

# II

## Transportation

### 1. INTENT

Transportation facilities have an enormous influence on the character of future development and on lifestyle choices. They influence whether we can walk or have to drive, whether bicycling and hiking are easy options for recreation, and whether transit can get us to jobs or cultural events quickly. Street design makes it possible for homes to face the street creating an outdoor “living room” for the neighborhood rather than a wall of garages. It is even been shown that street design influences how well we know our neighbors.

**Streets and Walking.** The standards of this plan are intended to create streets that are more pedestrian-friendly, while also meeting the demands of motorists and emergency vehicles. Walkable neighborhoods are the basic building block for more livable—and environmentally sustainable—cities. Design plays a vital role in their creation. An arrangement of complementary land uses with pedestrian compatible design paired with inviting streets influence the extent to which workers and residents walk to local destinations and use transit. Pedestrian-friendly streets are a foundation to transit-oriented development and create an alternative to driving for many daily needs.

In deciding to walk or bike instead of drive, pedestrian and biking environments must feel safe and comfortable. Fast, unmitigated traffic presents a major deterrent. The incidence of major pedestrian and bicycle injuries is significantly reduced when vehicle speeds approach 25 miles per hour. The use of modest travel lane widths and traffic calming devices slows traffic, while adding little to motorists’ real travel times.

Pedestrians feel more comfortable when on-street parking and street trees are placed between sidewalks, and when street crossing distances are reduced. Street trees reduce temperatures by as much as ten degrees—an important advantage on hot days—and on-street parking is critical to attracting street-facing shops.

Pedestrian comfort and safety are influenced by the relationship between abutting uses and streets. Streets lined by rear yard fences, garage doors or parking lots are unwelcoming, and have been shown to attract more crime than streets lined by building entries, creating semi-private space through porches and stoops, and windows. Traffic must be kept to modest volumes, however, to encourage street-facing buildings in most settings. A highly interconnected street network plays a critical role in keeping traffic volumes to appropriate levels. Street connectivity also reduces pedestrian travel distances to local destinations, and integrates the many functions and activities of a city center.

**Great Streets and Boulevards.** The roadways through Volcano Heights should be pleasant and memorable places, whether experienced by car or on foot. The basic recipe for great streets is simple: provide sidewalks sized to anticipated activity; plant closely-spaced street trees; and keep cartways to minimum dimensions. In urban areas, frame streets with handsome building fronts placed close to the street, and where a rural set-

ting is desired, avoid curbs and group buildings together to retain “long views” across open space.

**Transit.** Transit plays a vital role in reducing regional traffic congestion, but to be widely used it must be fast, frequent, and reliable. Volcano Heights’ emphasis on walkability and urban development will make more frequent transit service viable. The Bus Rapid Transit (BRT) system proposed for the area uses dedicated bus lanes and emerging technologies to make travel times competitive with the car. As proposed, BRT would efficiently move area residents and workers to and from jobs and activities in central Albuquerque and in the I-25 corridor.

**Trails.** Bicycling and hiking will be encouraged through a network of open space trails and supportive street features, like bike lanes and landscaping. These facilities will make biking and hiking safer and more enjoyable, whether it is for commuting, errands, or leisure. Trail locations and design will help avoid human activity on ecologically- and archeologically-sensitive lands.

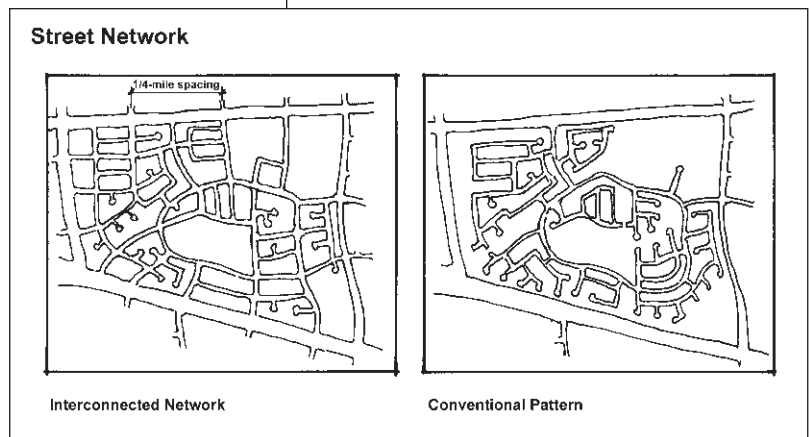
## 2. STREET NETWORK

**Major Street Network.** The alignment of major streets within the Volcano Heights Area Plan is described on **Exhibit 20, Road Network Map**. This map shows street types forming an interconnected network that can distribute traffic among multiple routes, and thereby reduce reliance (and excessive volumes) on fewer routes. The network will enhance access in the Plan Area by providing routes that are more direct, and by reducing traffic volumes on collector streets and arterials, so that fewer travel lanes and a more intimate, pedestrian-supportive environment can be created. (Refer to the *Kimley-Horn Memorandum, Volcano Heights Concept Plan—Traffic Operations Assessment and Boulevard Design Recommendations*). Amendments are needed to the Middle Rio Grande Council of Governments *Long Range Major Street Plan* and to the design standards for Unser Boulevard contained in Bill No. F/S R-455 (Enactment 169-1989).

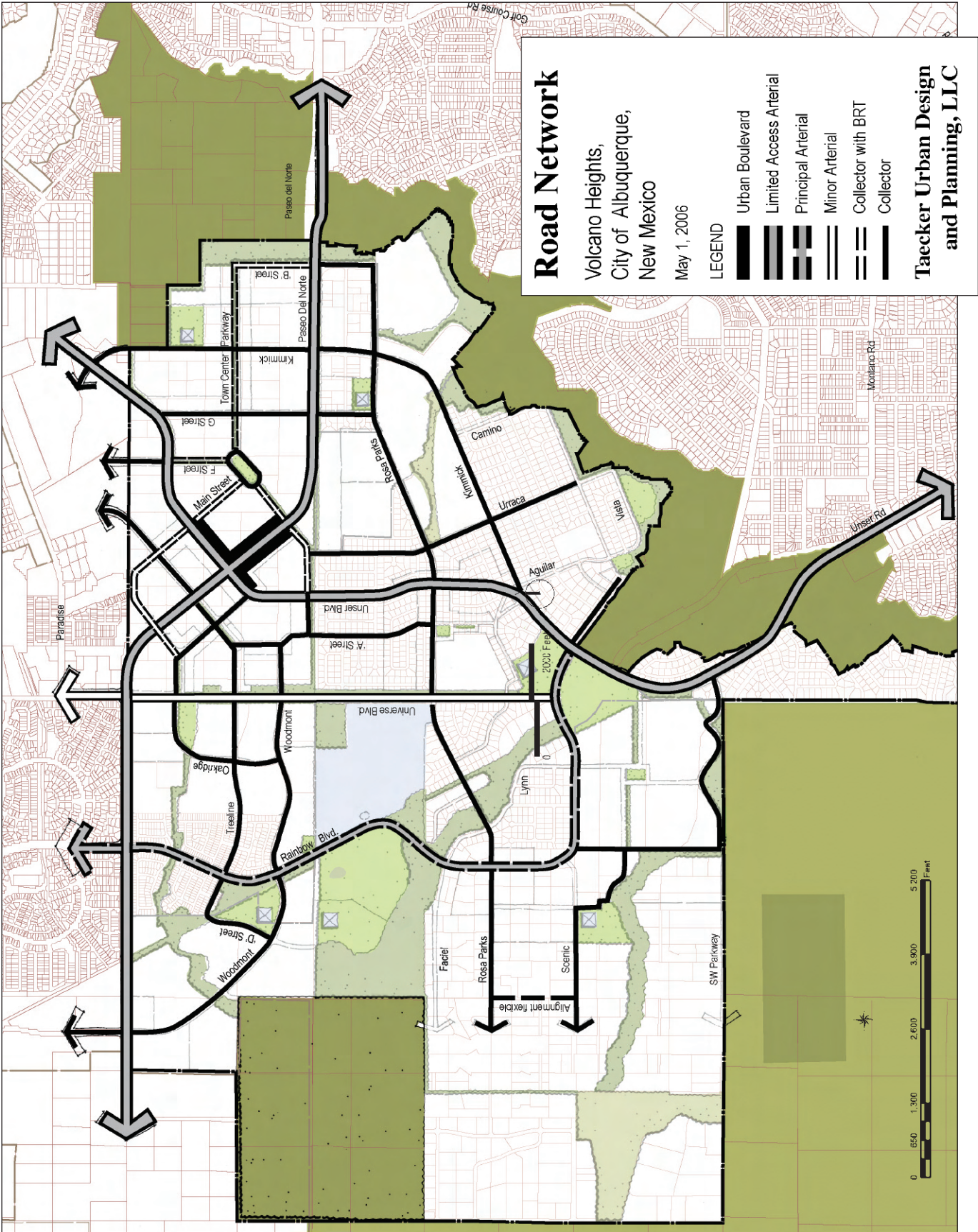
While the integrity of the street network should be maintained, minor adjustments to the street alignments depicted may be made to avoid significant rock outcroppings, or archeological or biotic resources, or to respond to unanticipated engineering factors.

**Street Connectivity.** The *Road Network Map, Exhibit 20* shows the recommended alignment of limited access roadways, arterial and collector streets. The alignment of local streets has not been determined, as they depend on the requirements of future, still-to-be defined projects.

The *Street Network, Diagram 1* contrasts an interconnected network of streets using one-quarter mile intersections, with a conventional pattern of street design in which there are fewer entrances from local to major streets. In the Town Center, Village Center, Neighborhood Mixed Use and Residential zones, adequate connectivity among streets must be assured. Adequate connectivity is critical for providing direct routes to local destinations, and for disbursing traffic



**Diagram 1**



**Exhibit 20**  
Road Network Map



such that all streets can be pedestrian-friendly. To ensure adequate connectivity, continuous street connections shall be provided at least every 800 feet, except near Open Space, Executive Residential and Rural Estate areas. Continuous street connections may be accompanied by offset intersections at special locations and by traffic calming features to discourage cut-through traffic.

**Block Size.** Smaller city “blocks” (bound by streets or publicly-accessible open space) ensure that streets and pedestrian routes are more direct and intimate in scale. Blocks shall be fully bound by streets, or bound on one side by a publicly accessible path or open space. In Village Center, Town Center, Main Street, Urban Residential and Suburban Residential zones, blocks shall not exceed: 3 acres for residential uses (including residential over storefronts), and 6 acres for retail and office uses. See **Diagram 2, Maximum Block Sizes**. Block size requirements do not apply to Rural Residential, Executive Residential, or public uses.

### 3. STREET DESIGN

**Contextual Street Types.** Street design shall correspond with each street’s unique function and context. This *contextual* approach puts in place conditions that support abutting land uses and walking for many trips by: protecting pedestrians, minimizing pedestrian crossing distances, and reducing vehicular speeds, and protecting ecologically- and archeologically-sensitive features—while also accommodating reasonable vehicular travel times. The Area Plan depicts the alignment of arterial streets and most collector streets, as described on **Exhibit 20, Road Network**. Local street alignments are not the subject of the Sector Plan. Where emergency access is required, the clear uninterrupted dimension of any cartway shall not be less than 14’.

**Sidewalks and Street Trees.** Where average densities exceed 2 units per gross acre, sidewalks should accompany all streets. Street trees should be placed between the curb and where most pedestrians walk: within grated tree-wells along shopping streets and where drop-offs occur frequently; and within landscaped strips in other areas. Where average densities are less than 2 units per acre, trails and gravel shoulders may be used in lieu of streetside sidewalks. (See **Diagram 3, Sidewalk / Street / Tree Relationship**)

**Arterials.** Arterials accommodate the highest traffic volumes in the Area with significant volumes of through traffic. Arterials have 11 foot travel lanes, and include: Paseo del Norte (PdN), Unser, Rainbow, and Universe. PdN and Unser

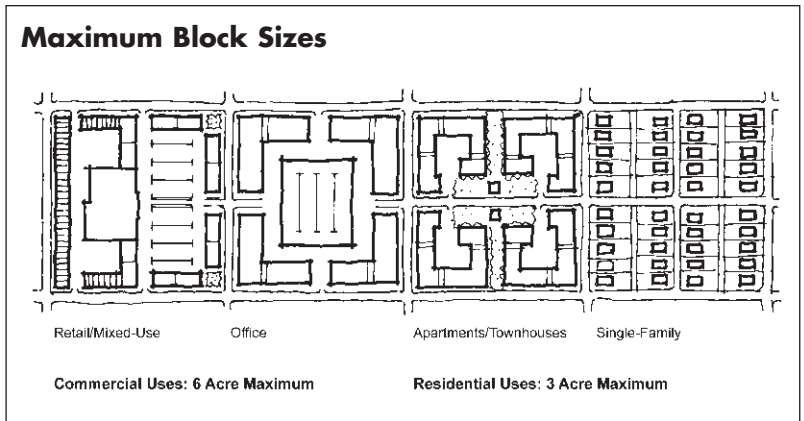


Diagram 2

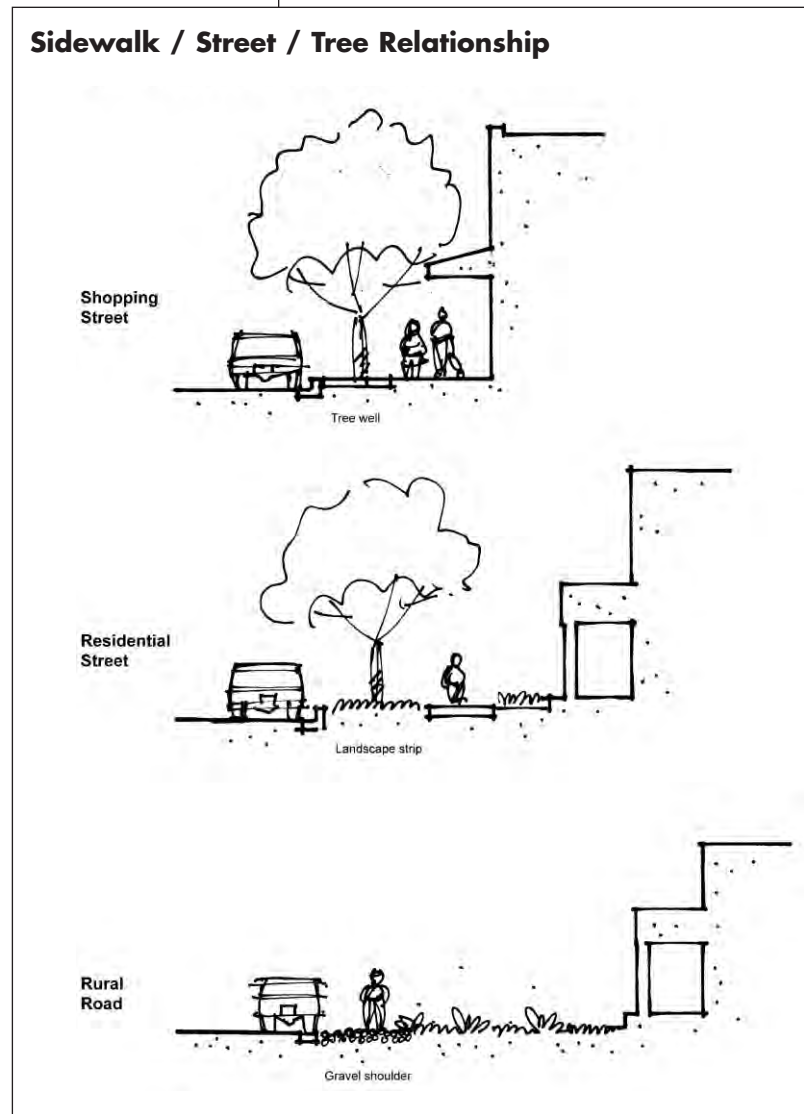


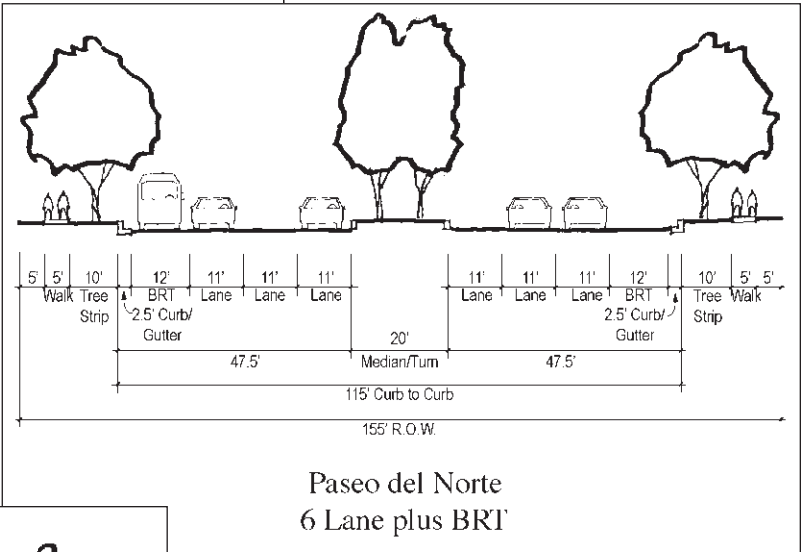
Diagram 3



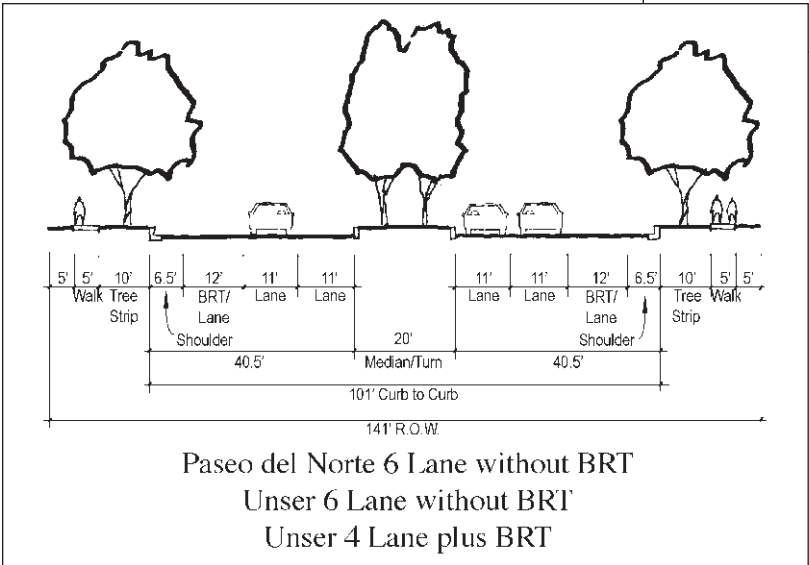
are designated Limited Access Roadways on the regional Long Range Roadway System Plan. For each arterial, the number of travel lanes (non-BRT) remains constant, except for a short segment of Unser just south of PdN to improve the performance of the Unser / PdN intersection. BRT lanes are also designated for PdN and Unser in places where the BRT is not serving the center of the Town Center and Universe Village. In addition to these variables, some arterial cross-sections are designed expressly to provide pedestrian activity and parking where street-facing storefronts are desired. Bicycle lanes accompany Universe.

**Limited Access Roadways - Paseo del Norte and Unser. Exhibit 21, Limited Access Arterials Key Map** shows where the various cross-sections apply to the road system. Three segments for Unser are shown: the portion through the escarpment, through the Town Center, and elsewhere. Some elements of Unser are uniform throughout.

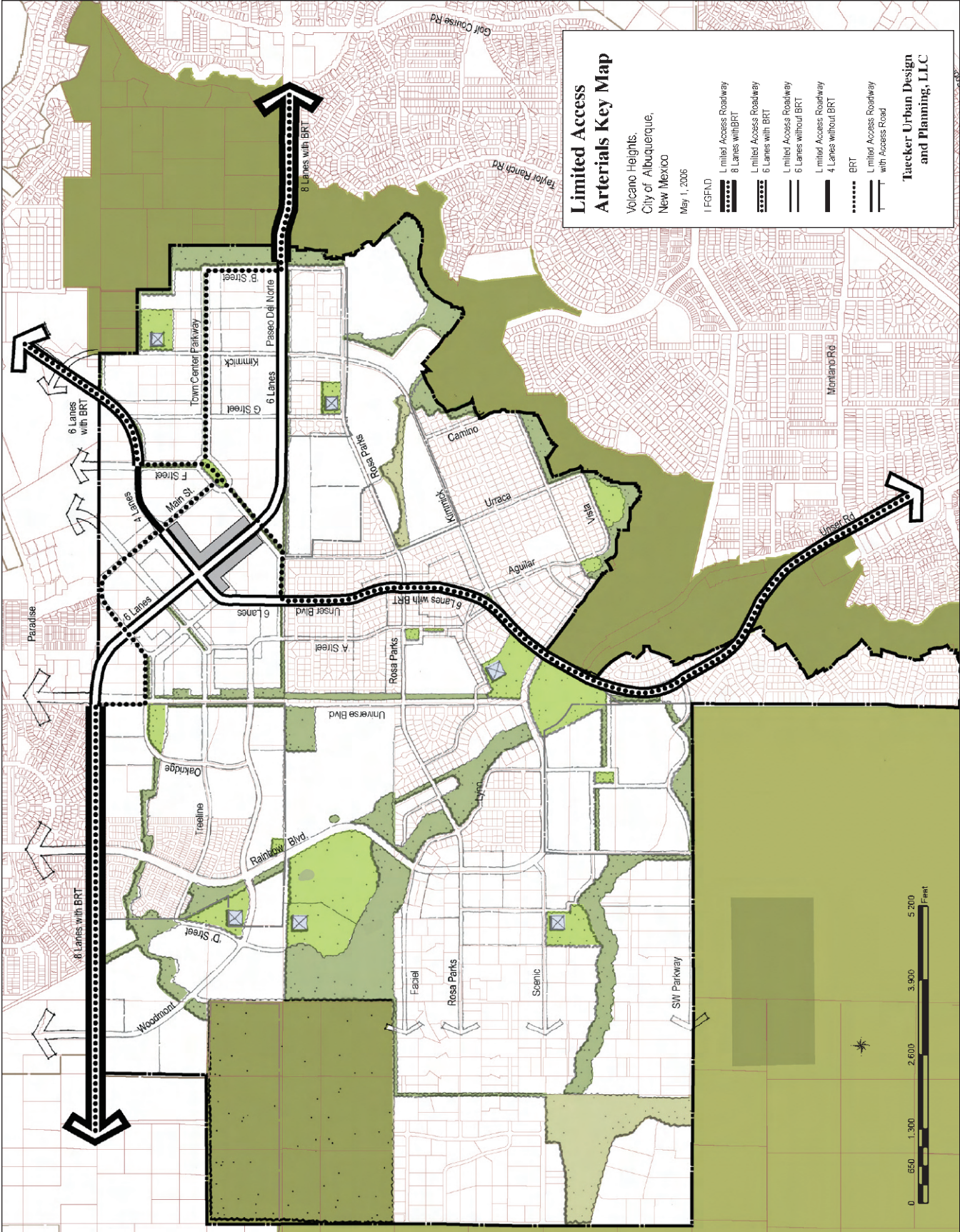
**Cross Sections for Limited Access Roadways**



**Cross Section 1**

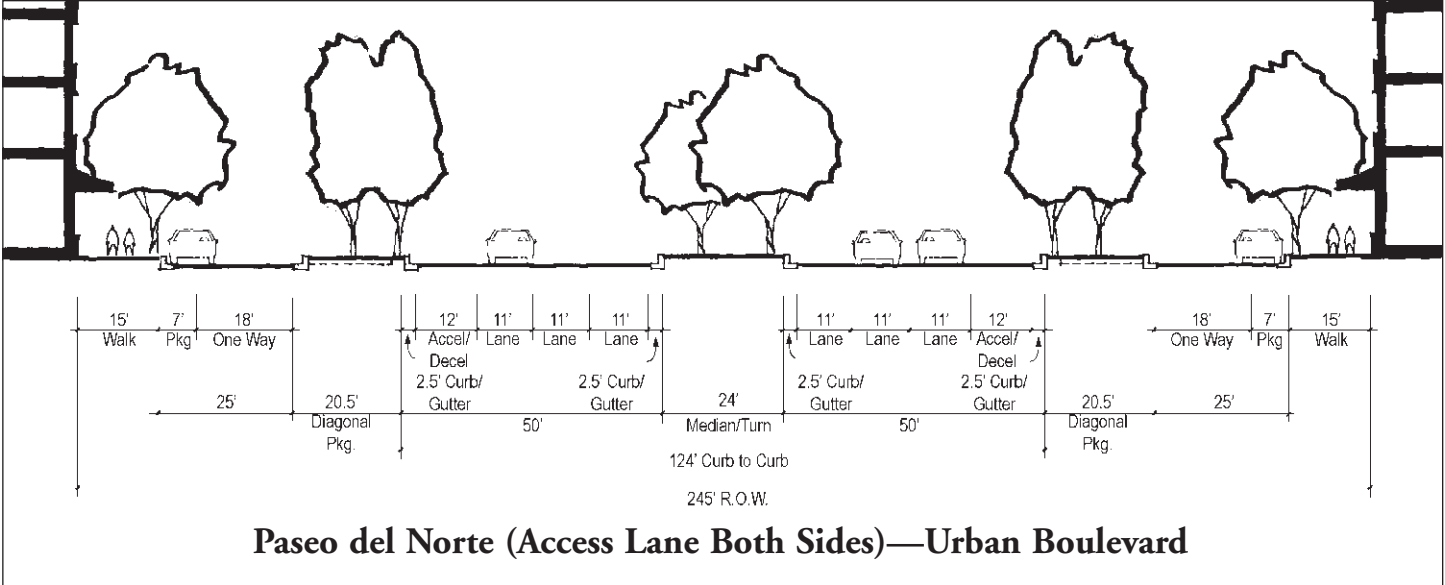


**Cross Section 2**

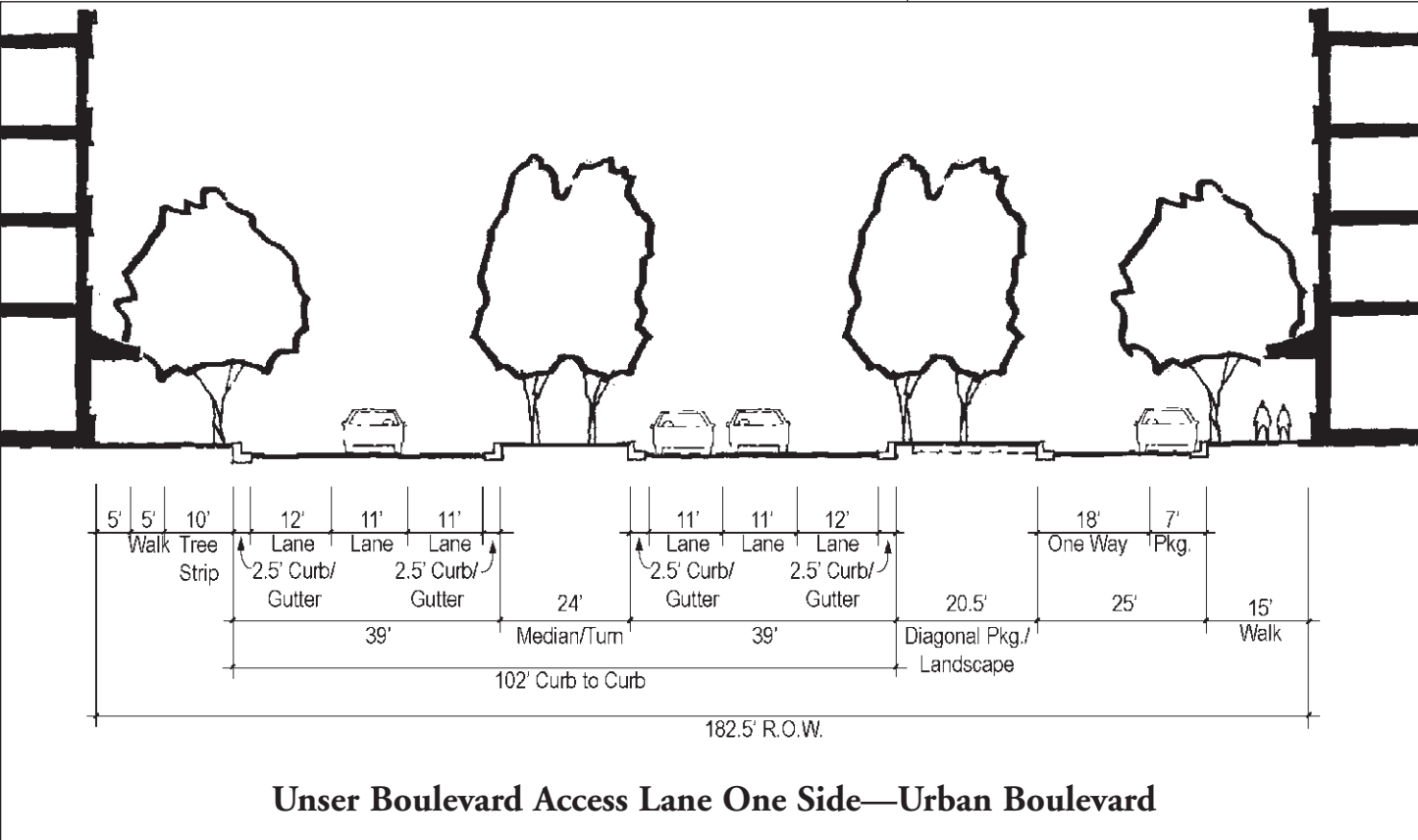


**Exhibit 21**  
Limited Access Arterials Key Map

*Cross Sections for Limited Access Roadways*



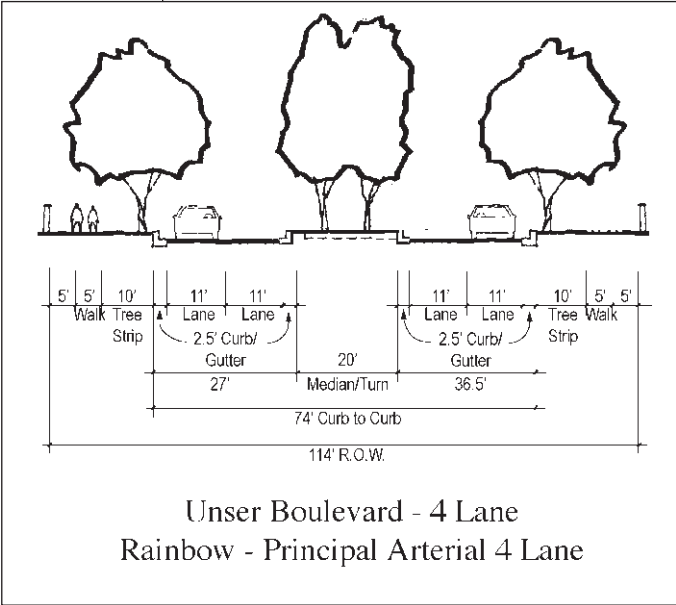
**Cross Section 3**



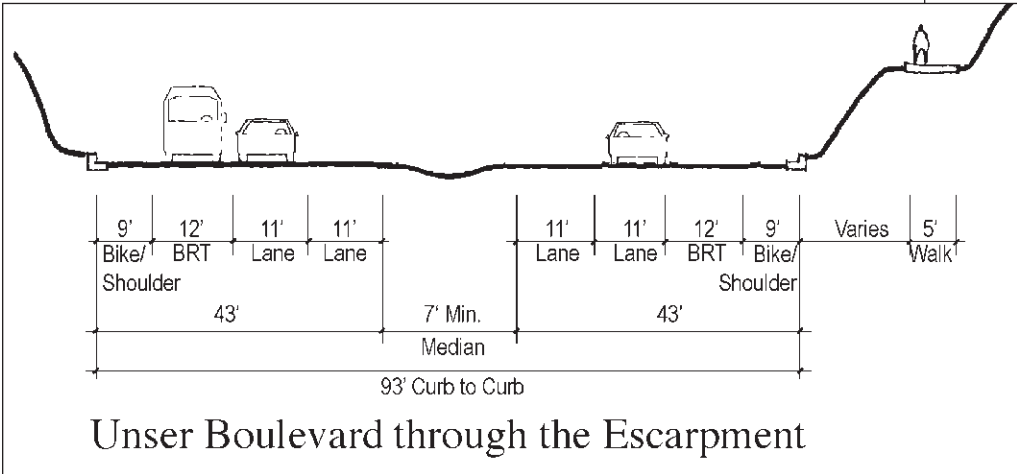
**Cross Section 4**



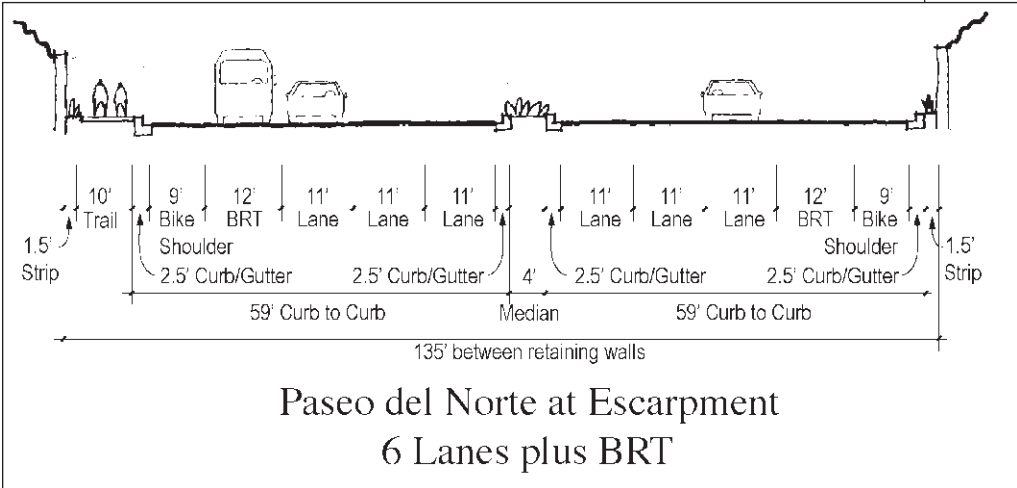
**Cross Section 5**  
 Rainbow has four drive lanes  
 (two each direction) and  
 one median / turn lane.

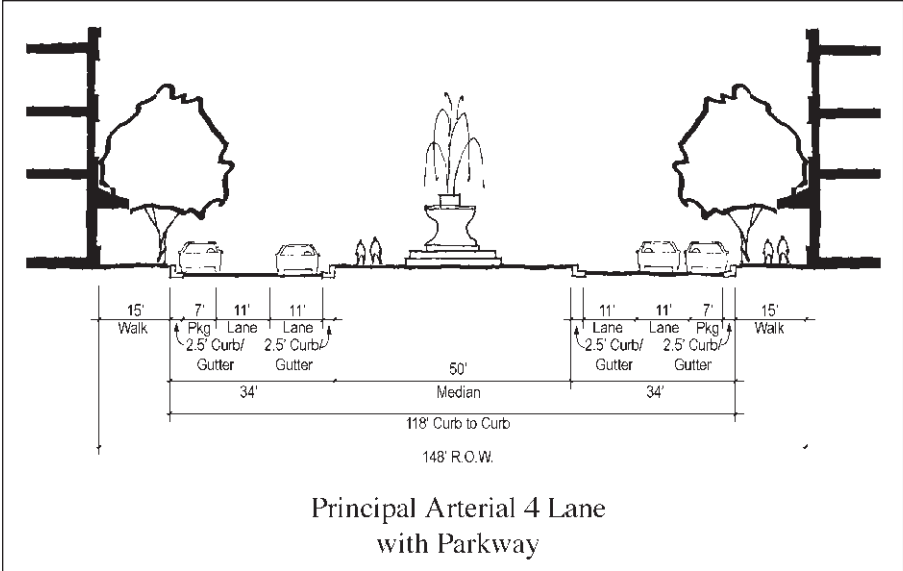


**Cross Section 6**

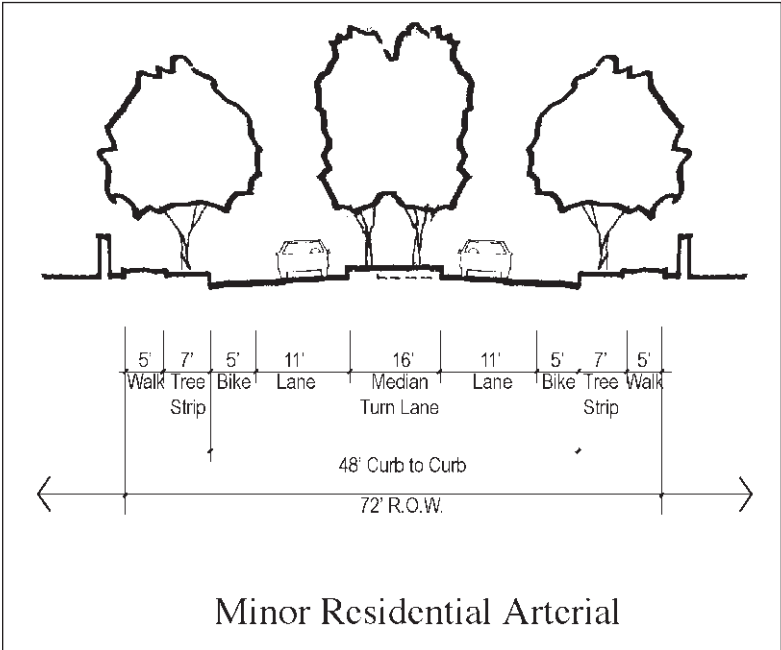


**Cross Section 7**

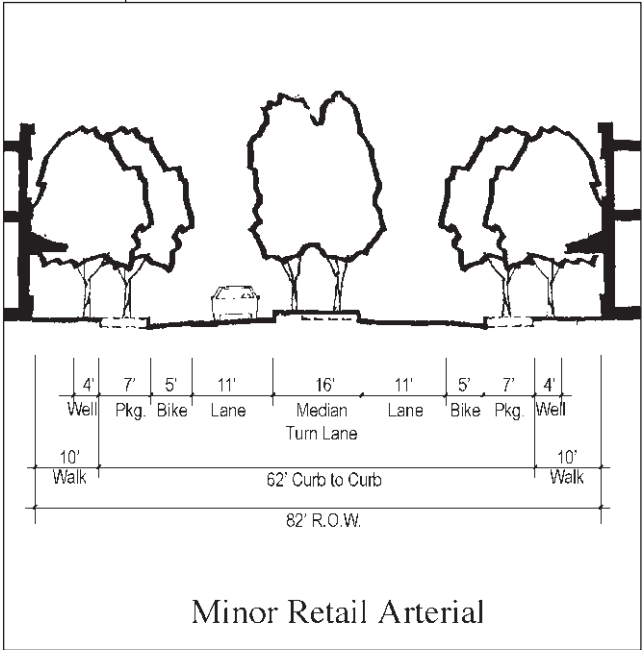




**Cross Section 8**  
This section is appropriate for Rainbow Blvd. through the Rainbow Village Center.



**Cross Section 9**  
Universe has two drive lanes (one each direction) and one median / turn lane. Bike lanes are also incorporated.

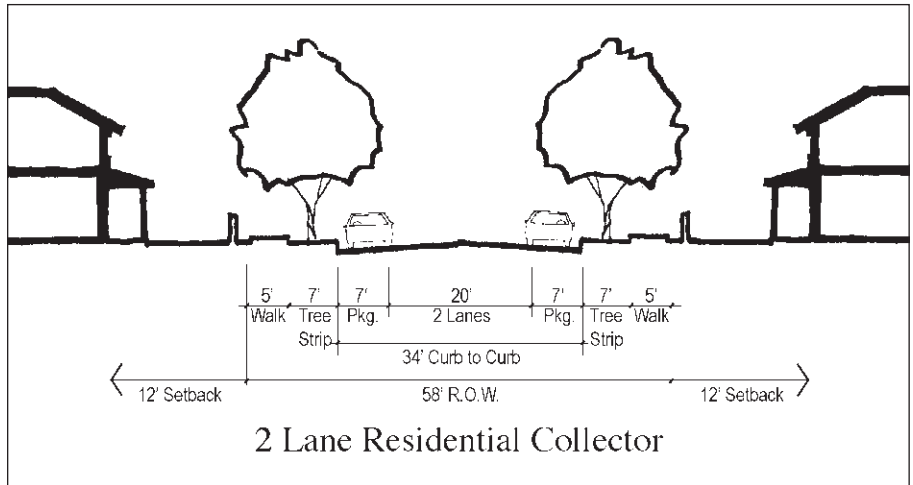


**Cross Section 10**  
Where urban uses like retail uses, apartments or townhouses are anticipated, parking lanes should also be provided.

**Collectors.** Collectors have two 10 foot travel lanes and parking lanes. Collectors are key to creating an outdoor room effect in the interior of pedestrian-oriented centers.

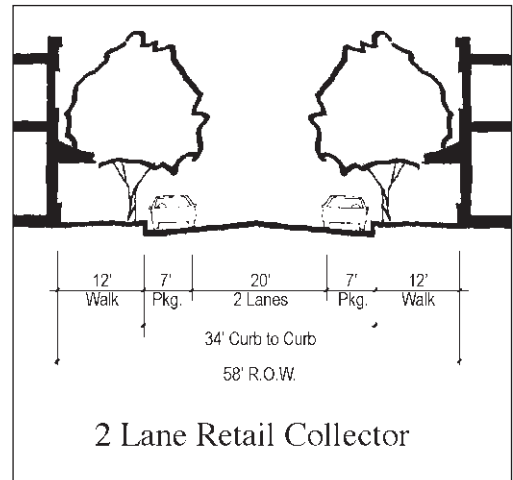
- **Retail Collector.** “Main streets” establish conditions favorable for creating shopping streets with abutting retail or other commercial uses. On-street parking is provided to support street-facing commercial uses. With higher levels of pedestrian activity, sidewalks with tree grates extend to the curb.
- **Collectors–Typical.** Collectors have on-street parking and sidewalks to support street-facing entrances and uses on abutting parcels (except near major intersections where on-street parking may be eliminated and a turn-lane may be introduced).
- **Collector Parkway.** The Plan recommends the creation of a linear parkway (shown as Town Center Parkway on the Road Network) consisting of a 40 foot landscaped median that extends between the heart of the Town Center to a park just above the Monument escarpment. Collector-level traffic and BRT will be accommodated and will be one-way along each edge of the parkway to maintain a strong connection between the parkway and abutting uses and minimize pedestrian crossing distances. When framed by urban buildings, linear parkways create a strong sense of place. This parkway will also provide a dramatic view of the Town Center to the Sandia Mountains to the east. When on the east side of the park, motorists and pedestrians will also have views of the volcanoes to the southwest.

*Cross Sections for Collectors*

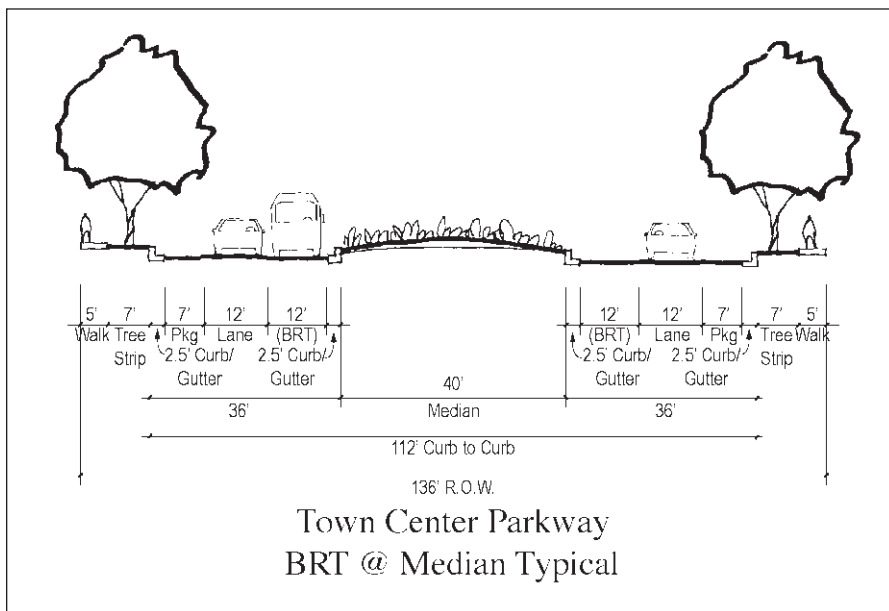


**Cross Section 11**

Collectors have two 10 foot travel lanes and parking lanes as shown in Cross Section 11 and 12. Collectors are key to creating an outdoor room effect in the interior of pedestrian-oriented centers.



**Cross Section 12**



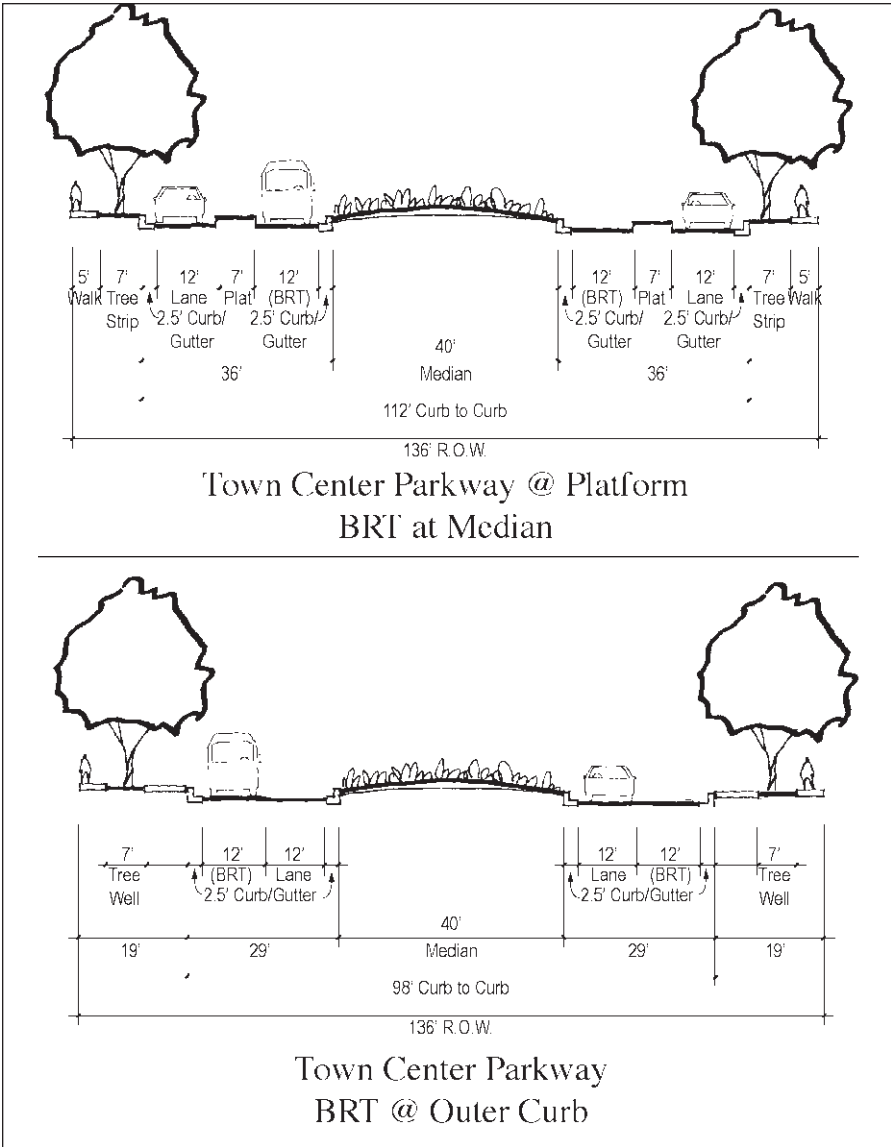
**Cross Section 13a**



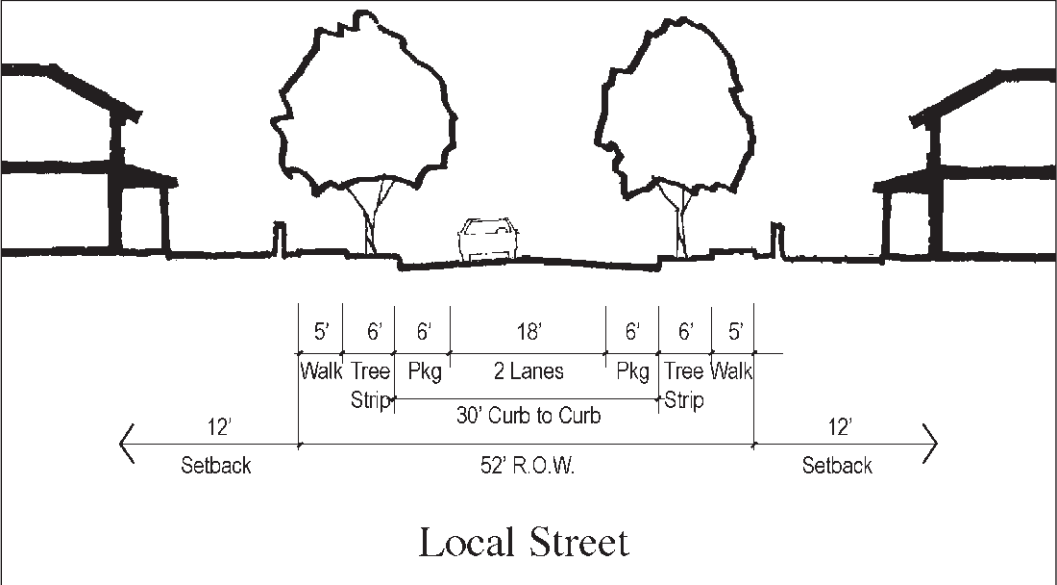
**Cross Section 13b**

**Cross Section 13c**

*Cross Sections for Local Streets*



**Local Streets.** Generally, local streets are not shown on the Road Network map. Local streets have two 9 foot travel lanes, which emphasize pedestrian safety over vehicular speed. With low traffic volumes, conflicts between traffic and parked-car doors are rare, and 6' parking lanes are appropriate. When engineering curves, a maximum design speed of 25 miles per hour should be assumed. If interconnected and frequently spaced, a network of local streets will avoid concentrations of traffic that require wider travel lanes elsewhere.

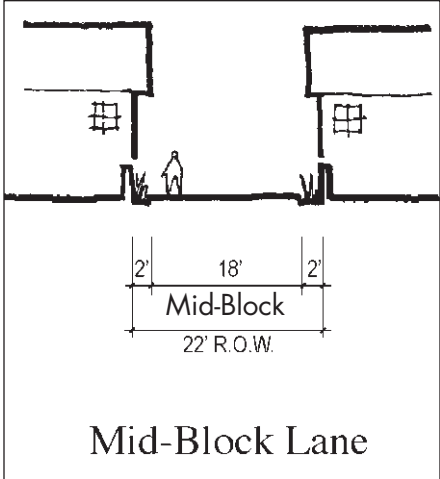


**Cross Section 14**

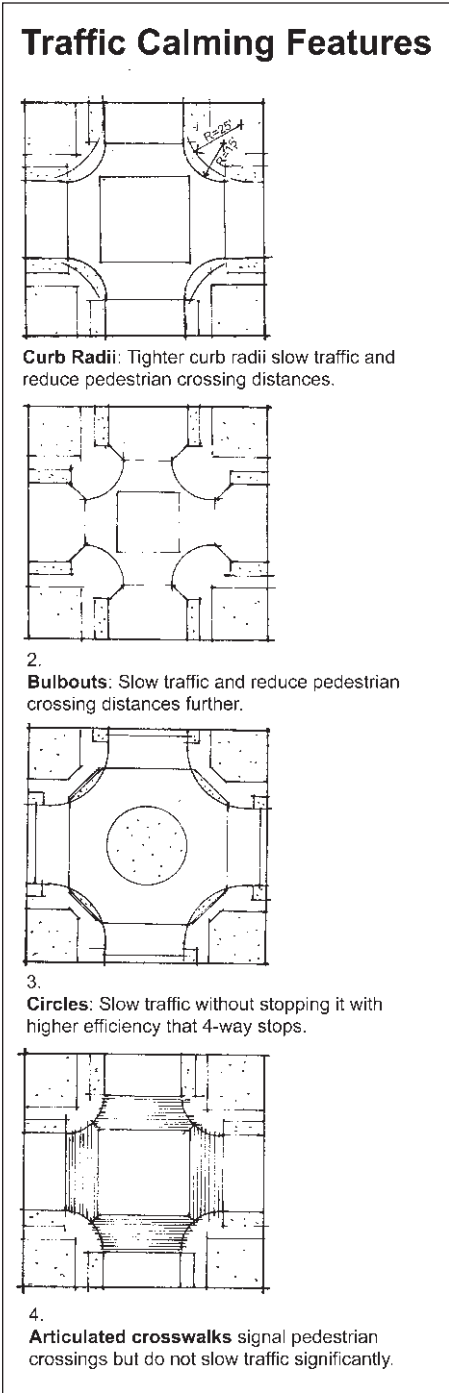
**Parking–Typical.** Where abutting uses have a commercial, industrial, cultural or educational component, and where residential uses exceed a density of 5 dwellings per net acre, parking shall be provided on both sides of the Local Street (except where elimination of a parking lane can help avoid significant natural or archeological resources).

**Parking–1-Side.** Where abutting uses are residential with density less than 5 dwellings per net acre, parking shall be provided on only one side of the Local Street.

**Mid-Block Lanes.** Mid-block lanes provide access to garages and service areas placed behind buildings, thereby avoiding negative visual and transportation impacts of garages doors, parking structures and service areas that face streets. Mid-block Lanes are encouraged in Town Center, Village Center, Main Street, Office and Urban Residential areas. Mid-block lanes should also be used wherever street-facing buildings are desired but curbcuts are problematic, and where buildings front onto open space with no intervening street.



**Cross Section 15**



**Diagram 4**

**Traffic Calming Features**

These features shall be approved for use in the Plan Area in addition to those in the *City of Albuquerque Development Process Manual (DPM)*.

To discourage fast and cut-through traffic, traffic calming should accompany the interconnected street network called for in these standards. A measure of traffic calming will be provided through the use of appropriately dimensioned travel and parking lanes. (Excessive street width has been identified as a major contributor to higher vehicle speeds and a higher incidence of severe injuries.) Additional techniques may be employed to calm traffic, in support of pedestrian safety and convenience.

- **Curb Radii.** To reduce pedestrian crossing distances and slow traffic curb radii shall not be more than 15 feet, except where no pedestrian crossing is expected, significant truck or bus traffic is expected; or where there are special demands for acceleration or deceleration. Where curb radii exceed 15 feet, other measures should be considered to support pedestrian safety.

- **Bulbouts.** Bulbouts extend curbs and replace parking lanes. They are especially warranted at intersections and other pedestrian crossings in areas with: high pedestrian activity; where motorists need to be alerted that they are entering a pedestrian-oriented area (e.g. “gateway” locations), and where pedestrian refuge and short crossing distances are critical (e.g. near facilities for children or senior citizens).
- **Offset Intersections.** Travel routes that force turns because of offset intersections, slow traffic and discourage cut-through traffic. For special places such as locations of civic buildings, intersections should be offset by at least 100 feet, unless the road geometry provides adequate sight lines. Offset intersections also provide special vista opportunities for parks, civic buildings, building entries, monuments, or exceptional architecture.
- **Circles.** Traffic circles slow traffic while offering capacities for turning movements that usually exceed conventional 4-way intersections. Circles can be small enough to be placed in the middle of typical intersections, or large enough to accommodate parking and handle complex intersection geometries. Intersections recommended for traffic circles are shown on the road network.
- **Articulated Crosswalks.** At crosswalks, special visual and physical features can signal the needs of pedestrians to motorists. Articulation can be created through the use of signage, lighting, special pavers, textured concrete, and highly reflective paint. Where traffic volumes are low and pedestrian volumes are high, crosswalks are to be placed at the same level as abutting sidewalks to make vehicles ramp up to that level and signaling that pedestrians take precedence.

**Arroyo Crossings.** At arroyos, the length of culverts (i.e. the width of bridges) should be minimized by eliminating both the median and landscape strips. Bridge concrete, railings and barriers should be brown.

**Landscaping.** Street trees and landscaping improve pedestrian comfort and contribute to the image and identity of Volcano Heights and its districts. Street trees should be spaced not less than 40 feet on center.

See section “VI. 5. Open Space” for a more detailed description of landscaping appropriate for streets. For each type of street in Volcano Heights, there should be a preferred palette of trees, shrubs, groundcover, light poles and light fixtures. (Street types are noted at the beginning of “Transportation”). The City of Albuquerque should undertake the creation of this palette from the Xeric Plant List (See “V. 5. Appropriate Planting Lists”). It is anticipated that some follow-up work will detail special design needs, such as a preferred landscaping palette for each type of street. Finer-scale planning is called for in association with Special Assessment Districts and plans for the Town Center and Village Centers. Masterplanned projects shall submit a proposed palette for consideration by City staff.

**Street Lighting.** (See **Diagram 5, Street Lighting**) Light standards shall not exceed a height of 20 feet on Arterials and Collector Streets, and 16 feet on Local Streets and alleys. Cobrahead light standards shall not be used, except at the largest intersections. On Scenic Routes—and in other locations adjacent to arroyos or the open space buffer adjacent to Petroglyph National Monument—only light bollards should be used, except where a light pole is critical for safety. Light standards should utilize metal standards with a durable, low-luster finish. Fixtures should provide “cut-off” angles and light standards should be positioned to avoid glare into residential units. Specific light standards and fixtures should be identified and approved as part of more detailed Plans.



**Above-Grade Obstructions.** Utility boxes, light standards, newsracks, postal boxes, street furniture, and other potential impediments to pedestrian movement should be positioned to maintain continuous and uninterrupted pedestrian routes.

**Signage.** A signage program should be identified and approved as part of more detailed master plans, and should include monument signage at major gateways (street entries) to Village Centers and the Town Center.

**Sustainable Design.** Street features can improve stormwater quality and permit stormwater infiltration. (See **Diagram 6, Swale Streets**) Typically, curbs and gutters collect and concentrate pollutants, and direct them into pipes that carry pollutants to arroyos, rivers and other waterways. Sustainable design features allow stormwater to be filtered or percolate into the ground, and can reduce the demand for and cost of conventional pipes.

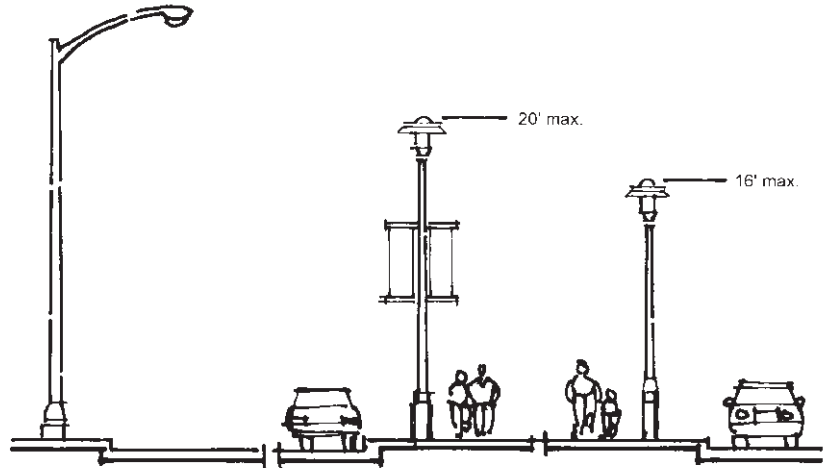
- **Swales With Curbs.** Where streets are abutted by commercial or residential uses in excess of 2 dwellings per net acre, curbs shall accompany swales. Regularly spaced curb inlets or drains shall be used to direct stormwater from gutter to swale.

- **Swales Without Curbs.** Curbless streets allow rain to sheet into streetside swales without interruption. Curbs need not be used where residential densities are less than 2 dwellings per net acre and swales are provided, and where streets abut arroyos. Where streets abut arroyos, gravel shoulders may be substituted for parking lanes. For maintenance, a concrete band shall be poured at the edge of the street to accommodate uninterrupted drainage.

- **Permeable Paving.** Permeable concrete or unit pavers may be used for driveways and parking areas. Permeable pavers should not be used in locations of high use. Porous concrete can be laid above subsurface stormwater storage and infiltration areas to meet discharge needs, and becomes cost-effective in dense urban settings.

### Street Lighting

Must be "night sky" compliant.



Cobraheads prohibited except at the largest intersections.

Required for arterials and collectors.

Required for local streets.

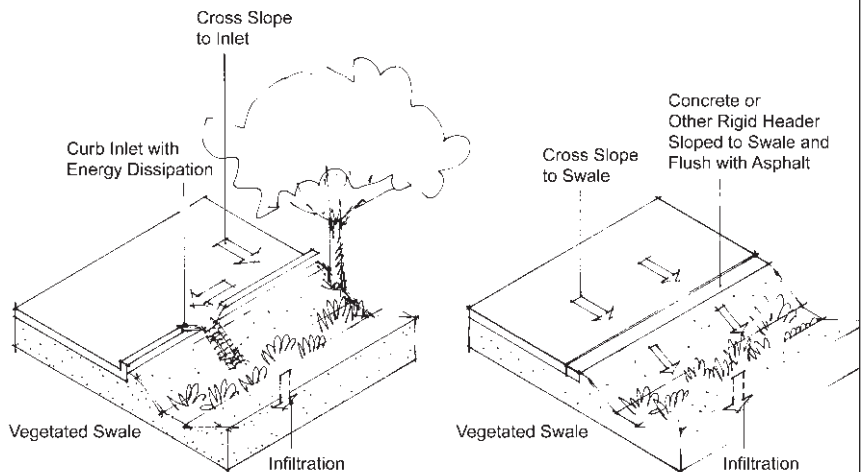
Banners for shopping streets.

**Diagram 5**

### Swale Streets

Urban Curb with Inlet to Swale

Urban Curbless Drainage to Swale



**Diagram 6**

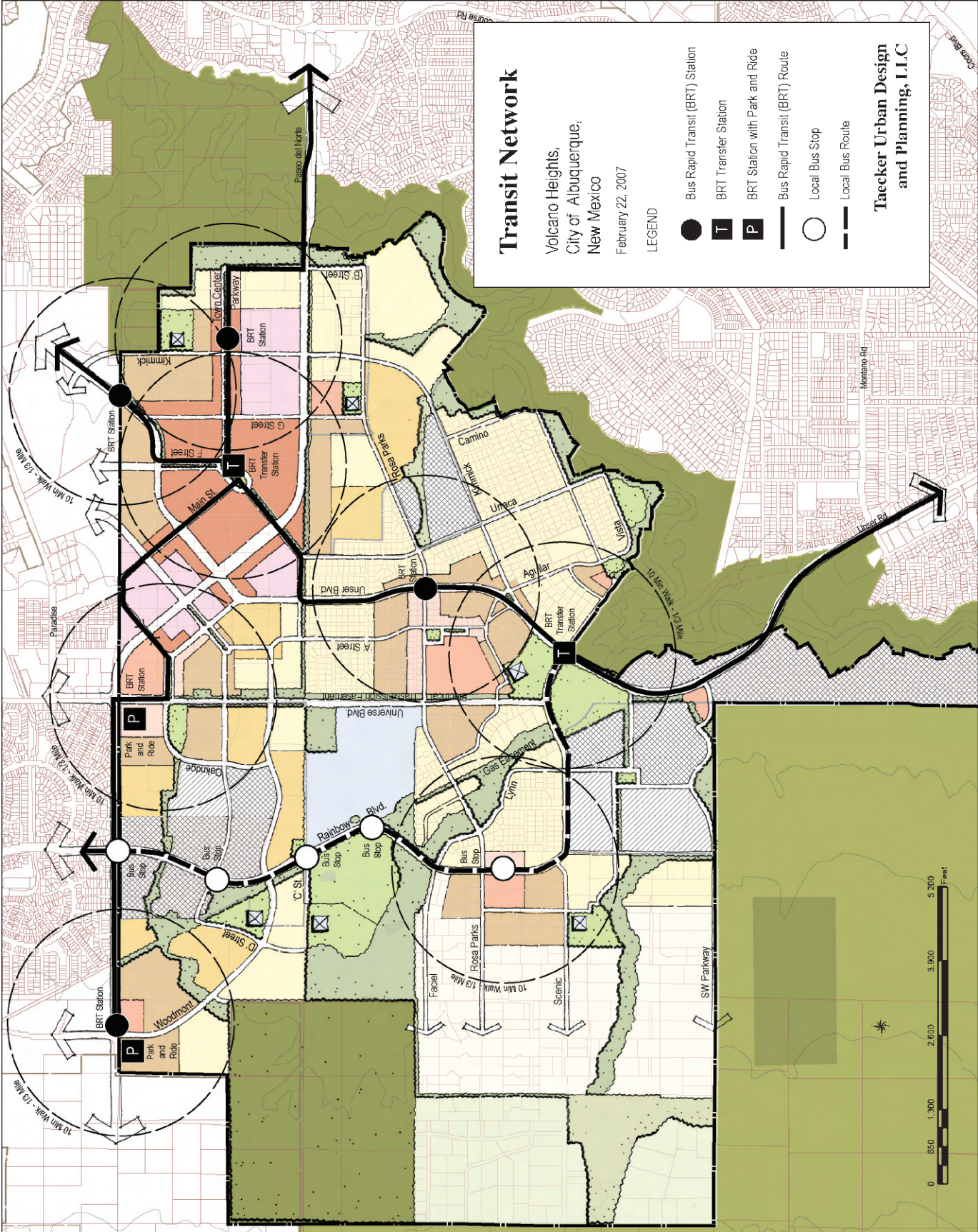
## 4. TRANSIT NETWORK

Transit plays a vital role in reducing regional traffic congestion, but to be widely used it must be fast, frequent, and reliable. Volcano Heights' emphasis on walkability and urban development will make more frequent transit service viable. The Bus Rapid Transit (BRT) system proposed for the area uses dedicated bus lanes and emerging technologies to make travel times competitive with the car. As proposed, BRT would whisk area residents and workers to and from central Albuquerque, and to and from jobs in the I-25 corridor.

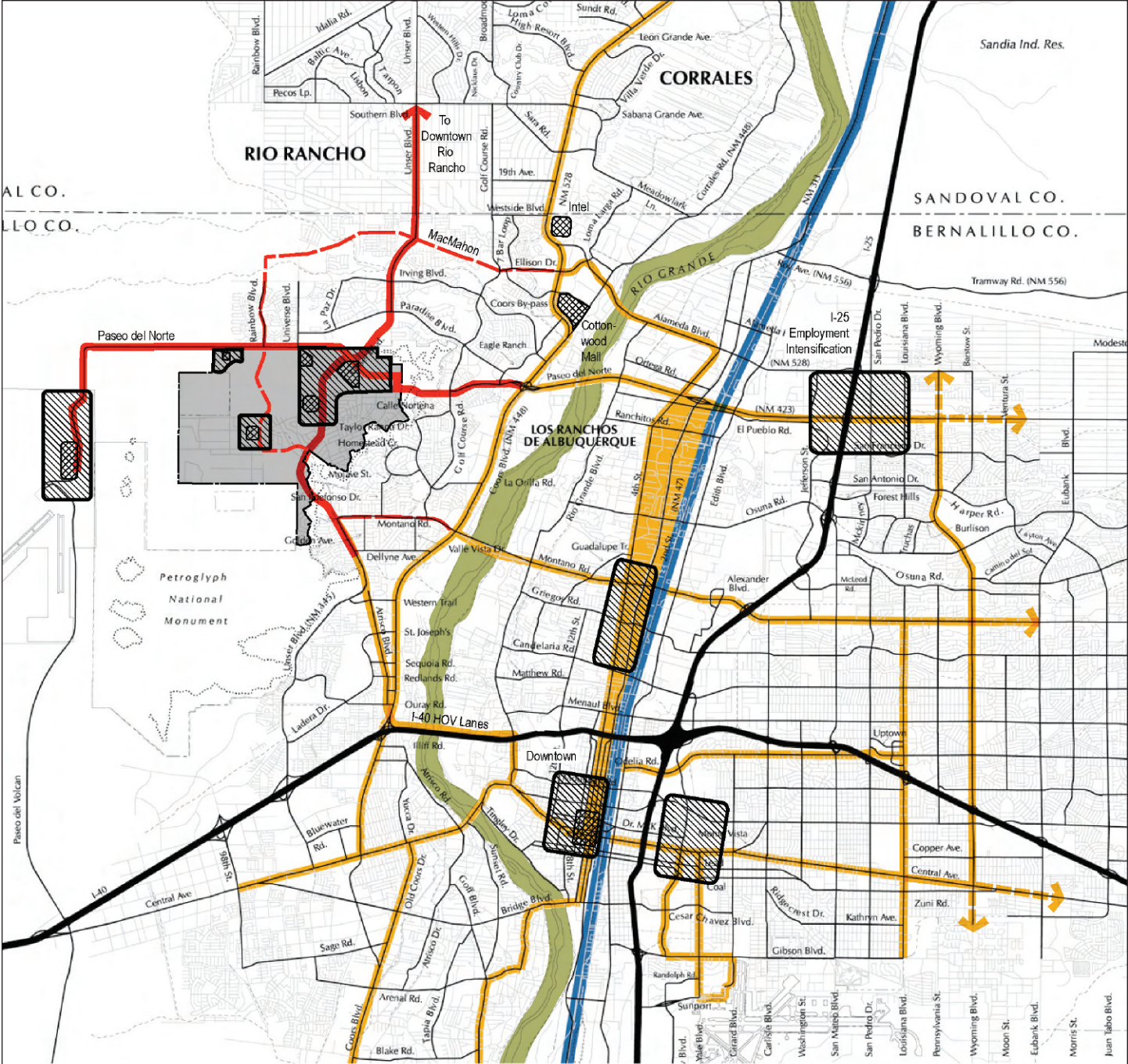
**Transit Network.** The proposed Transit Network is depicted on **Exhibit 22, *Transit Network***. Transit stops and/or stations should be located to maximize the number of residents and workers who can walk less than one-quarter mile to a stop or station. On these routes, crossings of a limited-access arterial or arroyo will need special design treatment to ensure safe and easy pedestrian crossings. Transit stops or stations should be placed near the center of Village Centers, Town Center, and adjacent to where retail conveniences, schools and public amenities are planned. See **Exhibit 22, *Transit Network*** for recommended placement of transit stops, stations, and Bus Rapid Transit (BRT) transfer stations. At the same time reasonably direct routes and acceptable system-wide travel speeds should be maintained.

**Long Range High Capacity Transit Plan.** The map showing transit recommendations at a regional scale is shown as **Exhibit 23, *Proposed Long Range High Capacity Transit System***. The most significant change in the Long Range map is the recommendation to designate Unser as suitable for High Capacity Transit, and to link it within the Plan Area with an extension of BRT on Paseo del Norte extending west of Coors. The roadway design recommendations for Unser and PdN in the Plan incorporate potential for BRT. These Plan recommendations focus on ultimate conditions. Transit improvements may be phased and interim routing may be different than ultimate routes in some locations. The Long Range High Capacity Transit Plan shall be amended to be consistent with adopted recommendations.









**LEGEND**

- Local Bus
- Major Transit Extensions proposed by the Area Plan
- High Capacity Transit
- Interstate Highways
- Commuter Rail
- Districts
- Nodes
- Volcano Heights Plan Area

# Proposed Long Range High Capacity Transit System

May 1, 2006



**Exhibit 23**

Proposed Long Range High Capacity Transit System

**High Occupancy Vehicle (HOV) Lanes & Bus Rapid Transit (BRT).** Travel lanes dedicated solely to buses and other high occupancy vehicles speed travel time for those who car pool or use transit. Paseo del Norte (PdN) and Unser shall be designed to accommodate travel lanes for BRT/HOV lanes, as indicated by Cross Sections 1, 2, 6, and 7. A BRT and future light rail station shall be maintained near the center of the Town Center to enhance its pedestrian- and locational-advantages. Lanes solely for the use of BRT should connect HOV lanes along PdN and Unser with the center of the Town Center, and possibly the Village Center at Universe and PdN.

Impacts of HOV/BRT lanes outside the Plan Area should be studied by the Departments of Municipal Development and Transit to determine how best to integrate these lanes at Ouray and other key intersections east of the Escarpment.

**Transit-Oriented Development.** To attain high transit ridership, transit-supportive uses should predominate within a third of a mile (1,760 feet) of transit stops, including Town Center, Village Center, Main Street, Office, Schools and Urban Residential uses (See **Diagram 7, Transit-Oriented Development**). Consideration should be given to transit system policies, which emphasize more frequent service along high-density corridors.

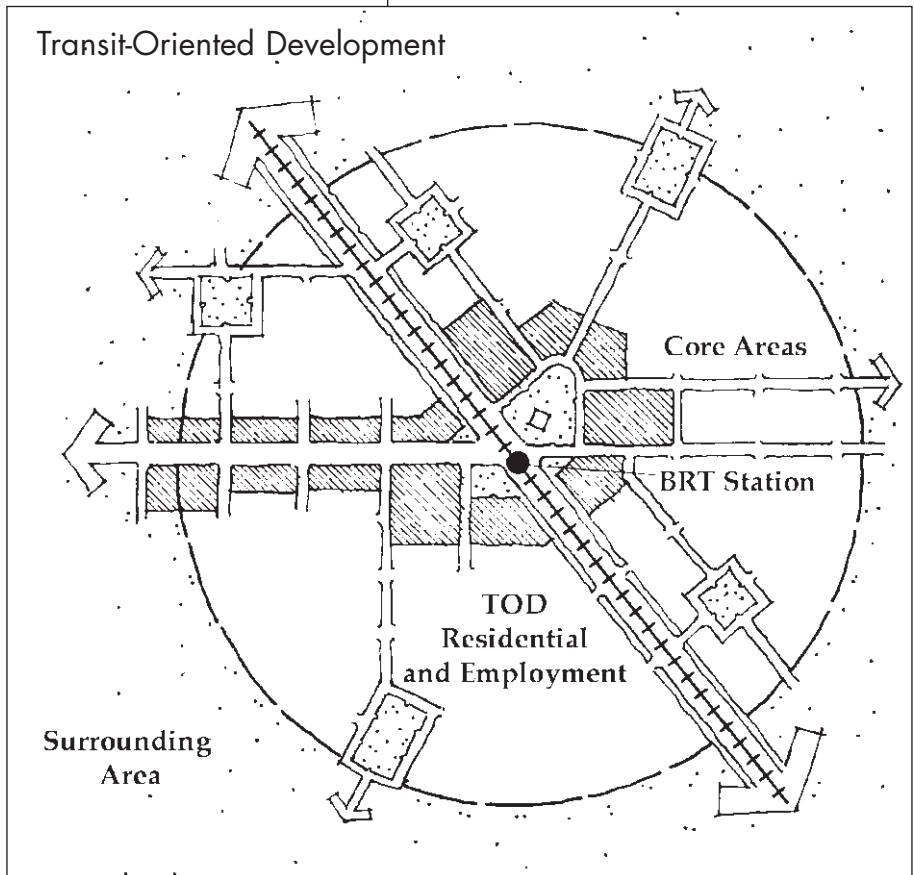
**Convenience and Access.** Pedestrian routes to transit stops should be reasonably direct (along streets and/or off-street paths); circuitous routes should be avoided. Transit stops should be placed near retail conveniences and community amenities.

**Signal Preferencing.** To improve travel times by transit, light signals in the Volcano Heights area should incorporate signal-preferencing technology (“queue jumping”) to give buses priority at intersections.

**Pre-Boarding Fare Systems.** Consideration should be given to technology that requires bus fares to be paid prior to boarding, thereby greatly reducing boarding and transit travel times.

**Transit Centers.** Transfer between BRT routes should occur at a “transit center” near the center of the Town Center; this transit center may also serve local buses and paratransit (like taxis). Transfer between BRT and local bus should be facilitated by a transit center near where Rainbow, Universe, and Unser converge; a more detailed master plan for this area should consider how this “transit center” might be accomplished.

**Park & Ride.** The park where Rainbow, Universe, and Unser converge presents a special “Park & Ride” opportunity, and its design should consider how future parking could be introduced. If BRT on Unser extends beyond the northern edge of the Plan Area, land should be reserved for the creation of a “Park & Ride” lot as a way of intercepting traffic flowing from Rio Rancho and other points to the north. Parking structures can provide greater security for parked vehicles and are desirable at these locations.



**Diagram 7**  
Transit-Oriented Development



**Transit Stop & Station Design.** The approach to transit stops / stations should offer direct pedestrian routes, and be tree-lined and barrier free. Transit stops and/or stations should be designed as prominent focal points, offering well-lighted shelters with attractive architecture, and lying within or adjacent to plazas or other civic features. Shelter may be incorporated within the architecture of adjacent buildings, through the use of arcades or durable awnings. Transit route and system maps should be displayed at all stops / stations. Bicycle storage boxes should be located at major transit stops.

## 5. PEDESTRIAN CROSSINGS

**Overpasses with Vehicular and Pedestrians.** Sidewalks should be provided on both sides of bridges that need to be provided to accommodate vehicular traffic, such as at the extension of Woodmont (aka “A” Street) and Paseo del Norte. Bridges should be well lighted. Decorative metal railings and light standards should be used. Railing should be placed between travel lanes and pedestrian sidewalks, as well as at the edge of the bridge. Metal or fabric shade canopies are encouraged. Where pedestrian paths cross on- or off-ramps, reflective, long lasting, and slip-resistant crosswalks should be provided; in addition, pedestrian crossing distances should be minimized and traffic should be slowed through the use of signage, landscaping and/or break-away bollards.

**Pedestrian Bridges at Paseo del Norte and Unser.** High traffic volumes at this intersection necessitate pedestrian bridges across Paseo del Norte and across Unser. General design features for pedestrian bridges are described below. In addition, bridges at this regionally-significant location should be of exceptional design. An international competition might be sponsored for the design of these bridges, as was done in Redding, California, where a pedestrian bridge by Santiago Calatrava now draws tourists.

**Pedestrian Crossings in Other Locations.** Pedestrian crossings should be provided at signalized and unsignalized (“right-in / right-out”) intersections. Crossings should also be considered where they bring activity centers within walking distance, such as between retail centers, employment nodes, and public facilities.

**Crosswalks.** At signalized intersections at-grade crosswalks should be provided (except at the intersection of Paseo del Norte and Unser). Studies have shown that most pedestrians will not use an overpass or underpass if they can cross at street level in the same (or less) time. While pedestrian overpasses and underpasses eliminate conflicts between pedestrians and vehicles, their long, “uninhabited” crossing distances discourage walking. Overpasses and underpasses also cost a great deal and are visually intrusive.

To minimize increasing vehicle travel times, signals should be synchronized and pedestrian activation required. In addition, pedestrian crossing can be divided into two phases, such that pedestrians cross travel lanes for traffic in one direction during one phase, and then cross travel lanes for traffic in the other direction during the second phase. Pedestrian refuge islands should be provided where possible; refuge islands should be at least 5 feet in width and accompanied by bollards and/or landscaping.

**Pedestrian Overpasses.** The effectiveness of grade-separated crossings depends on how pedestrians perceived ease of access—measured in terms of time / convenience, physical exertion and safety. To the extent possible, overpasses—and their ramps and stairs—should provide a direct route between destinations and centers of activity. Use topography and site

grading to minimize the length of ramps. Stairs should be used in combination with ramps, where circuitous pedestrian routes can be avoided. Consideration should be given to extending overpasses to the buildings that will have an escalator or elevator.

Pedestrian crossings should be of exceptional design. Steel suspension and truss structures are encouraged. Concrete post-and-beam bridges are discouraged.

**Pedestrian Underpasses.** While pedestrian underpasses require less vertical clearance than vehicular underpasses, so ramps can be shorter, underpasses real and perceived security issues discourage their use. Pedestrian underpasses are generally discouraged, therefore, unless accompanied by exceptional design features including: bright lighting, frequent skylights / lightwells, surveillance cameras, vandal resistant walls, and good drainage. Wall surfaces should be visually interesting. Public bathrooms are encouraged near underpasses.

**Pedestrian Barriers near Pedestrian Crossings.** Fences or other barriers may be needed to prevent pedestrians from crossing in locations that are unsafe. Ornate metal fences should be used within and adjacent to the Town Center, Village Centers, Villages and Suburban–Small Lot areas. Post and wire fencing should be used adjacent to Suburban–Large Lot, Executive Residential, and Open Space areas.

## 6. TRANSPORTATION DEMAND MANAGEMENT

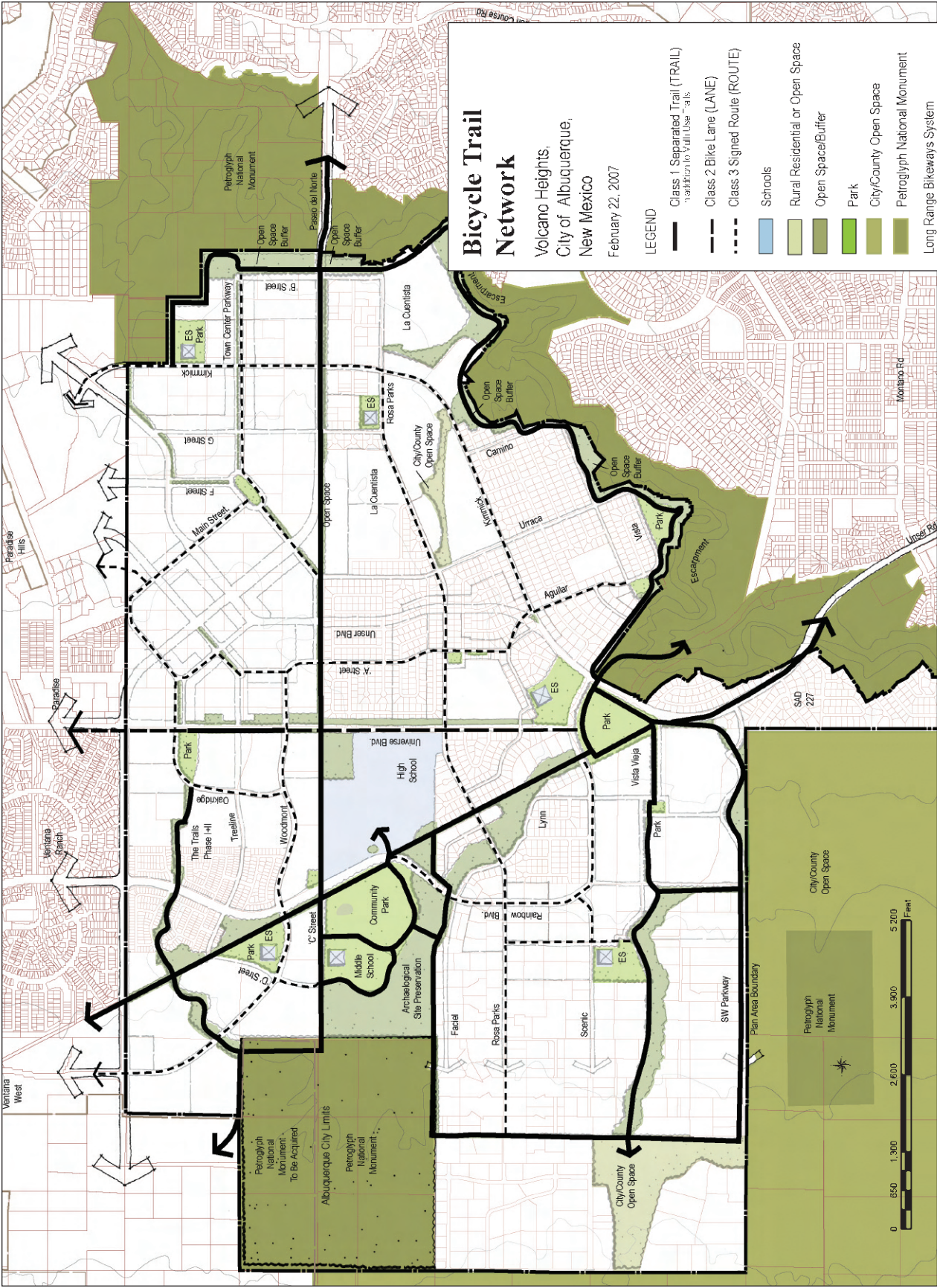
**Comprehensive Programs.** The City should require the preparation and conditions for the implementation of a Transportation Demand Management (TDM) plan, when considering approvals relating to large employers or development projects. TDM provisions support alternatives to the car, by offering incentives for ridesharing, transit use, bicycling, and walking. Incentives may include: reduced parking requirements, reduced development fees, development intensity bonuses; and/or the creation of transportation management associations to coordinate efforts among multiple users in the same area.

## 7. BICYCLE TRAIL NETWORK

The Bicycle Trail Network includes some separated trails that are also part of the Multi-Use Trail system described in the Open Space section (See **Exhibit 24, Bicycle Trail Network**). Separate bicycle trails combined with walking are proposed along the Escarpment edge, along the southern edge of Paseo del Norte, along the former alignment of Rainbow, and along planned open space on the western edges of the Plan Area. A bike lane is proposed along Universe (See **Cross Sections 9 and 10** for *Minor Arterial*). Class 3 bike routes signed for bicycles but without a separate bike lane are recommended for Collector streets such as Rosa Parks, Woodmont, and the Town Center Parkway.

A bike lane has been constructed on the ROW of Unser through the Escarpment. Rather than continuing along Unser to the north, this bike lane connects to a separate bike trail along the former Rainbow alignment. This location is preferred due to safety considerations and the opportunity to combine a bike trail with the multi-use trail system. A bike lane is also shown on Universe which will provide a good alternative bicycle commuter route. This lane also connects with Unser above the Escarpment.

Trail design provisions for bicycles and pedestrians are contained within the Open Space Element.



**Bicycle Trail Network**  
 Volcano Heights,  
 City of Albuquerque,  
 New Mexico  
 February 22, 2007

**LEGEND**

- Class 1 Separated Trail (TRAIL) (Indicated by Full Line Trails)
- - - Class 2 Bike Lane (LANE)
- . - - Class 3 Signed Route (ROUTE)
- ▭ Schools
- ▭ Rural Residential or Open Space
- ▭ Open Space/Buffer
- ▭ Park
- ▭ City/County Open Space
- ▭ Petroglyph National Monument
- ▭ Long Range Bikeways System (classifications shown in parentheses above.)

**Taecker Urban Design and Planning, LLC**

Exhibit 24