential streets where traffic calming devices such as traffic circles at intersections, median breaks for bicycles at arterials, or parking pull-outs are placed to control traffic but let bicycle traffic flow unimpeded. Signalized intersections should have automatic sensing equipment for cyclists. (Claremont Ave or Silver Ave would be possible candidates for this type of treatment.)
- Refuge Islands – an island placed in the middle of major (multi-lane) arterials to provide a “safe” zone for pedestrians or bicyclists when crossing these streets.
- Traffic Signal – a traffic signal is used to provide safe crossing for pedestrians and bicyclists at major



Bicycle Boulevard – Schematic

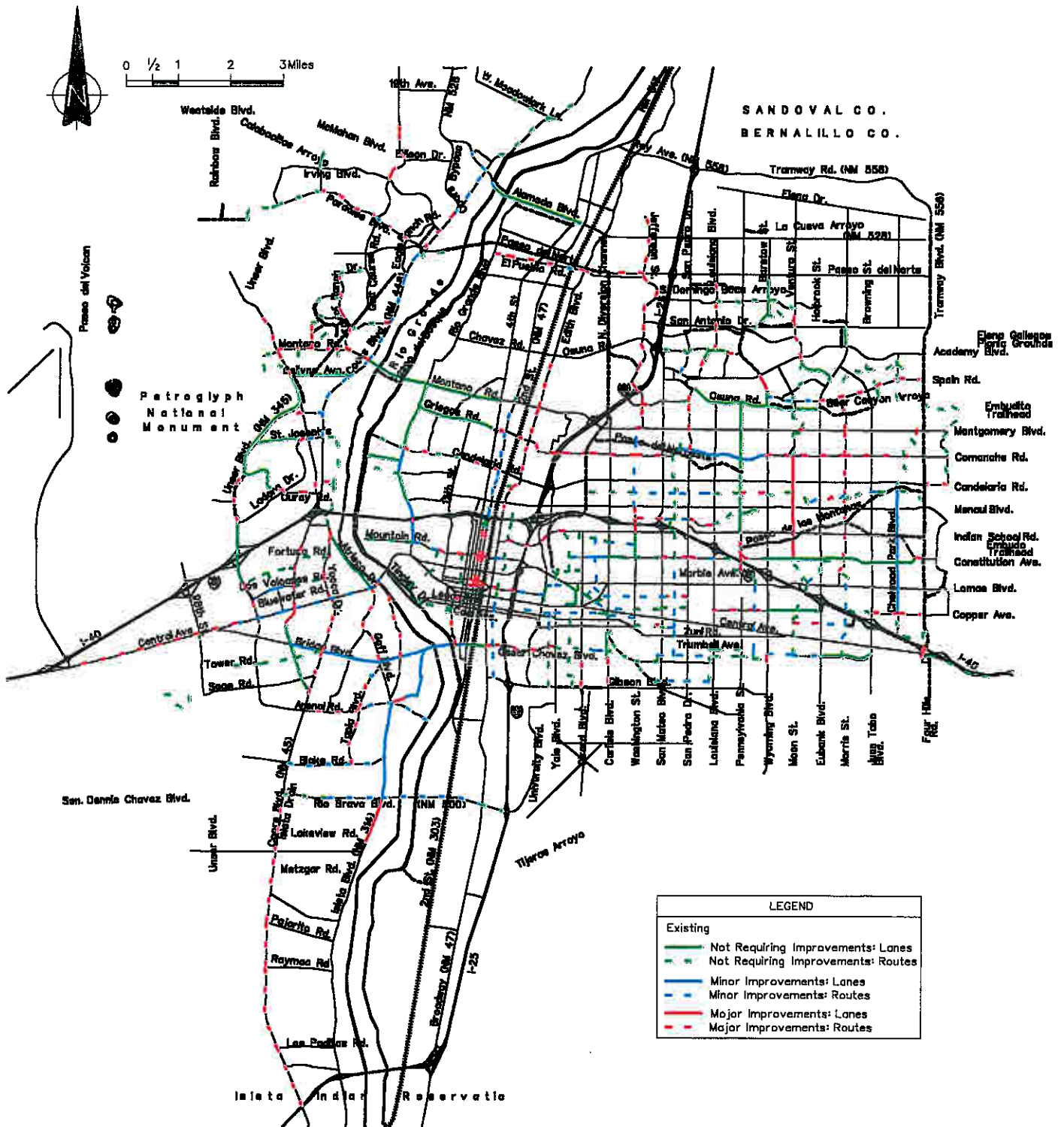


Figure 4-3
Level of Improvements Required for Existing Bicycle Facilities

cross roads. The number of bicyclists using these crossings must be sufficiently high to justify the cost of installing a traffic signal.

- Bicycle Detection – detection may be provided via in-pavement loop detectors or by video detection. Video detection is more reliable at indicating the presence of a cyclist.
- Intersection Modifications – physical changes to intersection geometrics to make them bicycle “friendly.” An example would be widening an intersection approach to provide room for a bicycle lane between the through and right-turn lanes.
- Railroad Crossings – upgrading a railroad crossing to improve the riding surface.
- Pavement Markings without a Pavement Overlay (stripe bike lanes) – stripe an existing roadway where the outside travel lane width is adequate for providing a bike lane.

Major Improvements

- Pavement Markings with a Pavement Overlay (restripe a roadway to provide for either bike lanes or wide curb lanes) – a roadway where the existing total pavement width may be reallocated to make room for bike lanes or wide curb lanes.
- Shoulders – adding pavement to roads that currently do not have curbs or shoulders to provide space for bicyclists. The minimum shoulder width should be 4 feet.
- Roadway Widening – widening roadways that currently have curbs to provide adequate space for bikeways. This improvement typically will require the removal and replacement of existing sidewalks. Additional right-of-way may also be required.
- Median Modifications – reducing the width of the center median to provide room for curb-side bike lanes or wide curb lanes. This type of improvement requires reconstructing the median, adding new pavement, and restriping the roadway to shift the travel lanes to the left to accommodate the bikeway.

**Table 4-1
Existing Bikeway Network – Priority Improvement Projects**

Type of Improvement Project	Mileage
Minor Improvements	
Route signing	0.9
Roadway overlay	9.5
Traffic calming	7.6
Parking Removal	22.4
Convert to an off-street or sidewalk trail	2.0
Bike lane pavement markings (no overlay)	26.2
Refuge island (8 intersections)	3.4
Traffic signals (3 intersections)	1.6
Intersection improvements (3 intersections)	2.2
Upgrade railroad crossing (1 location)	0.4
Minor Improvement Subtotal	76.2
Major Improvements	
Bike lane pavement markings (with overlay)	2.2
Add shoulders to roadway	17.2
Roadway widening	3.7
Median modifications	9.8
Reduce number of travel lanes	18.2
Roadway reconstruction	22.2
Major Improvement Subtotal	73.3
Bicycle facilities not requiring improvements	90.8
Additional bicycle facilities not requiring improvements (facilities identified during supplemental inventory)	12.9
Bicycle facilities slated for removal from network	2.8
No Improvement Subtotal	106.5
Existing Bikeway Mileage Total	256.0

- Travel Lane Reductions – removal of travel or turning lanes on a roadway segment to make room for bikeways. This technique requires a close examination of traffic volumes and intersection capacity before making any changes.
- Roadway Reconstruction – a complete reconstruction of a roadway is required to accommodate bikeways.

Each roadway segment identified as requiring improvements was evaluated to determine which of the above improvement project(s) should be implemented to obtain roadway conditions conducive to bicycling. Alternative solutions may be identified. It is recommended therefore, that a field review be conducted prior to project implementation. A synthesis of the types of improvements required for the existing bikeway network is provided in Table 4-1.

The proposed improvement projects result in a significant shift from bike routes to bike lanes, as shown in Table 4-2. This shift in facility types is because many bike routes were located along narrow streets with high traffic volumes and speeds. These conditions exist on many of the primary streets (i.e., collectors, minor and principal arterials) within the Albuquerque metropolitan area. A second reason for the shift to bike lanes is that many streets with designated bicycle lanes (typically 6-10 feet in width), currently allow parking within the lane; and for the purposes of this study these facilities were treated as bike routes. With improvements, many of these designated “bike lanes” can be brought up to the desired standards.

**Table 4-2
Existing Bikeway Network - Composition Before/After Improvements**

Bicycle Facility Type	Before Improvements (Existing Conditions)	After Improvements
Bike Route	200 miles	95 miles
Bike Lanes	56 miles	159 miles
Bike Trails (sidewalk)	-	2 miles
Removal of Bikeways	-	(3) miles
Total	256 miles	253¹ miles

Notes:

Table includes the 12.94 miles of additional existing bikeways identified during the supplemental inventory.

1 – Reflects total mileage with 3 miles removed.

A cost estimate was prepared for each roadway segment improvement. These cost estimates included a description of the work to be done and applies unit costs to estimated quantities. The unit costs, shown in Table 4-3, were developed through discussions with the City of Albuquerque Public Works Department. A 15% factor for engineering design, an 8% factor for other services such as surveying and concept development, and a 15% factor for contingencies were added to the estimated cost for each project. A summary of improvement costs by bicycle corridors is provided in Table 4-4. A bicycle corridor includes all of the different roadway segments along a particular road. Each particular roadway segment may require a different type of improvement due to existing geometric conditions. Information about improvement costs by roadway segment is provided in Appendix F (under separate cover). A separate document contains specific cost build-ups for each roadway segment.

The total cost estimate for improving the existing roadway and bicycle network is estimated at approximately \$61.9 million, see Table 4-4. This total includes an estimated cost for the 22.2 miles of

streets requiring reconstruction. Examples of reconstruction include streets requiring extensive widening (e.g., Coors Blvd and Jefferson St) and bridges that need to be widened (e.g., Washington St over I-40). For estimating purposes, it was assumed that the roadway reconstruction unit cost would be \$1 million per mile.

**Table 4-3
Improvement Projects: Construction Unit Costs**

Element	Unit	Unit Cost
Pavement Markings		
Remove Striping (any)	mile	\$2,950
Bike Lane Striping (8" plastic)	mile (2-way)	\$9,800
Lane Striping (4" plastic)	mile	\$4,650
Bike Lane Markings (painted)	mile (2-way)	\$5,000
Signing		
Bike Lane/Route Signing	mile (2-way)	\$4,800
Bike Lane/Route Signing	each	\$200
No Parking Zones	mile (1-way)	\$5,400
Remove Signs	each	\$100
Bicycle Button	each	\$550
Bicycle Loop Detection		
Left-Turn Lane	each	\$700
Through Lane	each	\$500
Pedestrian/Bicycle Ramp	each	\$1,500
Grade Separated Structures (assume 200' of ramp on each side)	ft ²	\$140
Pavement		
Remove/Dispose Pavement (any)	yd ²	\$3
New Pavement (Asphalt)	yd ²	\$25
New Pavement (Concrete)	yd ²	\$50
Overlay (Asphalt)	yd ²	\$12
Curbs		
Standard Curb and Gutter	linear ft.	\$15
Median Curb and Gutter	linear ft.	\$12
Sidewalks	yd ²	\$25
Pedestrian Island	each	\$36,000
Right-of-Way	ft ²	\$40
Railroad Crossing (Rubberized)		
Mainline	track-ft.	\$1,240
Spur	track-ft.	\$1,500
Speed Humps	mile	\$30,000
Landscaping	mile	\$255,000

Costs estimated in 1998 dollars.

**Table 4-4
Existing Bikeway Network – Roadway and Bikeway Improvement Costs (1998 Dollars)**

Bicycle Corridor	Cost Est.	Bicycle Corridor	Cost Est.	Bicycle Corridor	Cost Est.
2nd Street	\$1,224,165	East Copper	\$531,713	Rio Grande *	\$992,587
3rd Street	\$173,019	Eastern	\$56,387	San Francisco	\$16,615
8th Street	\$23,880	Edith *	\$2,643,416	San Ildefonso	\$258,874
Alameda	\$131,356	El Pueblo	\$976,462	San Pedro	\$570,677
Alvarado	\$219,306	Girard	\$141,002	Silver	\$151,692
Arenal*	\$2,450,000	Indian School	\$455,566	South Coors	\$1,511,597
Atrisco*	\$3,800,000	Isleta *	\$447,163	South Morris	\$114,374
Blake	\$435,951	Jefferson	\$4,550,000	Southern	\$272,881
Bluewater	\$497,147	LaFayette	\$16,615	Spain	\$536,236
Bridge / Avenida		LaOrilla	\$173,982	St. Joseph	\$153,872
Cesar Chavez *	\$1,980,933	Louisiana	\$742,125	Stanford	\$49,680
Buena Vista	\$218,722	Manitoba	\$332,241	Sunset	\$336,757
Burlison	\$524,779	Marquette	\$140,650	Taylor Ranch *	\$1,507,517
Campus	\$212,793	Dr. MLK Jr.	\$1,281,623	Tower	\$40,572
Candelaria *	\$1,003,271	McKinney	\$208,824	Unser *	\$2,527,624
Carlisle	\$54,488	McLeod	\$301,264	Utah	\$111,283
Central *	\$1,458,089	Montano	\$1,731,609	Ventura	\$128,064
Chelwook Park *	\$1,370,422	Moon	\$1,074,109	Walker	\$168,691
Chico	\$497,880	Morris	\$1,600,244	Washington*	\$767,234
Claremont	\$1,304,853	Mountain *	\$1,978,005	Wenonah	\$136,355
Coal	\$1,809	North Coors *	\$1,436,592	West Claremont	\$147,163
Comanche	\$5,271,498	Old Coors	\$854,896	West Copper	\$266,030
Constitution	\$108,113	Ouray *	\$1,293,791	West Marquette	\$259,703
Coors*	\$1,300,000	Paradise	\$1,435,161	Western Trail	\$565,116
Cutler*	\$550,477	Pennsylvania	\$762,523	Wyoming	\$42,053
East Constitution	\$117,875	Rio Bravo	\$144,707	Roadway & Bikeway Cost	\$61,874,743
Total project cost incomplete due to unavailable data.				Bikeway Only Costs	\$17,500,000

Note: Bikeway costs include pavement widening, median reconstruction, striping, marking, signing and signal detection.

The \$61.9 million represents estimated project construction costs – both bicycle facility improvements and roadway repair, rehabilitation, or reconstruction costs. The project costs in Table 4-4 do not include right-of-way, drainage and miscellaneous infrastructure costs. Funding, which is exclusively for bicycle related improvements – pavement widening for bike lanes, striping, marking, signing, and bicycle detection at signals – is estimated at \$17.5 million. The difference is the roadway upgrade cost, \$44.4 million. It is anticipated that the on-street bicycle program would contribute only that portion of each project’s funding directly related to bicycle facilities. Funding sources for implementation are discussed in Chapter 5. Two scenarios, which exemplify the above description, are provided below:

- Adding bike lanes on a street scheduled for a pavement overlay with no roadway widening. In this case, bicycle funding will pay for the bike lane markings and signing, not the overlay. An example of this type of project is Indian School Rd between University Blvd and Carlisle Blvd.
- Adding bike lanes on a street where the center median must be narrowed to accommodate the bike lanes. In this case, bicycle funding will pay for the entire project, except for pavement overlay costs if an overlay was scheduled. A recent example is Atrisco Dr between Central Ave and Iliff Rd.

It is important to note that these cost estimates are preliminary and were prepared for planning purposes only. A summary table presenting the current Bicycle Facility Score, improvement cost, and improved Bicycle Facility Score for each existing roadway segment is provided in Appendix F (under separate cover).

Proposed Additions to the Bikeway Network

A review of the existing bikeway network, with improvements, revealed that it did not meet Objective 2 of the Goals and Objectives—development of a continuous, interconnected and balanced bikeway system. The existing bikeway network did not provide an interconnected network of bikeways (Objective 2A), and did not provide bicycle facilities at half mile spacing intervals (Objective 2C). To address these issues, the remainder of the collector/arterial network was inventoried (403 miles) to assess bicycle facility feasibility. This evaluation consisted of the following steps:

- All primary streets (i.e., collectors, minor and principal arterials, and limited access) in the metropolitan area were inventoried. Select parallel local streets were also included in this inventory.
- An improvement plan was identified for those roadway segments that require modification(s) to accommodate bicycling.
- A cost estimate was provided for each roadway segment that required improvements.

Upon completion of the inventory and analysis, a system of “proposed” bicycle facilities was determined to meet the interconnective/continuous objective.

Inventory

A supplemental field inventory of primary streets and a few local streets was conducted between April 1998 and June 1998. This inventory included approximately 67 miles of collectors, 103 miles of minor arterials, 118 miles of principal arterials, 22 miles of limited access roadways, and 93 miles of local streets. The data collection utilized the same methodology as the initial inventory and included assessment of roadway geometrics, pavement conditions, parking, traffic volumes, pavement and median widths, roadway right-of-way width, and street classification. The City of Albuquerque database was used for pavement and right-of-way widths. Each street segment was evaluated to determine if a proposed bicycle facility would help achieve Objective 2, and for those segments that supplemented the system, a cost estimate was prepared.

Improvement Types and Cost Estimates

The inventory yielded approximately 266 miles of additional bicycle facilities and 35 miles of bicycle corridors that should be added to the existing bikeway network. Bicycle facility design criteria indicate that 230 miles of identified roadways are currently deficient, and another 36 miles will require significant reconstruction to provide suitable bicycling width. During the supplemental inventory, approximately 13 miles of additional, existing bicycle facilities were identified, as previously noted in Table 4-1. These facilities were presumably constructed during the 18 months between inventory efforts.

Each roadway segment requiring improvement has been evaluated to identify improvement alternatives. Alternative solutions are viable for many segments, therefore, a field review and value engineering evaluation is recommended prior to project implementation. Table 4-5 lists the approximate mileage of the most cost effective enhancements, by improvement type, resulting from the supplemental inventory.

These proposed improvement projects will result in approximately 80 new miles of bike routes, 185 new miles of bike lanes, and one mile of new sidewalk trail being added to the bikeway network. It should be noted that bicycle routes may result from the route signing, shoulder widening, parking removal, and traffic calming improvement categories in Table 4-5. Cost estimates were prepared for each roadway segment requiring improvement in order to safely accommodate bicycle travel. A summary of improvement costs by bicycle facility is provided in Table 4-6.

**Table 4-5
Proposed Additions to Bikeway Network - Priority Improvement Projects**

Type of Improvement Project	Mileage
Route signing	67.0
Traffic calming	1.1
Provide sidewalk trail	1.0
Parking removal	14.4
Bike lane pavement markings (no overlay)	40.2
Bike lane pavement markings (with overlay)	7.4
Refuge islands (2 intersections)	1.5
Add shoulders to roadway	57.3
Roadway widening	4.5
Median modifications	15.5
Reduce number of travel lanes	19.8
Roadway reconstruction	35.8
Total	265.5

The estimated construction cost of adding the proposed 265.5 miles of bicycle facilities to the bikeway network is approximately \$81 million, including roadway resurfacing, rehabilitation or reconstruction. This total includes an estimated cost for the 35.8 miles of streets requiring reconstruction (at \$1 million per mile). Prominent reconstruction projects include roadways located on Albuquerque’s Westside - Paradise Blvd, Irving Blvd, and Golf Course Rd. Where feasible, bicycle facilities should be constructed in conjunction with the proposed improvements.

The bikeway improvements for the 265.5 miles of proposed bicycle facilities have an estimated construction cost of \$26 million. This amount represents the bikeway funding share of the \$81 million estimated construction cost. The remaining cost of \$55 million is the roadway improvement cost. A summary table presenting the improvement project(s) and improvement cost for each proposed roadway segment is provided in Appendix G (under separate cover). Table 4-6, like Table 4-4, indicates planning level construction costs (without all contingencies), not total project costs.

**Table 4-6
Proposed Bicycle Network Additions – Roadway and Bikeway Improvement Costs
(1998 Dollars)**

Bicycle Corridor	Cost Est.	Bicycle Corridor	Cost Est.	Bicycle Corridor	Cost Est.
12th St	\$122,591	Ellison/McMahon *	\$2,139,272	Moon	\$235,679
14th St	\$4,372	Estancia	\$16,478	Ortega	\$12,050
19th St/San Pasquale	\$3,494	Eubank *	\$3,095,042	Osuna/Chavez	\$2,167,347
2nd St	\$1,944,215	F.R. 333	\$12,847	Osuna	\$267,300
2nd St (North)	\$2,543,290	Forest Hills	\$370,156	Pajarito	\$8,688
3rd St	\$479,429	Fortuna	\$103,252	Pennsylvania	\$92,481
4th St	\$9,773	Four Hills	\$23,165	Prosperity	\$148,455
5th St	\$484,228	Gablodon	\$10,570	Quincy	\$2,678
6th St	\$419,725	George Rd	\$13,883	Ranchitos	\$10,501
72nd St	\$4,705	Georgia	\$3,312	Randolph	\$20,054
86th St *	\$1,537,222	Gibson *	\$2,356,894	Raymac	\$267,218
98th St	\$202,974	Girard	\$789,385	Renaissance/Chappel *	\$426,823
Academy	\$4,407,440	Goff	\$215,337	Rio Grande	\$929,686
Alameda (East) *	\$3,622,170	Golf Course Rd*	\$6,190,000	Rio Grande/New York *	\$258,537
Alameda (West)	\$167,136	Guadalupe Trail	\$27,324	Rover	\$2,095
Alamo (near Airport)	\$118,955	Gun Club	\$451,649	Sage *	\$2,120,335
Alamo Rd (near SIPI)	\$5,426	Hanover	\$24,376	San Francisco	\$1,399,912
Alcazar	\$55,539	Holbrook*	\$1,750,000	San Pedro (South) *	\$1,309,666
Alexander *	\$359,918	Indian School (East)	\$3,111,989	San Pedro (North)	\$566,133
Arenal/Unser	\$308,270	Indian School	\$945,993	Sapphire	\$7,778
Atrisco/57th	\$598,717	Indian School (I-40 trail)	\$9,323	Sequoia *	\$181,320
Barcelona	\$402,851	Indian School (West)	\$10,116	Seven Bar Loop	\$55,152
Barstow*	\$1,450,000	Irving/LaPaz *	\$3,016,254	Simms Park Rd	\$7,352
Bellamah	\$5,583	Isleta	\$123,099	Singer	\$3,368
Blake	\$178,170	Juan Tabo	\$12,612	Singing Arrow	\$14,615
Bridge	\$380,353	Kathryn	\$34,222	Snow Heights	\$26,358
Broadway (NM 47)	\$1,548,211	Ladera	\$63,593	Sunset	\$190,555
Browning	\$60,960	Lead	\$940,253	Sunset Gardens	\$16,359
Cabezon	\$42,569	Loma Larga	\$255,739	Sunshine Terrace	\$2,716
Calle Cuervo*	\$310,000	Lomas	\$39,732	Tennyson *	\$380,255
Camino de la Sierra	\$4,962	Los Padillas	\$228,422	Tesuque	\$36,422
Camino San Martin	\$4,052	Louisiana *	\$792,750	Tijeras	\$3,350
Carlisle	\$223,825	Louisiana (North)	\$388,714	Tower	\$503,001
Central	\$32,940	Lowell *	\$494,372	Tramway/Roy *	\$740,587
Chamisal/Roehl	\$7,672	Lyon (Unser)*	\$450,000	Tramway Rd	\$6,806
Claremont	\$5,501	Manitoba	\$6,950	Truchas	\$7,853
Coal	\$1,079,341	Marble	\$185,717	Turner	\$3,983
Comanche	\$318,614	Marquette	\$3,212	University *	\$2,429,496
Coors (South)	\$564,906	Marron Circle	\$4,955	Ventura *	\$1,627,362
Coors (North)	\$12,551	Matthew	\$7,057	W. Meadowlark	\$451,713
Corrales Rd (NM 448)	\$372,853	McKinney	\$174,677	Washington	\$72,584
Cutler*	\$490,000	Menaul	\$944,000	Western Skies	\$12,077
Desert Road	\$151,215	Mission	\$27,052	Wisconsin	\$5,319
Don Felipe	\$301,660	Modesto *	\$2,773,192	Woodward	\$119,951
Duranés/Floral	\$6,492	Monte Largo	\$26,206	Wyoming (South)*	\$510,000
Eagle Ranch*	\$1,090,000	Monte Vista	\$46,220	Wyoming (North) *	\$2,503,881
Edith	\$498,146	Montgomery *	\$1,218,704	Zuni	\$148,245
			Roadway & Bikeway Cost	\$81,185,179.	
* Total project cost incomplete due to unavailable data.			Bikeway Only Cost	\$26,000,000.	

Note: Bikeway costs include pavement widening, median reconstruction, striping, marking, signing, and signal detection.

Recommended On-Street Bikeway Network

The recommended bikeway network must provide bicycle facilities that are appropriate for the street classification, traffic volume, and vehicle speeds. Other principal objectives followed when developing the bikeway network were: 1) provide bicycle facilities at ½-mile spacing intervals, 2) create a continuous, interconnected bikeway system, 3) assure connections to major employment/shopping sites and corridors, schools, and parks and 4) provide connection to off-street multi-use trails. With these objectives in mind, a Recommended On-Street Bikeway Network was developed for this Comprehensive On-Street Bicycle Plan and is shown as Figure 4-14. The Recommended On-Street Bikeway Network consists of 507 miles of bike routes, bike lanes, and short segments of sidewalk trails. The off-street multi-use trail system is coordinated by a separate trail/bikeway plan. These trails are identified in Figure 4-14 to ensure connectivity to the on-street bikeway system. A summary of the on-street bikeway network by bicycle facility type is provided in Table 4-7.

**Table 4-7
Recommended On-Street Bikeway Network**

Bikeway Network	Facility Type			Total
	Bike Routes	Bike Lanes	Sidewalk Trails	
Existing Bikeway Network <i>(no improvements required)</i>	53.9 miles	36.9 miles		90.8 miles
Existing Bikeway Network <i>(improvements required)</i>	28.2 miles	120.1 miles	2.0 miles	150.3 miles
New Facilities between Inventories	2.2 miles	10.8 miles		13.0 miles
Proposed Additions to Network	77.2 miles	174.2 miles	1.0 miles	252.4 miles
Total Existing and Proposed	161.5 miles	342.0 miles	3.0 miles	506.5 miles

Implementation of these recommendations will produce a continuous on-street bikeway network. All areas of Albuquerque will be easily accessible via safe bicycle facilities. The interconnection of facilities will lead to travel time savings and should encourage utilitarian ridership.

The west mesa, valley, and southeast heights areas of Albuquerque will have the most tightly spaced bicycle network links. This results from roadways which are more conducive to bicycle facilities than the principal arterials in the northeast heights. From Girard Blvd to Chelwood Blvd, the north-south bicycle facility spacing will be approximately 1-mile. In this area, the principal north-south arterials are not “bicycle friendly” due to high speeds, frequent driveway spacing and high traffic volumes. Significant land use changes would be required to create a safe cycling environment along these arterials. Similarly, the east-west spacing between I-40 and Osuna Rd/Spain Rd will have approximately 1-mile spacing, for identical reasons.

There are currently 476 miles of streets classified as collector or above within Bernalillo County (excluding roads in the East Mountain, West Mesa, and interstate roadways). This street system is comprised of collectors (157 miles), minor arterials (119), principal arterials and limited access roadways (200 miles). A national study¹ indicated that cities having a ratio of bike lane miles to arterial miles (collector and above) greater than 35% on average had triple the proportion of bicycle commuters, as

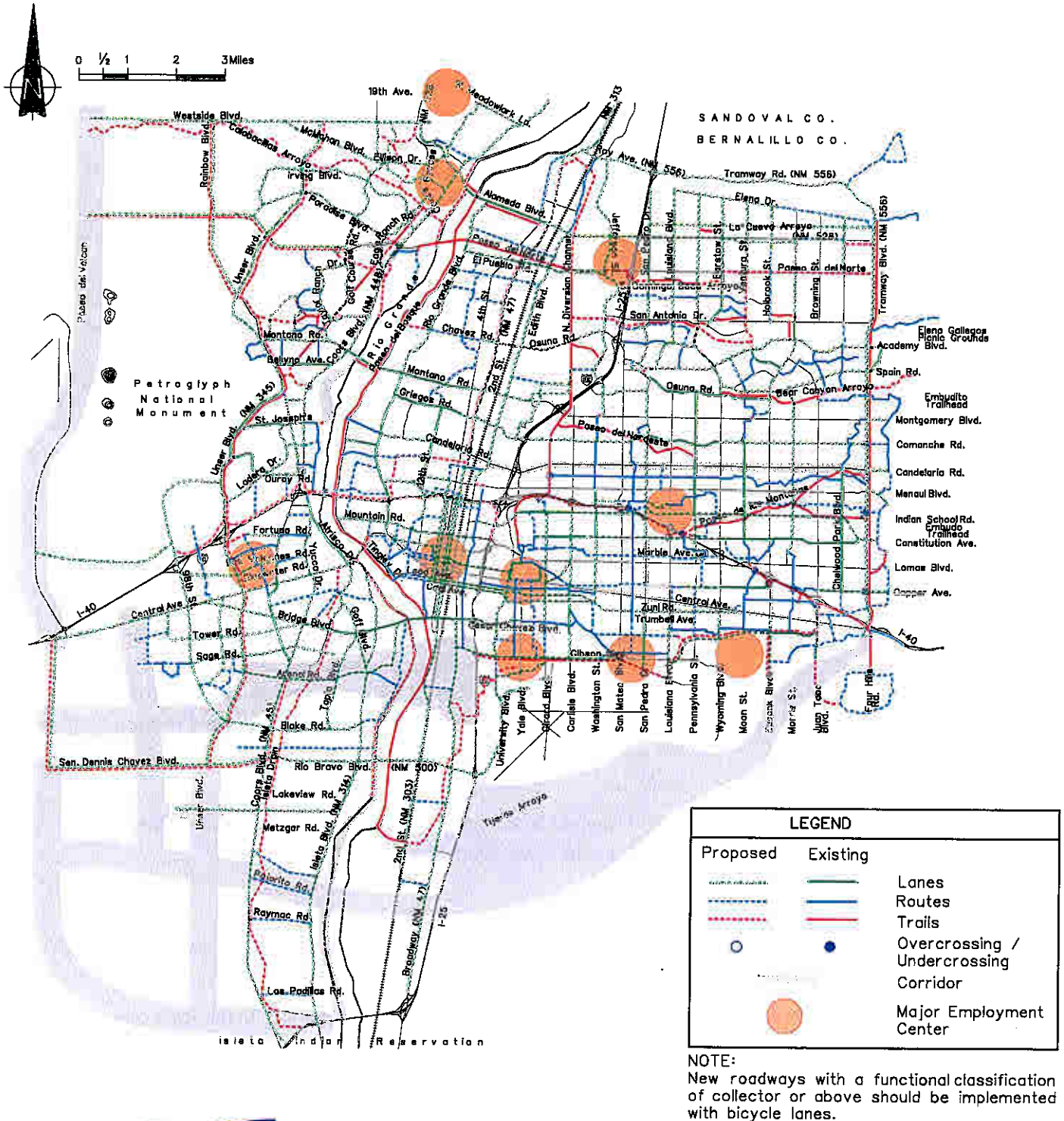
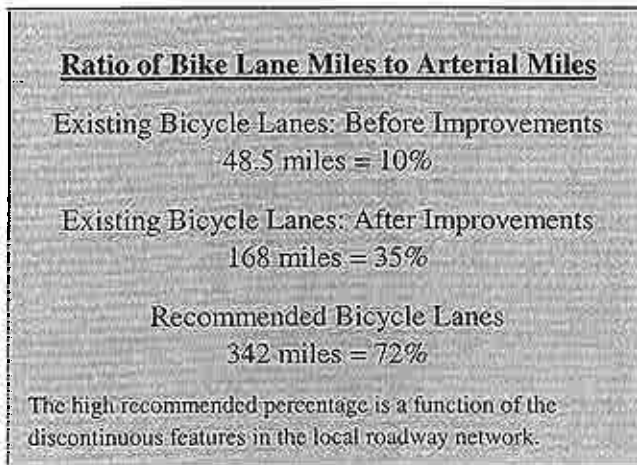


Figure 4-4
Recommended On-Street Bikeway Network

opposed to cities with a ratio below 35%. The ratio obtained for the Recommended On-Street Bikeway Network at buildout is very high (72%) and similar to ratios found in Davis, CA, and Gainesville, FL, where bicycle ridership is high.

The Recommended On-Street Bikeway Network will yield a very high percentage (72%) of arterial and collector roadways with bicycle lanes. This high ratio results from the discontinuities in the local street system. Discontinuities in local streets are caused by arroyos and the Rio Grande, limited access roadways, large commercial and residential developments, walled communities, and educational institutions. In addition, the roadway network on the west side of town and in the valley has been developed to minimize through traffic in residential areas. This requires a high percentage of bicycle lane miles along the collector-arterial system to provide acceptable facility spacing, system continuity and destination access.



It is recommended that the Long Range Bikeway System (LRBS), provided as Figure 1-3 (page 1-6), be updated to reflect the proposed changes contained in the Recommended On-Street Bikeway Network. The Recommended On-Street Bikeway Network contains only bicycle facilities located within Bernalillo County; therefore, the LRBS will require updating. Due to the large number of changes being proposed as part of the Recommended On-Street Bikeway Network, it is recommended that both existing and proposed bicycle facility types be shown on the LRBS. In addition to proposing bike routes and lanes, the Recommended On-Street Bikeway Network contains proposed trail connections and overcrossings, not shown on the current LRBS, addressing connectivity issues. These proposed trails and overcrossings are listed below:

Multi-use trails

- Paseo del Norte (Jefferson – I-25): Provide a trail to connect the bike route (proposed bike lanes) on El Pueblo to the proposed trail along the South Domingo Baca Arroyo.

Overcrossings

- San Francisco at I-25 – An I-25 overcrossing to connect to the Journal Center.
- Claremont at Paseo del Nordeste trail – A bridge to connect the Claremont bikeway to the Paseo del Nordeste/North Diversion Channel trail.
- Apache at Paseo del Nordeste trail – A bridge to connect the Girard bikeway to the Paseo del Nordeste trail.

There are additional overcrossings and undercrossings proposed as part of the off-street trails system. These are shown in Figure 4-14, but are not discussed as part of the on-street bikeway network.

The multi-use trail network, that currently consists of approximately 55 miles of trails, complements the on-street network. An additional 70 miles of trails are proposed, as identified on the LRBS map (Figure 1-3) or see Figure 4-14. This portion of the bikeway network cannot be overlooked due to a number of barriers (e.g., Rio Grande, interstates, and arroyos) found throughout Albuquerque. Additional

information on the trail system can be found in the Trails and Bikeways Facility Plan, discussed in Chapter 2.

Roadway and bikeway construction costs to implement the Recommended On-Street Bikeway Network are estimated at approximately \$143 million. The bikeway cost assessment is \$43.5 million of the total improvement estimate. Bikeway improvements include pavement widening for bike lanes, median reconstruction, striping, marking, signing, and signal detection, but do not include major roadway construction, right-of-way, overlays, drainage, utility relocations, or other miscellaneous infrastructure improvements. A summary of the cost for the Recommended On-Street Bikeway Network is provided in Table 4-8. These estimates do not include projects implemented for bicycle corridors or future roadway construction which is still in the planning stages.

It is expected that a majority of these bikeways will be implemented as part of rehabilitation and reconstruction projects. Employing new construction and/or maintenance techniques could reduce total project cost amounts. An example would be to replace traditional mill and overlay projects with microsurfacing projects, recently implemented in Albuquerque (e.g., Indian School Rd or San Pedro Blvd). This microsurfacing procedure should extend pavement life an additional 5 years, increasing the time between major reconstruction efforts and reducing future system disruption. This could result in savings as high as \$20 million when implementing the Recommended On-Street Bikeway Network. To reiterate, these cost estimates were estimated for a planning level, based upon 1998 dollars, and will require project specific estimates prior to implementation.

**Table 4-8
Estimated Cost of the Recommended Bikeway Network (1998 Dollars)**

	Roadway Cost Est. ¹	Bikeway Cost Est. ¹
Existing Bikeways		
Improvement Projects	\$40	\$17.5
Reconstruction Projects	\$22	-
Subtotal	\$62	\$17.5
Proposed Bikeways		
Improvement Projects	\$45	\$26
Reconstruction Projects	\$36	-
Subtotal	\$81	\$26
Total¹	\$143	\$43.5

Note: Bikeway costs include pavement widening, median reconstruction, striping, marking, signing and signal detection.

References

¹ Goldsmith, S., 1992. *Case Study No. 1: Reasons Why Bicycling and Walking Are and Are Not Being Used More Extensively as Travel Modes*. U.S. Department of Transportation, Washington, D.C.

CHAPTER 5

IMPLEMENTATION PLAN

Implementation Plan

A successful implementation of the Albuquerque Comprehensive On-Street Bicycle Plan will provide the citizens of Albuquerque with a viable transportation alternative, bicycling. This can only be achieved by integrating the bikeway network with the trails network to form a cohesive system. The two systems will operate independently, except where crossing natural and man-made obstructions such as the Rio Grande and the interstates, where trail crossings are recommended.

This chapter includes funding source information, recommendations for implementing the on-street bikeway network, and integrating bicycle issues into planning and policy processes. A list of the necessary steps for implementing the Comprehensive On-Street Bicycle Plan is provided below.

- Identify necessary funding sources for implementing bicycle projects.
- Provide bicycle facilities using an Improvement Program to prioritize projects.
- Update street standards to “institutionalize” bicycling as a viable form of transportation.
- Educate Transportation Engineers and Planners in the new bicycle facility design standards and the importance of bicycling.
- Identify and fund a maintenance process for bicycle facilities that will encourage bicycling.
- Identify standards to allow safe passage of bicyclists through roadway construction projects.
- Provide bicycle end-of-trip facilities through revisions to the City Zoning Code.
- Encourage bicycling as a viable form of transportation through promotions and working with major employers. Promote bicycle safety through education and enforcement.

Funding Sources

Significant increases in funding for bicycle facilities have been available from both Federal and local agencies since the early 1990’s. With the advent of Intermodal Surface Transportation Efficiency Act (ISTEA) in 1991 and subsequently the Transportation Equity Act for the 21st Century (TEA-21), Federal funding for bicycle projects have increased. These programs, however, are not exclusively dedicated to bicycle facility funding. Bicycle facilities must compete for these funds with other surface transportation modes and facilities. A local dedicated funding source was created in 1995 when the City of Albuquerque passed a resolution that set aside 5% of Public Works Transportation funding from the General Obligation bond program for bikeways and trails. The two programs share the 5% set aside and *these funds are currently the only guaranteed money for the on-street bikeway network improvements.* Descriptions of potential Federal, state, and local funding sources for implementing bicycle projects are provided below.

Federal Sources – TEA-21

- National Highway System (NHS) – These funds may be used to construct bicycle facilities on lands adjacent to any highway on the National Highway System (e.g., Rio Bravo and Paseo del Volcan). This type of funding will be most useful for constructing trails along limited access roadways. (\$50 million in NM funding – 1998)
- Surface Transportation Program (STP) – This funding category may be used for either the construction of bicycle facilities or nonconstruction projects (maps, brochures, and public service announcements) related to bicycle safety. This is the single largest potential source of funding available for the construction of on-street bicycle facilities. (\$41 million in NM funding – 1998)

- Transportation Enhancements Program (TE) – These funds are a set aside of 10% of each State’s annual STP funds. They can be used to provide bicycle facilities and to provide safety and educational activities for bicyclists. (\$4.1 million in NM funding – 1998)
- Hazard Elimination and Railway-Highway Crossing Programs – This funding category is another set aside of 10% of each State’s annual STP funds. This program is required to identify locations that may constitute a danger to motorists and bicyclists and to make corrections. (\$4.1 million in NM funding – 1998)
- Congestion Mitigation and Air Quality Improvement Program (CMAQ) – These funds may be used for either construction of bicycle facilities or non-construction projects related to safe bicycle use. This funding mechanism is currently being used to support the City of Albuquerque Bicycle/Pedestrian Safety Education Program. (\$5.8 million in NM funding – 1998)
- Transit Enhancement Activity Program – This funding category is a set aside of 1% of transit grants. This funding can be used for providing bicycle access to mass transit, including bicycle storage facilities (e.g., transit centers or park & ride facilities) and for installing equipment for transporting bicycles on mass transit vehicles.
- Section 402 Grant Funds – These funds can be used for state and community safety plans. In order for a state or community to be eligible for these grants, it must submit a Performance Plan (i.e., goals and performance measures) and a Highway Safety Plan (i.e., activities to achieve goals).

State Sources

- New Mexico State Highway and Transportation Department – The Highway Department provides funds to match Federal-aid projects on New Mexico and U.S. highways within the Albuquerque metropolitan area.
- New Mexico Legislature – During its annual legislative sessions, funds can be provided for bicycle projects through special appropriation bills (e.g., capital requests or memorials).

Local Sources

- Capital Implementation Program (CIP) – Funding for capital improvement projects is provided through the General Obligation (GO) bond program and Urban Enhancement Trust Fund (UETF). Both the City of Albuquerque and Bernalillo County have set aside 5% of the Public Works Streets portion of their GO bonds to be used exclusively for bicycle projects, beginning in 1995. The City set aside is equally distributed between the on-street (2.5%) and trails (2.5%) programs. The GO bonds are obligated in 2-year cycles, generating \$600,000 for the on-street system biennially. Additional monies from the CIP (e.g., major pavement rehabilitation or specific roadway construction projects) may be used for bicycle projects.
- Gross Receipts Tax – A ¼-cent gross receipts tax for fixing existing streets, building new roads, expanding transit and constructing bikeways/trails was approved by voters in 1999. A set percentage (4%) of this revenue is earmarked for trails used for both commuting and recreational travel, however, no dedicated funds were specifically identified for on-street bikeway improvements. On-street bikeways will be incorporated into new roadway construction and street rehabilitation/resurfacing projects wherever feasible.

There also exists an opportunity to work with the private sector to implement bicycle projects. This could be accomplished through right-of-way dedications, infrastructure improvements and/or impact fees.

Construction costs to implement the bicycle facilities (only) of the complete Recommended On-Street Bikeway Network are estimated at approximately \$43.5 million in 1998 dollars. This cost does not include funding for portions of the bikeway network located on roadways requiring reconstruction or within identified bicycle corridors. In addition, approximately \$7 million in funding is still required for constructing trails and another \$15 million is needed for constructing river and roadway over/undercrossings as recommended in the Trails and Bikeways Facility Plan. Since 1995, on-street bikeway and trail facilities have been primarily funded through the 5% set aside in the CIP and through the CMAQ programs of ISTEA. These funding sources have been essential in the implementation of many new bicycle facilities, particularly in the construction of trails identified as part of the Trails and Bikeways Facility Plan.

It will be necessary to implement the recommended bicycle network in a timely manner in order to achieve the bicycle mode shares identified as part of the goals and objectives of this plan and as part of the 2020 Metropolitan Transportation Plan. The current funding structure (CIP and CMAQ) will provide an annual average of \$650,000 for on-street bikeways. This level of funding would not allow for the recommended bikeway network to be constructed in a timely manner. Therefore, it will be necessary to continue pursuing additional Federal and local funding sources and to utilize roadway rehabilitation and reconstruction projects to increase bicycle facility miles.

Improvement Program

The implementation of the improvement program for the Comprehensive On-Street Bicycle Plan needs to provide maximum flexibility based upon a fiscally constrained program as well as rely upon other transportation improvement funds for facility construction. Funding of the on-street bikeway improvements will come from various City, County, State and Federal funds. Projects identified in Tables 4-4 and 4-6 are not prioritized for implementation. To efficiently develop the on-street bikeway system, some bikeway construction will be implemented concurrently with roadway resurfacing, reconstruction, new construction, or streetscape projects. These projects will receive a high bikeway priority and will depend upon the overall project's schedule. Coordination with these projects will reduce bikeway costs. Additional implementation will be provided through the 5% set aside and CMAQ funding. These funding sources will support bikeway system connectivity and access to destination projects.

The improvements have been separated into 6 categories:

- Resurfacing/Rehabilitation
- Reconstruction/Widening
- Activity Center Connectivity
- System Connectivity
- Spot Improvements
- Land Use Development

The first 5 categories are public agency actions whereas the last one is dependant upon the private sector. Implementation of the facility improvements recommended in this Plan will be a dynamic process, largely dependant upon the timing of public agency transportation improvements. Identification of the on-street bikeway facilities through this comprehensive planning process will ensure coordination with Capital and land use development projects, insuring implementation of those components of the on-street bikeway network.

Resurfacing/Rehabilitation

Resurfacing/rehabilitation improvements are facility enhancements that may result in the creation of additional on-street bicycle facilities. These improvements frequently result from roadway microsurfacing or overlay projects where the street may be restriped following resurfacing. This action requires the reallocation of the roadway typical section by narrowing travel lanes, removal of a travel lane or removal of on-street parking. Implementation is dependant upon the existing roadway pavement condition and the resurfacing schedule. These annual improvements will require tracking by the Bicycle/Pedestrian Planner to ensure that provisions for the bikeways are included in the design. Funding for these projects will be primarily through roadway maintenance funds and the ¼ cent tax revenues.

Reconstruction/Widening

Bicycle facilities will be constructed in conjunction with all roadway reconstruction and widening projects which occur along the identified bikeway network. These projects, primarily along major arterials, will provide access to commercial corridors and activity centers and reduce bikeway spacing. Construction of the reconstruction/widening projects will be dependant upon the project schedule as identified through the CIP process, therefore, these projects will receive a lower priority. Funding for reconstruction projects will be primarily through CIP funding, ¼ cent tax revenues and matching Federal funds. Note: major improvement projects which request Federal funding rank higher with multi-modal components, therefore, inclusion of bicycle facilities should be provided.

A parallel reconstruction/widening project type is the Special Assessment District (SAD). These projects are citizen funded widening projects; and all bicycle related amenities would require funding through the General Obligation Bond or Federal sources. There is currently a two year moratorium on new Special Assessment Districts, therefore, their applicability as a future project resource is currently unknown.

Activity Center Connectivity

Activity center connections are vital to the bicycle trip-end. Many of the employment and shopping centers, schools, parks and public entertainment areas in Albuquerque are not adequately served by bikeways. These connections should greatly enhance bicycle usage to the centers. Activity center connections include the full range of improvements, from restriping to major widening. These connections will receive a high priority, however, they may require an agency commitment to remove parking or a travel lane or to reconstruct a street. Funding for these projects will be through all available funding sources, including private development participation.

System Connectivity

System connectivity refers to constructing the “missing links” in the bikeway system. These are a high priority because of the importance of establishing a basic framework of a continuous, uninterrupted bikeway network. These projects are generally short connections along the on-street system between existing bike routes or lanes and multi-use trails. They may also include short, grade separated trail connections across natural and man-made barriers such as freeways or waterways. Funding for these projects is primarily from the City General Obligation Bonds, the ¼ cent tax revenues and from matching Federal funds.

Spot Improvements

Spot improvements are required at complex intersections, for at-grade crossings of major arterials, at high accident locations and along bikeways that require parking restrictions. These locations will frequently be identified by the accident experience or by cyclist input. These projects will receive a higher priority since they will improve safety along the bikeway network. The safer the facility, the higher its usage. Funding for these projects is expected primarily from the City General Obligation Bonds.

Land Use Development

Development projects, advanced by the private sector as part of the platting and development process, will be responsible for participating in roadway improvements to bikeway facilities adjacent to or passing through their site. The requirements will be in accord with the City's Development Process Manual and may include right-of-way dedication or physical improvements. Funding for these links will be provided by private development.

The improvement program is dependant upon capital improvements and the coordination of bikeway projects with other transportation projects. It will be the responsibility of the Bicycle/Pedestrian Planner to track and coordinate the maintenance and CIP programs and to keep abreast of development along the bikeway network. Federal grant funding programs and their available resources should also be tracked to capitalize on available funding. Through diligent coordination of these efforts, bikeway funds will be used more efficiently and the bicycle system will achieve its 2020 goals.

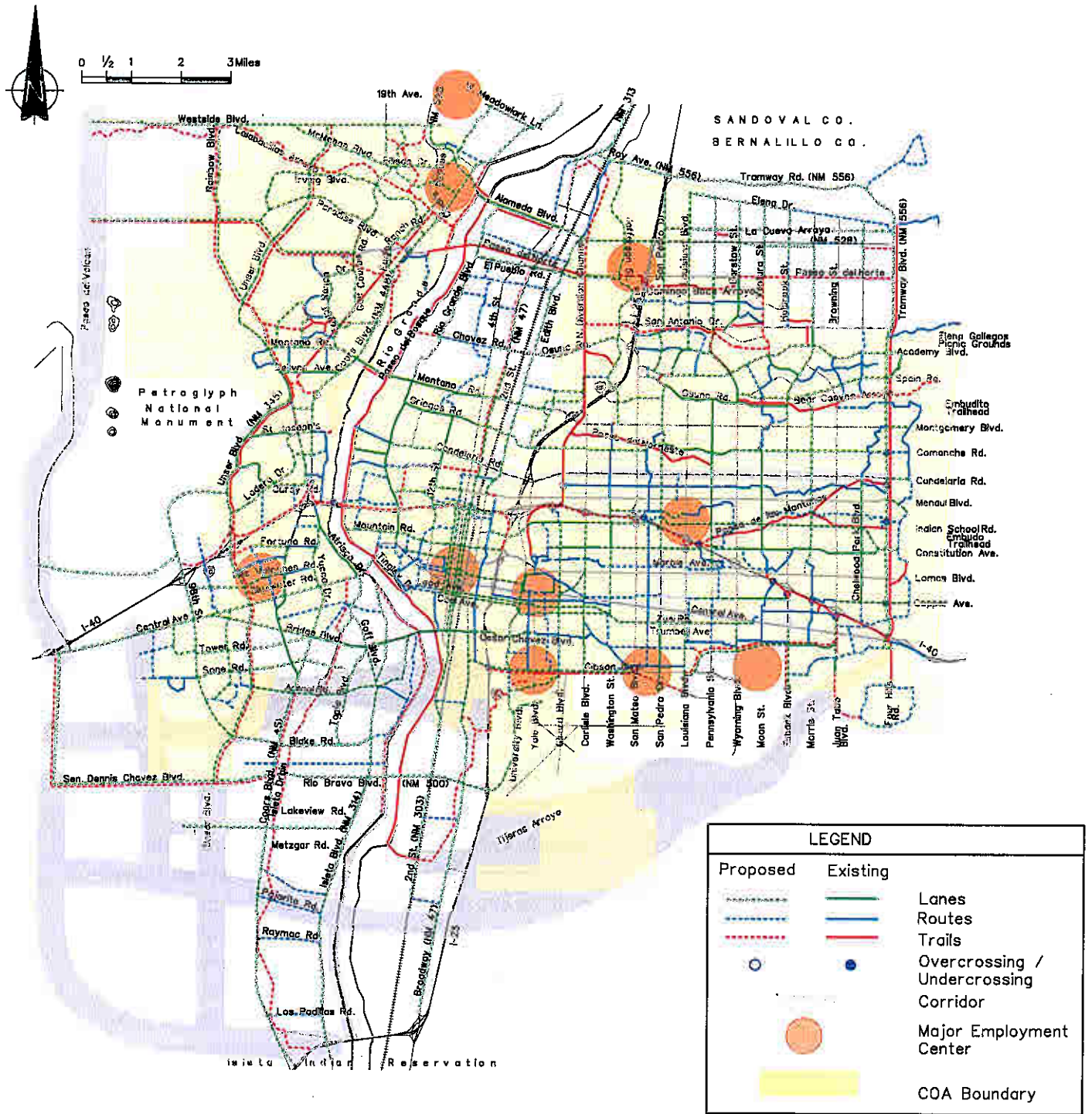
Street Standards

Citizen input indicated that there is a perceived bicycle safety concern on Albuquerque streets. Survey results indicated that inadequate roadway width and personal safety while bicycling were two of the primary causes of the low bicycle commuter quota. The field inventory of the existing bicycle facilities revealed many deficiencies including: 1) inadequate roadway and/or bike lane width, 2) parking within bike lanes, 3) complex intersections, 4) bike routes requiring major arterial crossings at unsignalized intersections, 5) bike routes with excessive number of stops, and 6) barriers (e.g., narrow bridges).

Through the adoption of street standards that create safe and convenient facilities, bicycling will be encouraged along Albuquerque streets. During development of this Comprehensive On-Street Bicycle Plan, the City of Albuquerque is updating the bicycle facility design criteria. These design revisions are not part of this document because the Development Process Manual (DPM) amendment process differs from the comprehensive planning process. The revised bicycle facility design criteria, updated to conform with the latest revision of the AASHTO bicycle design guidelines¹, will be submitted to the DPM Executive Committee for approval. Recommended revisions have been developed for the DPM, Standard Specifications for Public Works Construction², and for the MRGCOG functional street classification criteria³.

Maintenance Program

Providing new bicycle facilities will attract bicyclists; however, periodic maintenance of these facilities will maintain the higher level of use by current and new bicyclists, see Figure 5-1 for the city limits. Respondents to the project survey stated that street maintenance was the second most important factor, after new bicycle facilities, in making bicycling attractive. Another survey question asked about respondent's satisfaction with the following aspects of existing bicycle facilities: 1) pavement conditions (51% satisfied), 2) debris removal (24%), 3) pavement markings (62%), and 4) bikeway signing (70%).



NOTE:
 New roadways with a functional classification of collector or above should be implemented with bicycle lanes.

Figure 5-1
 Albuquerque City Limits

A set of guidelines has been prepared for addressing roadway maintenance issues. The maintenance of facilities during roadway construction projects is also a concern. Recommendations were developed concerning how to accommodate bicyclists through lane restrictions and detours.

Roadway Maintenance

Maintenance of bikeways along city streets is important for user safety and for protection of the public's investment in these facilities. Well maintained facilities increase rider safety and lead to increased usage. Investment of public funds in maintenance of existing roadway and bicycle facilities is as essential as the development of new facilities. The on-street bikeway system is currently maintained in one of three ways: 1) when roadway sweeping is performed on a regular schedule; 2) when standard roadway maintenance is requested by the citizenry or the need is identified by public employees; or 3) as part of a pavement rehabilitation and overlay program. Maintenance, therefore, is both proactive and reactive. The resurfacing and systematic street sweeping programs are both proactive, providing smooth, clean riding surfaces. Reaction to citizen requests where potholes have formed or unexpected debris has built up along a roadway are examples of reactive maintenance. Bicycle facilities require more frequent periodic maintenance than roadways without bicycle amenities and it may be necessary to seek additional maintenance funding to augment the current program.

User Needs

Roadways and bikeways should be maintained to provide optimal levels of safety. As the American Association of State Highway and Transportation Officials (AASHTO) 1991 *Guide for the Development of Bicycle Facilities* states, "to varying extents, bicycles will be ridden on all highways where they are permitted." Roadway safety for bicyclists is a function of the maintenance level.

Maintenance of roadways and bikeways for bicycle use is based on bicyclists' needs, particularly near the roadway edge where the majority of bicycling takes place. Ridges and cracks often develop between the roadway pavement and gutter pan and can be hazardous to bicyclists. Existing drainage grates which have longitudinal slots or which are not flush with pavement can trap a bicycle wheel and contribute to accidents. These deficiencies must be identified and remedied if safe facilities are to be provided.

Common maintenance concerns, such as pavement irregularities and roadway debris, can cause problems not only for bicyclists, but for motorists as well. Wet leaves, rocks, gravel, sand, snow, ice, branches, and glass present difficulties for bicyclists, often causing bicyclists to use more of the travel lane or even swerve unpredictably in order to avoid these hazards. Responsive and appropriate systematic levels of sweeping and maintenance will facilitate safe and responsible bicycle travel on roadways and bikeways.

Maintenance Program Tasks

Sweeping

Accumulated debris at the roadway edge or in the bicycle lane is one of the most common obstacles to safe use of facilities by bicyclists. A systematic inspection and maintenance program is important to prioritize limited sweeping resources and helps identify other pavement problem conditions.

Elements

1. Inspect arterials and collectors once per year.
2. Respond to service requests within a week to remove potentially hazardous debris.
3. Sweep arterials and collectors once per month, or more frequently as needed based on inspections and service requests, including the gutter pan.

4. Sweep local roadways four times per year or more frequently based on inspections and service requests.
5. Sweep debris as soon as possible after vehicular accidents to a level sufficient to accommodate bicycle travel.
6. Remove sand and cinder materials after the winter season ends or after major storm events in high bicycle-use areas.

Surface Repairs

Maintenance of the roadway and bike lane pavement surface to acceptable standards is required to attract potential bicyclists to use facilities as well as to safely provide for existing users. Enhanced maintenance levels and preventative maintenance practices are desirable to provide rideable surfaces by minimizing pavement irregularities.

Elements

1. Inspect arterials and collectors once per year for pavement surface problems and to rate pavement condition, or more frequently based on service requests.
2. Repair bikeway surface problems when identified or requested. Seal pavement cracks including those between the asphalt pavement and gutter pan, and grind down surface bumps and ridges in the pavement which may develop in this area. Trim intrusive tree roots where feasible and repave, or grind pavement to provide a rideable surface.
3. Respond to service requests based upon priority, and repair potentially hazardous conditions within 48 hours.
4. Prevent the edge of a roadway repair or utility cut from running through a bike lane if possible. If repairs are necessary in a bike lane, contractors should be required to repave the repair area flush with the existing pavement surface, and to maintain this surface for one year.
5. Repair pavement edge raveling on uncurbed roadways in a timely manner to help extend the life of the pavement and to maintain a rideable surface area.
6. Sweep project areas of debris after roadway pavement repairs, and remove any large, excess asphalt bumps left behind on the pavement surface.

Pavement Overlays

Pavement overlays improve conditions for motorists and bicyclists by reducing pavement irregularities. Pavement overlays and roadway rehabilitation projects provide good opportunities to supply additional space for bicycling by widening the pavement surface area and/or by restriping the roadway to provide bike lanes or wide curb lanes.

Elements

1. Coordinate the overlay schedule with the City of Albuquerque Public Works Department, Bicycle/Pedestrian Coordinator, for opportunities to provide bike lanes or wide curb lanes when restriping an overlay project.
2. Extend the pavement overlay over the entire surface area of the road and shoulder or at least 5 feet to the right of the painted edgeline if a bike lane or paved shoulder bikeway is provided. Ridges or edges should not be left in areas where bicyclists ride.

3. Mill the existing asphalt abutting the gutter and overlay the pavement flush with the gutter to reduce pavement irregularities.
4. Pave gravel driveway and side street approaches from the edge of the roadway to the City right-of-way line to help prevent loose gravel and rocks from being brought onto the roadway or bike lane area. If the right-of-way line is close to the edge of roadway, coordinate with local property owners to the degree feasible to pave further along driveways from the roadway edge.
5. Sweep the project area and remove excess pavement after completion of an overlay.
6. Bring drainage grates, manholes and utility covers to grade after repairing.

Vegetation

Plantings along the side of the road or bikeway may encroach or cause sight distance restrictions for motorists or bicyclists at driveways or intersections. Encroachment may cause bicyclists to ride further into the travel lane to avoid branches or to swerve unexpectedly. Plants blocking a motorists' or cyclists sight triangle at an intersection may cause them to extend their vehicles further into the travel lane or block a sidewalk, bike lane, or multi-use trail. This may cause motorists to make unsafe crossings in front of oncoming vehicle, bicycle, and pedestrian traffic.

Elements

1. Maintain trees and shrubs along roadways and bikeways to prevent encroachment from branches.
2. Respond to maintenance requests for vegetation trimming within 48 hours.
3. Trim trees and shrubs to provide clear sight triangles at street intersections.
4. Require property owners to maintain vegetation satisfactorily to City standards, were applicable.

Signing, Striping and Legends

Signing, striping and legends fade over time as they are exposed to the elements and traffic. Systematic inspection and maintenance is important to support regulatory and advisory functions of signs, and to increase the visibility and safety of bikeways.

Elements

1. Inspect signs, striping and legends on bikeways on an annual basis or as part of service requests.
2. Replace defective, vandalized or missing signs as soon as possible.
3. Repaint bike lane stripes and legends once per year, and in high bicycle-use areas potentially twice per year.

Drainage Facilities

Drainage facilities should be designed and maintained with consideration for bicycle traffic. Over time, drainage grates may shift or separate, longitudinal slots may develop, or grates may not have been brought to grade as part of periodic overlay projects. Also, curbs to divert surface drainage into catch basins may have been constructed in a bike lane or roadway shoulder area, thereby presenting hazards to bicycle traffic.

Elements

1. Raise drainage grates flush with the pavement.

2. Respond to service requests within 48 hours to modify or replace deficient drainage grates with bicycle-safe grates.
3. Address drainage problems where water accumulates along the roadside edge and remains for extended periods of time, affecting a cyclist's ability to ride along the roadway or in the bike lane.
4. Remove existing drainage curbs which encroach into the roadway or bike lane.

Chip Sealing

Chip sealing can leave rough surfaces for bicycling. Chip seals which cover the roadway surface but only part of the shoulder area can cause difficulties for bicyclists due to a ragged edge or ridge. During chip sealing, small rocks can be kicked up from motor vehicles and can be hazardous to bicyclists as well as can crack vehicle windshields. When possible, other alternatives to chip sealing should be utilized.

Elements

1. Cover only the travel lanes with chip seal and do not leave ridges at the bike lane stripe or painted edgeline on roadways with bike lanes or paved shoulders that are in good condition.
2. Use 3/8-inch chip seal material for bike lanes or shoulders which must be chip sealed as part of a roadway chip seal project, and chip seal the entire bike lane or shoulder rather than a portion of it.
3. Use standard sweepers or vacuum sweepers on the roadway after chip sealing, with particular attention to the bike lane or roadway shoulder where greater amounts of loose chip seal material may accumulate.
4. Bring drainage grates, manholes, and utility covers to grade after chip sealing.

Raised Pavement Markers

Raised pavement markers can create hazards to bicyclists and can be problematic to maintain under traffic conditions. The AASHTO 1991 *Guide for the Development of Bicycle Facilities* states that "Raised pavement markings and raised barriers can cause steering difficulties for bicyclists and should not be used to delineate bicycle lanes." *The Manual on Uniform Traffic Control Devices (MUTCD)* also states that "Raised markers generally should not supplement right edge lines."

Elements

1. Remove existing raised pavement markers if not needed for motorist safety.
2. If necessary for motorist safety, relocate markers to the motorists' side of the stripe.
3. If possible, utilize flush-mounted pavement markers that do not cause steering difficulties for bicyclists and are more durable in traffic and snow removal operations.

Spot Improvement Program

Road users are often the first to identify deficiencies. A spot improvement program allows bicyclists the opportunity to bring problems to the attention of authorities. The City of Albuquerque currently has a spot improvement program and provides a form, shown as Figure 5-2, for public input. Increasing public awareness of this program could assist the City in maintaining the bikeway network at a high standard.

Street maintenance issues in general have suffered from inadequate funding. Recent studies by the City of Albuquerque indicate that approximately 60% of roadways in the city have poor pavement conditions.

Budgetary constraints tend to restrict maintenance funding. Maintaining all roadways, including those with bikeways, is crucial for protecting Albuquerque's investments.

**Figure 5-2
Citizen Bicycling Improvement Report Form**

Citizen Bicycling Improvement Report

**City of Albuquerque
Greater Albuquerque Bicycling Advisory Committee**

The City of Albuquerque wants your input for improving our bicycle trail system. We want to make bicycling even safer and more enjoyable. If you notice any pavement damage, debris or missing signals/markings on any bicycle/pedestrian trail, bike lane or bike route, please let us know.

Location: _____

Landmarks (cross street, number of feet from curb, address) --be specific!

Description of problem: (What is it and why is it a problem?)

Reported by: Name _____ Day Phone _____

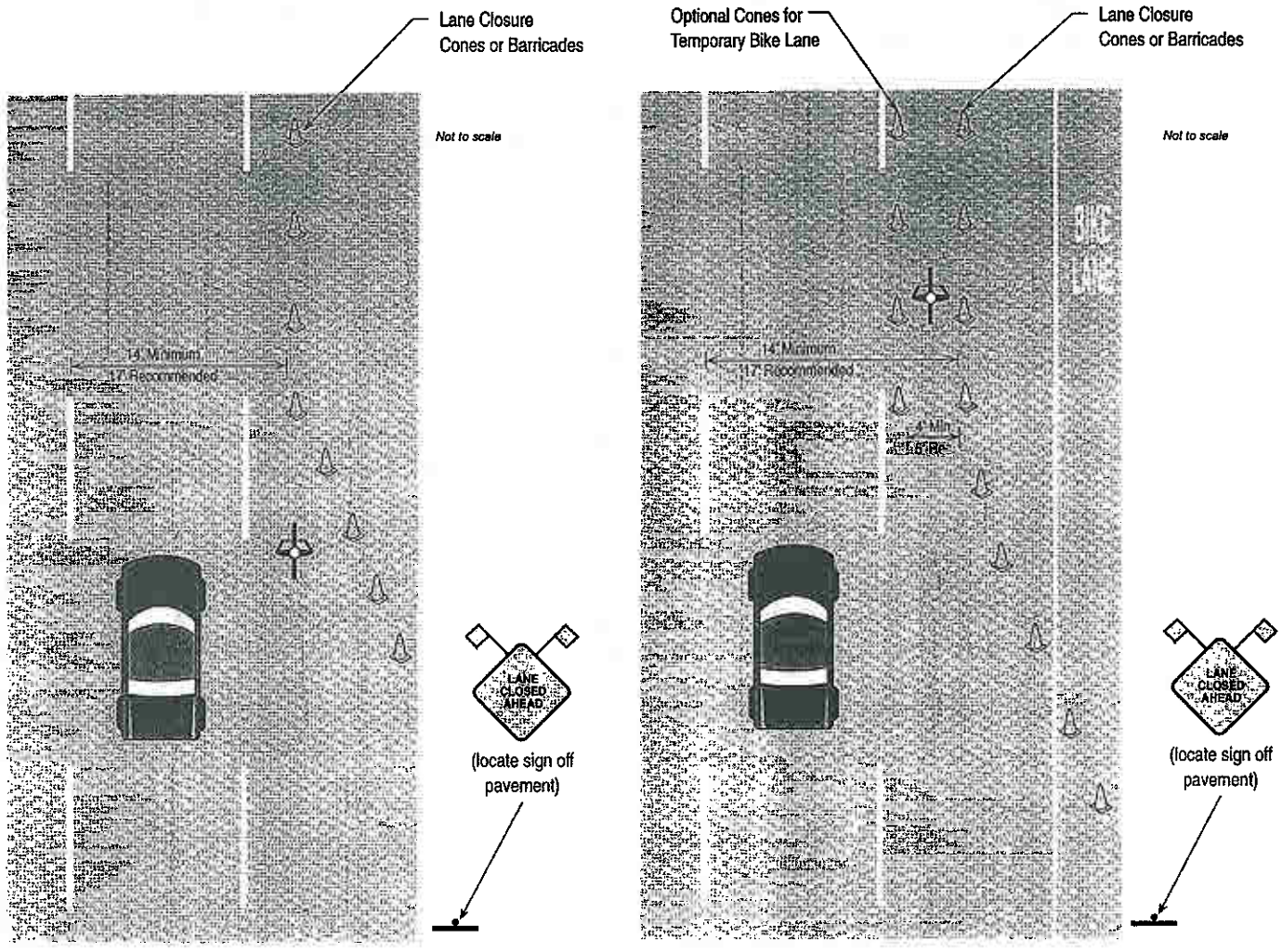
Address _____ City _____ Zip _____

Date _____ Where did you get this form? _____

Return to: Cultural & Recreation Service Department, Outdoor Recreation Division, P.O. Box 1293, Albuquerque, NM 87113 or Phone 768-3550/Fax 768-2846. TTY users may access this number via the N.M. Relay Network by calling 1-800-659-8331.

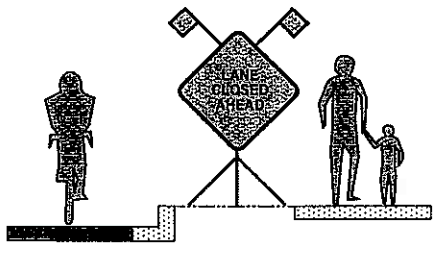
Bicycle Travel Through Work Zones

The construction of transportation, utility, and other projects within public rights-of-way affects the mobility, safety, and access of the traveling public. Bicyclist safety in particular may be affected by construction barricades, which temporarily reduce curb lane widths or eliminate bicycle lanes. Also, debris which accumulates within or near construction areas can adversely affect bicycle travel and safety. Steel plates placed temporarily over roadway cuts can increase accident risk and damage wheels if the edges of the plates do not have pavement ramps to the roadway surface. Plates which do not have a textured or non-slip surface can also be hazardous when wet.



(a) Wide Curb Lane

(b) Temporary Bike Lane



(c) Sign Placement

Figure 5-3
Bicycle Treatment in Construction Area

Efforts should be made to maintain safety and access for bicyclists. Temporary lane barricading for construction areas, detours, and other traffic control measures should be designed to accommodate bicycle travel. Appropriate detours for bicyclists away from construction zones may provide a feasible alternative. However, in some cases access across a particular bridge or section of roadway may be critical because the bridge or roadway may provide the only link between businesses and neighborhoods or other destinations. The recommendations contained herein may be utilized for training public and private sector staff who routinely perform barricade setup and construction operations.

Construction Area Program Components

Clearance Width

Adequate lane width through construction areas is important to safely facilitate the passage of motor vehicles and bicycles. In some cases this may be achievable within the existing pavement cross section, whereas in other situations appropriately designed detours may be required. The following elements should be considered for construction zones along bikeway network roadways.



Work Zone Obstructions

Elements

1. Provide curb lane widths of 11 feet or greater in construction areas on local streets with 25 mph speed limits.
2. Provide curb lane widths of 14 feet or greater in construction areas on collector and arterial roadways with 25 mph or higher speed limits, as shown in Figure 5-3(a). Along roadways where truck or bus traffic is expected, consideration should be given to the provision of 15-foot or greater lane widths.
3. In locations where a temporary lane closure occurs, provide additional curb lane width by utilizing a portion of the closed lane width.
4. Maintain the bicycle lane area or include sufficient curb lane space (i.e., 14-foot minimum) in work areas on roadways with existing bicycle lanes or paved shoulders, as shown in Figure 5-3(a).
5. In high-use bicycle areas, if feasible, provide a temporary bicycle lane through construction zone, as shown in Figure 5-3(b). Do not route bicyclists onto sidewalks or onto unpaved shoulders.
6. Utilize the bicycle caution sign (W11-1) where 14-foot minimum curb lane space cannot be achieved through construction areas.
7. Place advance construction signs out of curb lane or paved shoulder area in order to reduce hazards to bicyclists, as shown in Figure 5-3(c).
8. Avoid routing bicyclists at less than a 60-degree angle across railroad tracks or other hazards where bicycle wheels can get caught in tracks.

Detours

Detours for bicyclists may be desirable if adequate curb lane space is not available through construction areas or if other factors such as milling or removal of pavement result in an unrideable surface area.

Detours should provide reasonably direct and safe connections at each end of the construction area, and should not deviate more than 1/4 mile from the corridor under construction. Bicyclists, as with pedestrians, do not have a high tolerance for substantial out-of-direction travel.

Elements

1. Provide adequate signing and barricade setup to direct bicyclists safely onto and off of the detour route.
2. Provide appropriate detour routes which facilitate the safe passage of bicyclists either on local streets or on arterial and collector roadways which include bicycle lanes or wide curb lanes.

Other Factors

Other factors associated with daily operations in construction areas include maintenance of the roadway and barricade setup and control of traffic speeds.

Goals

1. Remove debris routinely on roadways in construction zones, including excess asphalt or mud which accumulates on roadway.
2. Maintain the pavement surface area to the degree feasible to provide a rideable surface. Provide smooth transitions over roadway cut areas and between the roadway surface and steel plates placed temporarily over roadway cuts.
3. Maintain locations of signs, cones, and barricades on a daily basis to provide for safe passage of motorists and bicyclists.
4. Monitor and control speeds through construction areas to promote safety for travelers and construction workers.
5. Promote the training of public and private sector construction workers (including those at barricade companies) to develop barricade plans and set up construction areas using practices which promote bicycle safety.

Zoning Practices

Each bicycle trip requires both the bicycle facilities (i.e., bike routes, bike lanes, or trail) to reach their destination and the bicycle end-of-trip facilities (i.e., bike racks or lockers and showers) at their destination in order to provide strong incentives for bicycling. A nationwide Harris Poll (1990) found that almost half their respondents would sometimes commute to work by bicycle, or commute more often by bicycle, if there were bicycle end-of-trip facilities available at their workplace. Bicycle end-of-trip facilities become even more critical when trying to encourage individuals to use bicycles for commuting. Governing agencies and private developers are responsible for providing bicycle end-of-trip facilities. The types and quantities of bicycle end-of-trip facilities to be provided for each land use (e.g., residential, commercial, institutional) is dictated in Albuquerque by the City of Albuquerque Zoning Code.

Bicycle end-of-trip facilities are important features to encourage bicycle commuting and bicycle use as a transportation mode. These facilities consist of secure, covered, vandal free parking environments, showers, and personal lockers at the work place or destination. The most secure parking facilities are bicycle lockers because of the significant number of “quick-release” bicycle components; and these are considered long-term (greater than 2 hours) parking facilities. If lockers are not available, a secured area with keyed access that is protected from the weather would be an alternative. The least desirable parking alternative is a sturdy, permanent bicycle rack for securing a bicycle. Bicycle racks are for short-term

parking, though they may be used for long-term parking. The second component of end-of-trip facilities are showers and personal lockers. Showers allow the rider to clean-up after the ride and personal lockers permit the rider to store both riding gear and work clothing in a safe environment. Each of these components is required to encourage bicycle commuting.

A review of the City of Albuquerque Zoning Code was conducted to identify current requirements for providing bicycle end-of-trip facilities. A comparison of Albuquerque's Zoning Code to the bicycle-related zoning codes in, Portland, OR and Tucson, AZ, was conducted to identify potential changes. With input from the project steering committee, revisions have been proposed for the City's zoning codes. These changes to the Zoning Code will be published separately and the recommended revisions will go through a separate adoption process.

Transit and Bicycles

Transit accommodation of bicycles encourages the use of transit by bicyclists and extends their commute range without requiring a personal motorized vehicle. This may be accomplished in two ways. First, for commuters who require non-transit travel at one end of the trip, parking may be provided at transit stations, major transfer points, or park-and-ride for home to transit or transit to work bicycling, and vice-versa. This eliminates a motor vehicle trip on at least one end of the commute. The second alternative is for commuters who need a bicycle at each end of the trip. SunTran provides bicycle racks which accommodate 2 bicycles, and these racks may be used by a commuter to carry the bike during the transit trip for bicycle travel at each end. This affords a cyclist the maximum flexibility and requires end-of-trip facilities at the work place.

Encouragement, Education, and Enforcement

The current level of effort expended on encouraging and educating bicyclists in Albuquerque is relatively good, as discussed in Chapter 3. It is recommended that existing bicycling encouragement efforts be continued, along with the following recommendations.

- Update the Albuquerque bicycle map to improve readability and to provide information on cycling skill levels necessary for various bicycle facilities. Also, investigate the possibility of expanding the map coverage area to include the City of Rio Rancho.
- Distribute the "Citizen Bicycling Improvement Report" more widely. Develop a telephone hot-line and web page for reporting maintenance problems.
- Educate school children and encourage bicycling as a form of transportation for them when going to and from school. This should help to alleviate some of the traffic problems around schools.
- Encourage intermodal transportation (i.e., using a bicycle and transit during a single trip) to address the travel distances faced by Albuquerque commuters. A media campaign should be implemented to inform the public of the bike racks that are mounted on buses and also inform the public about park (pedal) & ride locations.

Continued education of children (bike rodeos), adults (Effective Cycling course) and employment outreach programs are all excellent tools for encouraging people to bicycle and for improving safety. However, greater emphasis should be placed on educating motorists. Information on bicycling should be included in driver's education courses and in publications from the Department of Motor Vehicles.⁴

Enforcement of traffic laws is a necessary component of bicycle safety. Bicyclists have the same responsibilities as motorists, and disregarding traffic laws gives cyclists a bad reputation with motorists. Specific violations that have been identified and require attention include the following.

- Bicyclists running stop signs and traffic signals.
- Bicyclists riding the wrong way on the street or sidewalk.
- Bicyclists riding at night without lights.
- Bicyclists who drink and ride.
- Motorists not giving adequate room when passing a bicyclist.
- Motorists not yielding to bicyclists when turning.
- With proper enforcement of these common violations it is expected that a significant reduction in motor vehicle/bicycle collisions can be realized.

Action Plan

A summary of recommended steps to implement the Albuquerque Comprehensive On-Street Bicycle Plan is provided in Table 5-1. The recommended steps are organized based on the objectives and action items described in Chapter 2. The responsible position, agencies, or group are identified and the suggested time frames for implementation (completed; immediate; short-term – 0 to 5 years; intermediate – 0 to 10 years; long-term – 0 to 20 years, and ongoing) are included for each action item.

Implementation will primarily be the responsibility of the Bicycle/Pedestrian Planner in Public Works and both the Trail Coordinator and the Bicycle/Pedestrian Safety Education Program Coordinator in the Parks and Recreation Department. This core group will require assistance from other City of Albuquerque departments, Bernalillo County, New Mexico State Highway and Transportation Department, and the Middle Rio Grande Council of Governments. This plan requires close coordination with neighboring communities (i.e., Rio Rancho, Corrales, Village of Los Ranchos, and others) in developing a regional bicycle network. This core group will also continue to look for support from the bicycle advisory committees (GABAC and GARTC) and from other bicycle advocacy and user groups.

Table 5-1 – Responsibility and Implementation Schedule

	City of Albuquerque Personal/Dept								Other Agencies/Groups				Desired Implementation	
	B/P Planner	Trail Coordinator	B/PSEP Coordinator	PWD Coordinator	Planning	Parks & Rec.	Transit	Police	Bernalillo co.	Neighboring communities	MRGCOG	NMSHTD		Bicycle Advocacy Groups
1. Develop and promote Metropolitan Albuquerque as a Bike-Friendly Community														
a.	●	●	●	◆		◆			◆		◆			0-10 yrs
b.	●	●	●											ongoing
c.	●	●	●	○	◆				◆		◆	◆	◆	0-10
d.	●	◆	○	◆	◆				◆		◆	◆	◆	ongoing
e.	●	◆	◆	◆	◆				◆		◆	◆	◆	0-5 yrs
f.	●	●	●	○	○	○	○	○	◆		○	○	○	ongoing
2. Develop and maintain a continuous, interconnected and balanced bikeway system.														
a.	●	●	●	◆					◆		○	◆	◆	ongoing
b.	●	●	●	◆	○				◆		○	◆	◆	0-20 yrs
c.	●	●	●	◆					◆		◆	◆	◆	immediate
d.	●	●	●	◆					◆		○	○	○	0-10 yrs
e.	●	●	●	◆	○				◆		○	○	○	0-10 yrs
f.	●	●	●	◆	○				◆		○	○	○	0-10 yrs
g.	●	●	●	◆					◆		○	○	○	0-20 yrs
h.	●			○										0-5 yrs
3. Use bicycle-friendly standards and procedures for bicycle facilities and roadways.														
a.	●	●	●	●					●		○	◆	◆	ongoing
b.	●	●	●	●					●		●	●	●	ongoing
c.	◆	●	●	●					●		●	●	●	0-20 yrs
d.	●	●	●	●					●		●	●	●	ongoing
e.	◆								●		●	●	●	ongoing
f.	●	●	●	●					●		●	●	●	Immediate

Key

- Leading Position/Agency/Group
- ◆ Secondary Position/Agency/Group
- Supporting Position/Agency/Group

Table 5-1 – Responsibility and Implementation Schedule (continued)

Key	
●	Leading Position/Agency/Group
◆	Secondary Position/Agency/Group
○	Supporting Position/Agency/Group

	City of Albuquerque Personal/Dept										Other Agencies/Groups			
	B/P Planner	Trail Coordinator	B/PSEP Coordinator	PWD	Planning	Parks & Rec.	Transit	Police	Bernalillo co. Neighboring communities	MRCOG	NMSHTD	Bicycle Advocacy Groups	Desired Implementation	
4. Provide high-standard maintenance of roadways and on-street bicycle facilities.														
a. Improve & fund the street maintenance & sweeping program. Giving high priority to streets with bike lanes/routes.	○			●					●	◆	●		Immediate	
b. Maintain surfaces on designated bikeways to a high standard.	○	○		●		●			●	●	●		Ongoing	
c. Maintain street surfaces on routine basis on arterials & collectors not designated as bike routes to reduce hazards.	○			●					●	●	●		Ongoing	
d. Establish strong responsiveness to maintenance requests from citizens through a telephone hotline.	○	○		●		●			●	●	●		Immediate	
e. Pursue a bottle deposit system in order to discourage littering of roadways and bike facilities with broken glass.	○	○	○							●	●	●	0-5 yrs	
f. Maintain bike routes/lanes thru construction projects by maximizing curb lane widths or provide bike friendly detours.				●					●	●	●		Immediate	
5. Implement a comprehensive program to increase public awareness of bicycling.														
a. Develop and utilize video/audio PSAs and other means (billboards) to promote general public awareness for bicycling.	○	○	○	●			○				○		ongoing	
b. Provide line item agency funding to support public bicycling awareness programs & Share the Road campaigns.	○			●						○	○		ongoing	
c. Encourage participation by bike shops & clubs, GABAC and other bicycle groups to promote public awareness of bicycling.	◆	◆		●					○	○	○		Immediate	
d. Increase public outreach efforts to educate motorists on bicyclists rights and responsibilities.				●			○				◆		Immediate	
e. Heighten public awareness of bike planning efforts & ensure on going citizen participation for bikeway development.	●	●		◆	◆				◆	○	◆		ongoing	
f. Work with major employers to promote commuting by bicycle and increase motorists awareness to share the road.	◆	◆		●			○		○		◆		Immediate	
6. Educate bicyclists on legal, safe and predictable behavior.														
a. Develop distribute & update annually an improved, user-friendly bike map of the Albuquerque Metropolitan Area.	○	○		●					◆	○	○		ongoing	
b. Distribute a user-friendly Albuquerque Regional Bike Commuter handbook which has safety tips and laws on bicycling.	◆	◆		●			○		○	○	◆		0-5 yrs	
c. Develop and support a BikeEd program in Albq. Elem. Schools as part of physical education requirements.				●									Ongoing	
d. Provide full support for the Bicycle/Pedestrian Safety Education Program staff positions in their work with bicycle education.	◆	◆		●	○	○	○	○	○	○	○		Ongoing	
e. Continue develop. and use of video and audio PSAs, and short safety videos to promote proper and legal bicyclist behavior.	○	○		●						○	○		Ongoing	
f. Provide specific line item funding to support bicyclist education.				●					◆	○	○		Ongoing	

Table 5-1 – Responsibility and Implementation Schedule (continued)

Key	
●	Leading Position/Agency/Group
◆	Secondary Position/Agency/Group
○	Supporting Position/Agency/Group

	City of Albuquerque Personal/Dept										Other Agencies/Groups				
	B/P Planner	Trail Coordinator	B/PSEP Coordinator	PWD	Planning	Parks & Rec.	Transit	Police	Bernalillo co.	Neighboring communities	MRGCOG	NMSHTD	Bicycle Advocacy Groups	Desired Implementation	
g. Continue & expand Police Bike Patrols, & dedicate a distinct % of their time to educational efforts on bicycling behavior.			◆					●						Ongoing	
h. Develop and test a bike offender diversion program to complement the enforcement efforts under objective 8.			◆					●	◆					0-5 yrs	
i. Encourage and support head injury awareness and helmet usage thru educational brochures & programs.	○	○	●					◆			◆			Ongoing	
7. Promote bicycling as a non-polluting and cost-effective mode of transportation and recreation.															
a. Continue and expand marketing efforts to promote bicycling as an alternate mode of transportation.	○	○	●	○	○				◆		◆			Immediate	
b. Provide outreach & personal travel cost info. which shows how bike transportation can be beneficial to employees/students.	○	○	●								○			Immediate	
c. Prioritize implementation of recreational bike facilities which contribute key linkages for the on-street bikeway system.	●	●		○	○	○			●	◆	○			0-5 yrs	
d. Promote air quality benefits of bicycling thru public outreach efforts to public/private sector employers.	○	○	●			○			○	○	○			Immediate	
e. Develop and support cash incentive programs to promote bicycling.	○	○	●	◆					◆	○	◆			0-5 yrs	
f. Develop and adjust bicycle parking ordinances.	●	●	●	◆										0-5 yrs	
g. Continue and expand the interface between bicycles and buses. (coordination)	●	◆	●				◆							Ongoing	
h. Develop and implement specific incentive programs for business to provide facilities for bicycling. (coordination)	○	○	●	◆			◆			◆	○			0-5 yrs	
i. Develop and distribute to employers short videos which promote bicycle commuting.			●									○		0-5 yrs	
j. Promote organized bicycle racing on city streets to increase public awareness of bicycling as a sport.	○	○	○									●		0-5 yrs	
8. Develop & implement a traffic law enforcement program for bicyclists and motorists, linked with education program efforts.															
a. Update & develop materials for use by law enforcement personnel to support their educational & enforcement efforts.	○	○	●					●	◆		◆			0-5 yrs	
b. Commit time for police bike and motor vehicle patrols to target bicyclist and motorist enforcement.			○					●						0-5 yrs	
c. Develop and implement a consistent, balanced traffic law education program for law enforcement personnel.			○					●						0-5 yrs	
9. Develop and maintain databases useful for bicycle planning, prioritization of bicycle improvements, and accident prevention.															
a. Periodically conduct public opinion surveys to get input on bicycling in the AMPA.	●	●	●			○			○	○				0-5 yrs	
b. Conduct bicycle counts on a routine basis to estimate bicycle usage.	●	●	●						○	○		◆		0-5 yrs	
c. Maintain and update bikeways inventory to gauge success in meeting bicycle facility goals.	●	●	●						◆	○	◆			Ongoing	
d. Maintain and update bicycle accident database to identify trends, high accident locations, and system deficiencies.	◆	◆	●					○	○	○	○			Ongoing	

B/P Planner: Bicycle/Pedestrian Planner; **B/PSEP:** Bicycle/Pedestrian Safety Education Program Coordinator; **PWD:** Public Works Department; **MRGCOG:** Middle Rio Grande Council of Governments; **NMSHTD:** New Mexico State Highway and Transportation Department.

Further Studies

Additional studies are needed to further define how best to serve the needs of bicyclists in certain bicycle corridors and employment centers. A list of high priority bicycle corridors and employment centers recommended for study is provided below:

Central Avenue Bicycle Corridor (Old Town to Nob Hill) – This corridor contains many of Albuquerque’s finest attractions including the Albuquerque Biological Park, Downtown, University of New Mexico, and the shopping and entertainment provided in Old Town and Nob Hill. Creating a bicycle friendly Central Avenue corridor would provide much needed connectivity for the bikeway system and it would enhance the attractiveness of this corridor. The area between UNM and Nob Hill is a heavily traveled bicycle corridor.

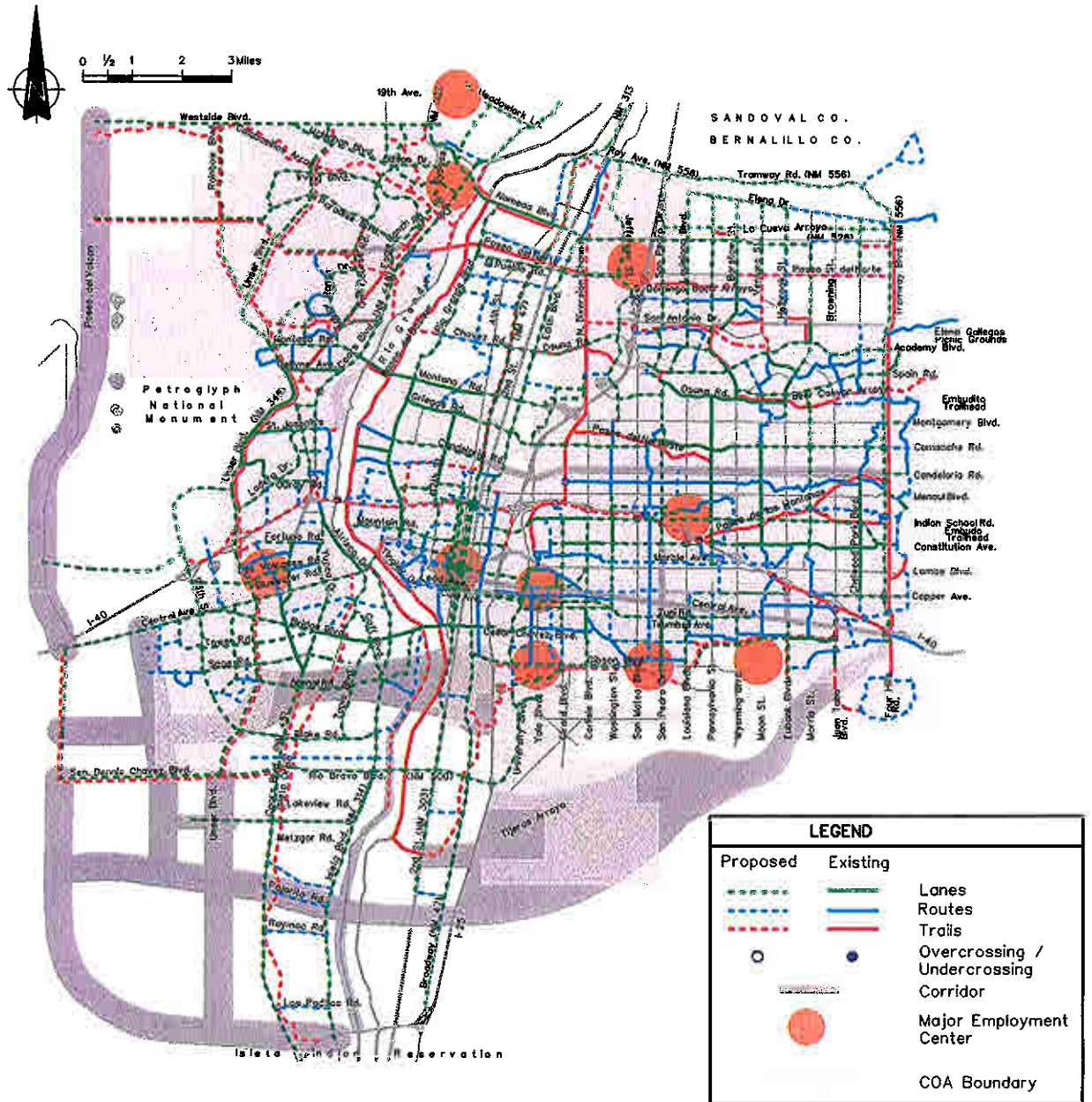
North I-25 (Journal Center) – This employment center is currently Albuquerque’s largest employment center with virtually no access provided for the average bicyclists. Currently it has a bicycle route designated for Jefferson Street, however, this roadway is very busy during peak travel periods and should be upgraded to include bike lanes. Additional opportunities for providing connections from the North Diversion Channel trail to the Journal Center should be investigated.

Seven Bar / Cottonwood – The Cottonwood area is Albuquerque’s fastest growing employment centers and retail center. Despite the fact that most of this area has been built recently, virtually no bicycle accommodations have been provided. A subarea study should be undertaken to determine how best to accommodate bicycle travel within this area.

To better integrate bicycling into the Albuquerque transportation system more frequent workshops should be held to train staff on the issues of bicycle planning, design, construction, and maintenance practices. Personnel from planning, transportation development, transportation engineering, and street maintenance should attend these workshops. These workshops should be open to other agencies (e.g., Bernalillo County and NMSHTD), private consultants, neighboring communities, and other interested parties. Through increased coordination and cooperation, Albuquerque will develop a model on-street bikeway network.

References

- ¹ AASHTO: Guide for the Development of Bicycle Facilities, 1991. AASHTO, Washington, D.C.
- ² City of Albuquerque Standard Specifications for Public Works Construction, 1986. City of Albuquerque Public Works Department, Albuquerque, NM.
- ³ 1996 Transportation Program for the Albuquerque Metropolitan Planning Area, 1996. Middle Rio Grande Council of Governments, Albuquerque, NM.
- ⁴ New Mexico Bicycle-Pedestrian-Equestrian Transportation Plan, 1996. New Mexico State Highway and Transportation Department, Santa Fe, NM.



NOTE:
New roadways with a functional classification of collector or above should be implemented with bicycle lanes.

Figure ES-1
Recommended On-Street Bikeway Plan

