Objective 1.0

Complete the creation of a well-connected bicycle network that is safe and convenient for all bicyclists and serves all Austin residents and neighborhoods.

Benchmarks

Complete 50% of bicycle network by 2015, 70% by 2020, and 100% by 2030.

Provide connectivity at 12 network gaps by 2020.

Annually contact adjacent jurisdictions to discuss bicycle system and connectivity improvements needed to realize our proposed system.

BICYCLE NETWORK

Nationally and locally, surveys show that the lack of the provision of bicycle facilities is the primary reason more people do not bicycle regularly. In 1991, the Bicycling Magazine Harris Poll surveyed active cyclists regarding what would encourage them to ride a bicycle to work. The most commonly cited inducement to bicycling to work is safe bicycle lanes (49%) (FHWA, 1992, p. 21). A Seattle survey provides additional evidence that people believe inadequate facilities are the key impediment to expanding ridership. When respondents (bicyclist and non-bicyclist alike) are asked to rank three sets of policy options in order of importance, improved or expanded facilities easily came out on top with 67% of the respondents selecting it as the most important. A local survey conducted as part of the 1992 Austin Bike to Work Day, reveals many similarities to these studies. Each person surveyed was asked what would encourage them to commute by bicycle more often. The top three most frequently mentioned facility improvements included bicycle lanes, street routes, and multi-use paths, suggesting that if Austin had more and better bicycle facilities, more people would use bicycles for transportation. Finally, a study conducted by Jennifer Dill and Theresa Carr reviewed the top 50 cities with high bicycle commuting rates found that the percentage of people commuting by bicycle is significantly associated with bicycle infrastructure, and the miles of on-street bicycle lanes per square mile (i.e., higher densities of bicycle lanes) is positively associated with bicycle commuting (Dill & Carr, 2003, p. 116-123).

Bicycling is a legal mode of transportation with considerable economic, environmental, and social benefits. People who choose to bicycle should not be placed in greater danger than any other legal mode of transportation. To varying extents, bicycles will be ridden on all roadways, making all arterials and collectors part of the bicycle network. All new roadways, except those where bicyclists will be legally prohibited, should be designed and constructed under the assumption that they will service a variety of transportation modes including bicycles (AASHTO, 1991, p. 11). Incorporating accommodations for bicycles in urban planning and development greatly increases the chances for superior bicycle infrastructure, which reduces the risk to cyclists. All new development and construction should therefore be designed to be “bicycle friendly.” (See Appendix A and sidebar on page 69 for Definition.)

Bicycle lanes and road markings contribute to increased sense of safety of bicycling. Not only do bicyclists know where they are supposed to be and feel they have a safe place to bicycle, motorists are also aware of the presence of bicyclists and know where they are going to be (Hallett, Luskin, and Machemehl, 2006).

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The building of bicycle facilities can be simple when planned for and implemented with other transportation projects. While significant improvements have been made, many planning and construction efforts in Austin do not adequately consider bicyclists' needs. Parks and roadways are often built without the simple considerations that would allow bicycle access and parking, causing bicycle provisions to be either excluded or hindered. To accommodate bicycles after construction often requires costly retrofitting, sometimes resulting in a non-standard and inferior design solution. Lack of review for bicycle facilities can result in retrofit facilities that are inadequate. Designing the facilities in coordination with those who maintain them can avoid expensive maintenance in the future and assure a design which will better assure the intended use.

For this reason, bicycle facilities shall be considered at the inception of all new projects and incorporated into the total design of each project. Retrofitting bicycle facilities in completed roadways and development is more costly and generally leads to less desirable results. Planning for bicycles must include recommended routes and facilities that are direct, safe, efficient, and convenient (Oregon DOT, 1992, p. 23). Moreover, because roadways are often built in phases, this plan requires that the interim version of all new or improved roadways also include adequate bicycle access, as approved by the Bicycle Program, using guidelines set forth in this section regarding roadway type and classification of bicyclists, along with consideration of the recommendation in this plan for the segment or considering the abutting segments and their existing and/or planned facilities.

In addition to implementing bicycle facilities in coordination with other transportation projects, the city should be aggressive in developing the bicycle system independently. The reality is that streets are not rebuilt often enough to keep up with the demand for bicycle facilities. If implementation was to rely solely on other transportation projects, then the bicycle system will not be completed by 2020.

Each set of construction documents is held to specific standards. Some of these standards are unique to the particular authority involved. Other standards, handicapped access for example, are applied to all projects by Federal regulation. Added to the inherent complication of design documents, consideration of bicycle provisions as a routine design procedure and construction documents is difficult to ensure. As a result, bicycle facilities are not provided uniformly, and even existing bicycle facilities do not comply consistently with established standards. Therefore, the City of Austin shall be aggressive in coordinating design and construction standards to promote uniformity and consistency throughout the transportation system.

"Bicycle Friendly" means (adapted from Mixed Use Matters, Envision Central Texas Oct. 2008, Page 18):

- Education and encouragement programs that teach motorists to share the road with cyclists and cyclists to ride with motorists.
- Evaluation and modification of roadway treatments for effectiveness in promoting cycling.
- Evaluation and modification of roadway crossings to make them safer, especially at key intersections.
- Bicycle route signage that indicates distances to major destinations.
- Varying bicycle facilities per land use characteristics, right-of-way, traffic volume, speed and composition, on-street parking, and roadway grade.
- Design for level of experience: off-road multi-purpose trails or neighborhood streets for new/young riders and on-road facilities for experienced riders.
- A network of bicycle facilities on designated arterial streets.
- Employee bicycle parking in a garage or other covered, safe area. Short term bicycle parking located close to the front door.
- End-use facilities for cyclists that become pedestrians that minimizes conflicts with others. Includes provision of adequate space and signage.
- Management of buildings and campuses in a style which promotes bicycling.

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Park Planning and Bicycle Routes Planning - The Lessons of Butler (Town Lake) Park

In 2005, the City of Austin gave final approval to the construction of Butler Park, after a long delay owing to a downturn in the economy. There were several pieces to the project which resulted in a reduction of bicycling facilities related to the park development, namely:

- The reduction of Riverside Drive between South Lamar and South First Streets (an east/west bicycle route) from two lanes in each direction to one lane in each direction without the addition of bicycle lanes.
- The elimination of Dawson Street between Riverside Drive and Barton Springs Road (a north/south bicycle route) for a parking lot.
- The posting of “No Bicycling” signs in portions of the park that had increased pedestrian uses, namely the Butler interactive fountain.

These elements were missed during the public input and design process. As a result, as construction took place and bicycling advocates as well as the City Bicycle and Pedestrian Program were alerted to the removal of facilities, the following facilities were added into the project:

- A wide multi-use path running along the south side of Riverside Drive.
- Bicycle and pedestrian crossings at several points, including the Z crossing at the old intersection of Dawson Street and Riverside Drive.
- The “No Bicycling” signs placed at various sites around the park, were removed and bicycle mobility was restored in key areas.

The good news is that some changes were made around Butler Park to accommodate bicycling and that other projects, namely the Sandra Murida Way, Pfluger Bridge Extension, and the Sand Beach park have proceeded with a lot more input from a broader group of stakeholders as well as input from multiple City departments in regards to the integration of bicycle access.

Adapted from input from Charlie McCabe, Austin Parks Foundation Executive Director and 2007-2008 Chair of the City of Austin Bicycle Advisory Council

An analysis of the existing bicycle network shows that many of the City’s existing bicycle network is disconnected. The action items in this section aim to create a comprehensive, connected bicycle network.

Types of Bicycle Facilities

Bicycle network facilities include the infrastructure on which bicyclists travel. There are several facility treatments that can be classified into eight types of bicycle network facilities: bicycle lane, wide shoulder, wide curb lane, shared lane, bicycle boulevard, multi-use path, bikeway, and protected bicycle lane. Below, each bicycle facility category is briefly described. Further information regarding bicycle facility design and a list of documents containing best practices in bicycle facility design are include in Appendix F.

*"The bicycle **network** is more than iust bike lanes: **innovative solutions** are the key to solving some of the gaps in the **Austin** bicycle network."*

-Street Smarts Task Force, Final Report, p. 11

Bicycle Lane

Bicycle lanes delineate the right-of-way assigned to bicyclists and motorists (AASHTO, 1999). They are designated by a lane stripe, pavement markings, and signage. Bicycle lane stripes are intended to promote the orderly flow of traffic by establishing specific lines of demarcation between areas reserved for bicycles and lanes to be occupied by motor vehicles. Typically, the solid stripe of the bike lane is either dropped or dashed prior to and through intersections, to allow for both bicyclist and motorist turning movements.

Sidewalks

Sidewalks may be useful as bicycle facilities when: bicycle access is needed and bicycle volumes and/or pedestrian volumes are expected to be low, right-of-way is constrained or there are traffic safety concerns (high speeds, high volumes, heavy truck traffic). Bicyclists should not travel faster than the design speed of the sidewalk (approximately 5-10 mph). Sidewalk bike routes should not result in bicyclists riding opposed to motor vehicle traffic. Due to limited opportunities for alternative facilities and other considerations, this plan recommends considering the use of sidewalk facilities with special attention required in the design process to ensure user safety.

Multi-use Path/Trails Designated for Bicycle Use

A multi-use path or trails designated for bicycle use is a path physically separated from motorized vehicular traffic by an open space or barrier and is located either within the road right-of-way, within an independent right-of-way, or accommodated in another way, such as parkland. It is shared by multiple users including, but not limited to, pedestrians, skaters, wheel chair users, and bicyclists.

Surface type is a critical component of multi-use paths. Generally, two types of surface treatments are used: crushed granite and hard surface pavement. Although decomposed or crushed granite can make a reasonable surface in good conditions, it is not suitable for all applications and can be hazardous or difficult for narrow bicycle tires. Depending on the anticipated use and its location, one surface treatment may prove to be preferred over the other.

Intersections

Designing intersections to accommodate bicycles is one of the biggest challenges in retrofitting streets for bicycle transportation.

Bicycle lanes can complicate turning movements at intersections as they encourage bicyclists to keep right and motorists to keep left, regardless of their turning intentions.

Bicyclists turning left from a right side bicycle lane and motorists turning right from a position to the left of the bicycle lane are both maneuvering contrary to the normal rules of the road. This problem can be addressed by ending bicycle lanes in advance of intersections, or by striping the lane with a broken, rather than a solid white line in advance of the intersection.

Bicycle Facilities


Bikeway


Bicycle Boulevard


Bicycle Lane


Protected Bicycle Lane


Multi-Use Path


Sidewalk


Shoulder


Wide Curb Lane


Shared Lane

<u>Bicycle Boulevard</u>

Bicycle boulevards are not just signed bicycle routes, but are streets on which bicycles have preference over cars and designed in a way to effectively divert motorized traffic. Design elements that may be included are diverters, reconfiguration of stop signs to favor the bike boulevard, traffic calming and shared lane markings, as well as crossing improvements at high traffic crossings. Automotive traffic still has access to residences or businesses, but traffic control devices are used to control automobile traffic speeds and access while supporting through bicycle traffic.

Bikeway

A bikeway is defined as a road, path or way, not necessarily within the roadway that in some manner is specifically designated for the exclusive use of bicycles.

Protected Bike Lane

A bicycle lane that is separated from traffic with a row of parked cars, a curb, or other physical separation.

Bike/Bus/Taxi Shared Lane

A travel lane that is restricted to the use of bicycles, buses, or taxis.

Climbing Bicycle Lane

A climbing bicycle lane is marked on one side of the road and benefits cyclists going up hill at slower speeds.

Shoulder

A shoulder is defined by AASHTO as “the portion of the roadway contiguous with the traveled way for accommodation of stopped

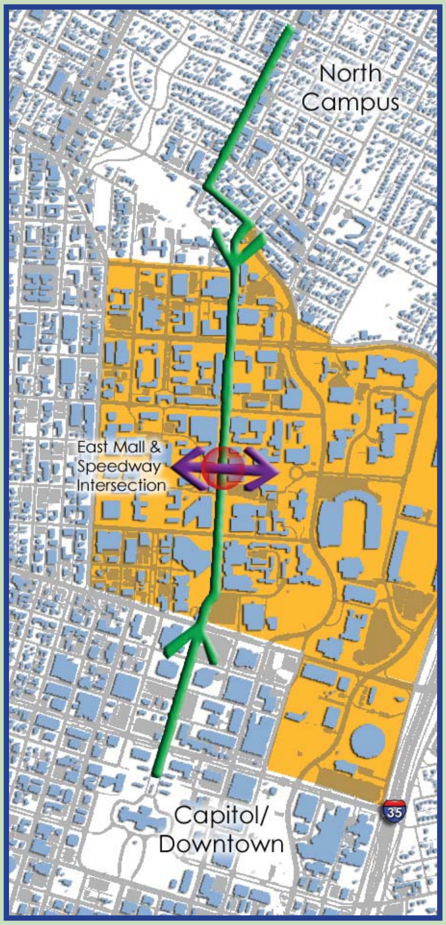
Speedway Bicycle Boulevard

Speedway already has many aspects of a bicycle boulevard. Vehicle movements are restricted by the Capitol and through UT campus, and UT has pedestrian / bicycle only zones. Speedway is an important connection among Downtown, UT, and the North Campus student center, making it an ideal place for a heightened awareness for bicyclists.

The UT Bicycle Plan speaks to Speedway as a pedestrian mall, where bicycle travel will be discouraged, but not prohibited. Because of the characteristics of Speedway as a bicycle boulevard and its strong connectivity to the heart of the UT campus from downtown, the Capitol, and residential areas north of the UT campus, it is important to continue to provide bicycle access along Speedway.

Because of the need to provide pedestrian access as well, there is potential for bicycle-pedestrian conflict along Speedway. The most troublesome area along Speedway for bicyclists is where Speedway and the East Mall intersect. Between classes, there is a significant amount of east-west pedestrian movement across Speedway, which creates conflict between the bicyclist and pedestrian. In this zone, bicyclists are often forced to dismount their bicycle out of necessity to avoid a collision with a pedestrian. This conflict should be resolved to allow bicycle use along Speedway.

The City of Austin Bicycle and Pedestrian Program will work closely with the University of Texas and student organizations to ensure that accessibility to the UT campus via bicycle is enhanced as much as possible, and that Speedway remains accessible and safe for both pedestrians and bicyclists.



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vehicles, for emergency use, and for lateral support of the subbase, base, and surface courses." (AASHTO, 1999) A shoulder can accommodate bicyclists if it is adequate in width and pavement surface and has few driveways or other crossings. Texas legal code allows continuous use of the shoulder only by bicycles, emergency vehicles, and maintenance crews.

Shared Lane

Shared lanes are the right-most through traffic lanes that are 14 feet wide or less, measured from the lane stripe to the edge of the gutter pan.

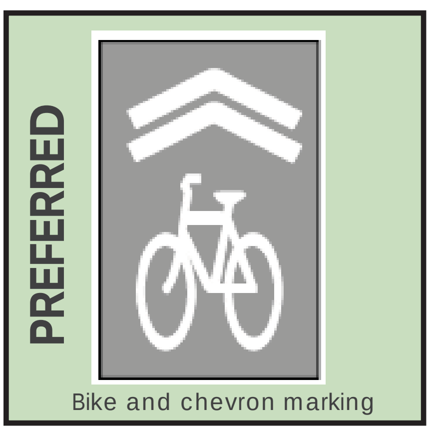
Wide Curb Lane

Wide curb lanes are the right-most through traffic lanes that are greater than 14 feet wide, measured from the lane stripe to the edge of the gutter pan.

Shared Roadway

A shared roadway is any roadway upon which a bicycle lane is not designated, is not a bicycle boulevard, and that may be legally used by bicycles regardless of whether such a facility is specifically designated as a bicycle route. Shared roadways can be described in three ways: shared lane, wide curb lane, and paved shoulder.

The Preferred Shared Lane Pavement Marking



Bike and chevron marking

Source: FHWA, 2006, p. 234

Shared Lane Markings

Shared lanes, wide curb lanes, and paved shoulders have limited pavement or right-of-way widths that prevent the feasibility of installing a bicycle lane in the short term or ever.

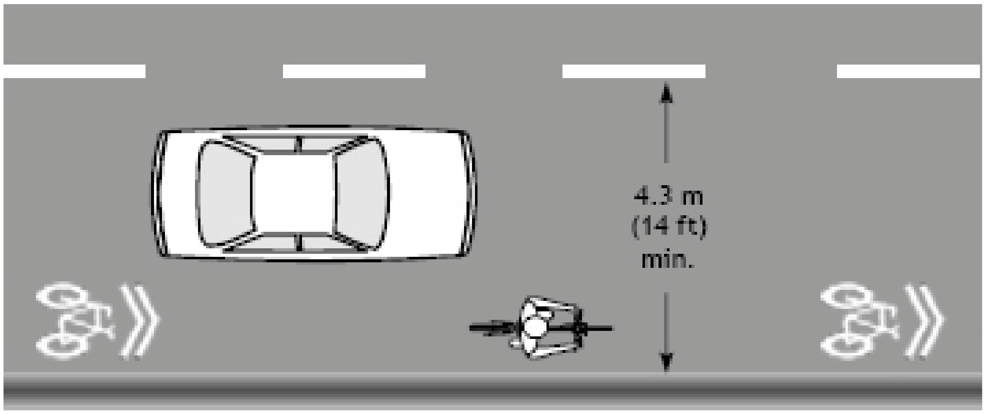
To address this issue, several cities across the U.S. are using shared lane markings, or "sharrows", to indicate where within the shared lane a bicyclist should be positioned. Sharrows encourage bicyclists to not ride on sidewalks and to ride away from parked cars. Like signage, they notify motorists that bicyclists may be present.

At adoption of this Plan, the National MUTCD has not yet adopted sharrows as an accepted traffic control device. The FHWA is anticipated to approve the use of the Shared Lane Marking in 2009, based on NCUTCD Technical Committee recommendations on their use. Currently, cities and states are allowed to use them experimentally; standards for their use are described below.

National Committee on Uniform Traffic Control Devices (NCUTCD)

The Bicycle Technical Committee of the NCUTCD, suggests the following guidelines for use of shared lane markings:

"If used in a shared lane with on-street parallel parking, Shared Lane



Shared-lane markings

Markings shall be placed so that the centers of the markings are a minimum of 3.3 m (11 ft) from the curb face, or from the edge of pavement where there is no curb.

"Shared Lane Markings shall not be used on shoulders or in designated bicycle lanes.

"The shared Lane Marking should not be placed on roadways with a speed limit above 55 km/h (35 mph).

"When used, the Shared Lane Marking should be placed immediately after an intersection and spaced at intervals not greater than 75 m (250 ft) thereafter.

California MUTCD

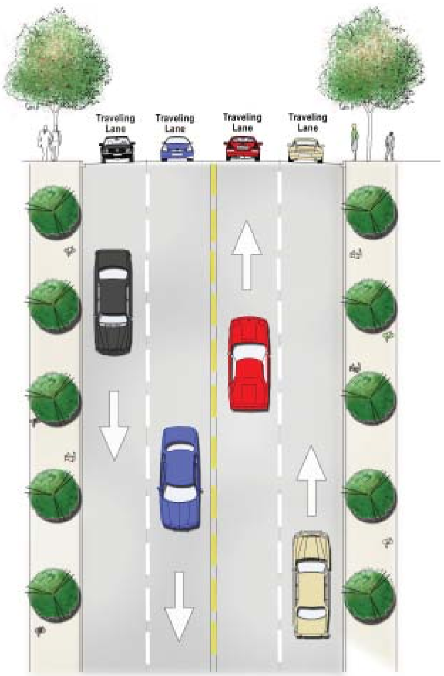
According to the California MUTCD (CMUTCD), "shared roadway bicycle markings shall only be used on a roadway (Class III Bikeway (Bike Route)) or Shared Roadway (No Bikeway Designation) which has on-street parallel parking. If used, shared roadway bicycle markings shall be placed so that the centers of the markings are a minimum of 3.3 m (11 ft) from the curb face or edge of paved shoulder. On State highways, the shared roadway bicycle marking shall be used only in urban areas.

"If used, the shared roadway bicycle marking should be placed immediately after an intersection and spaced at intervals of 75 m (250 ft) thereafter.

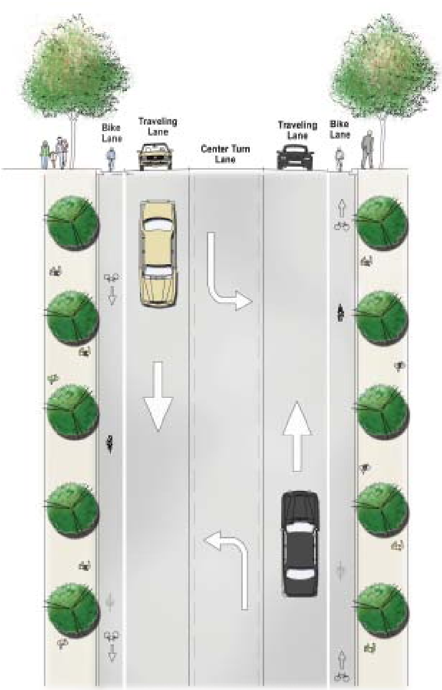
"If used, the shared roadway bicycle marking should not be placed on roadways with a speed limit at or above 60 km/h (40 mph).

"Where a shared roadway bicycle marking is used, the distance from the curb or edge of paved shoulder may be increased beyond 3.3 m (11 ft). The longitudinal spacing of the markings may be increased or reduced as needed for roadway and traffic conditions" (California DOT, p. 9C-5).

Graphical Representation of a Road Diet



Street before a road diet



Converted street after a road diet

Other Tools for Installing and Improving Bicycle Facilities

In conjunction with installing bicycle facilities, road diets and traffic calming are two techniques that can be utilized to install and/or improve bicycle facilities.

Road Diets

A road diet is a type of roadway conversion project where travel lanes are removed from a roadway and the space is utilized for other uses and travel modes, including bicycle lanes. Road diets have other benefits beyond improving the bicycling environment of a street. According to the *Road Diet Handbook: Setting Trends for Livable Streets*, "the resulting benefits [of a road diet] include reduced vehicle speeds; improved mobility and access; reduced collisions and injuries; and improved livability and quality of life" (Rosales, 2006, p. 3).

Potential road diet conversion projects should be evaluated on a case-by-case basis. Criteria has been identified of "best model projects" for road diet conversions, identified on page 76. Recent research identifies other factors that affected the success of a road diet project.

Literature and case study research has established guidelines for selecting road diet conversion projects (Rosales, 2006). These factors include:

- **Roadway function and environment**. What is the existing and intended function of the roadway? What are the roadway constraints (e.g., right-of-way)?
- **Overall traffic volumes and flow**. Evaluate peak hour and average daily traffic volumes. According to Dan Burden and Peter Lagerway, "the ideal road diet locations have four lanes and carry 12,000 to 18,000 trips, potentially up to 25,000 trips" (Burden & Lagerway, 1999, p. 3). An acceptable level of change in operations should be determined locally (Rosales, 2006, p. 105).
- **Turning volumes and patterns.** Turn volumes and patterns can affect operational and safety characteristics of a road and should be evaluated.
- **Frequent stops and slow-moving vehicles.** The presence of slow-moving vehicles, such as buses, trucks, or delivery vehicles, can significantly slow traffic and impact traffic flow of a roadway. According to Rosales, "approximately 50% of speed reduction when comparing speeds on three-lane to four-lane roadways occurs at or above 20% heavy vehicles" (Rosales, 2006, p. 106).
- **Weaving, speed, and queues.** The need to decrease the weaving (lane changing) and speed of a roadway can affect the decision to implement a road diet project. Additionally, the operational impact

a conversion has on vehicle delay may also impact this decision and should be reviewed.

- **Crash types and patterns.** Several studies have found that “road diets can reduce crash rates and the number and severity of crashes” (Rosales, 2006, p. 106). Therefore, a road diet conversion could be a potential solution for roads that have high crash rates.
- **Pedestrian and bicycle activity.** By decreasing motor vehicular speed and reducing the number of lanes, the roadway environment is improved for pedestrian activity. The potential for road diets to result in the installation of bicycle lanes improves the bicycle environment as well. The effects of a roadway conversion on pedestrian and bicycle activity may influence a road diet’s feasibility.
- **Right of way availability, cost, and acquisition impacts.** When right-of-way, costs, and acquisition are constraints for a roadway project, a road diet could be a more feasible solution since road diet projects can be designed and implemented by simple re-striping.
- **Presence of parallel routes.** Road diets have the potential to divert traffic onto alterative routes and streets. According to Rosales, “road diet studies have shown traffic diversion ranging from 2 to 15%, which has not been reported as a problem in most jurisdictions” (Rosales, 2006, p. 108). The impact that a road diet project may have on parallel routes should be evaluated.

Roadway Characteristics for Road Diet Conversion Projects

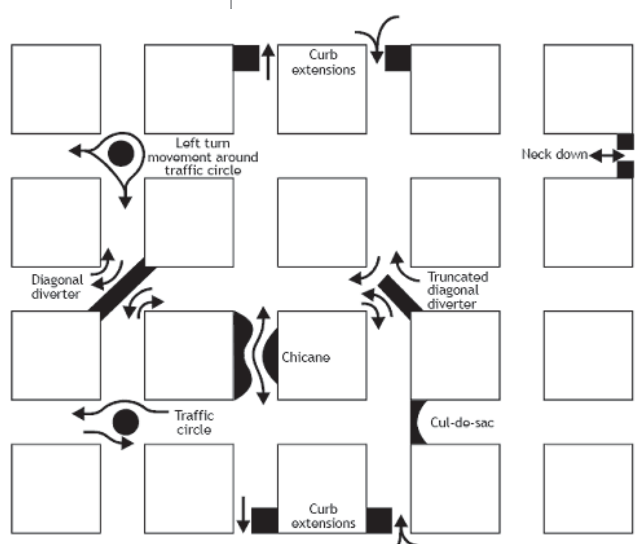
The following indicate characteristics of best practice road diet conversion projects:

- Moderate motor vehicle volumes (approximately 20,000 ADT)
- Roads with existing safety issues
- Streets with residential frontage
- Commercial reinvestment areas
- Without frequent bus traffic
- Economic enterprise zones
- Entertainment districts
- Historic streets
- Scenic roads
- Main streets

Adapted from: Burden & Lagerway, 1999, p. 7 and Rosales, 2007

Traffic Calming

When it is not possible to install a bicycle lane, traffic calming may improve the bicycling environment. Traffic calming devices are used to reduce motorized vehicle speeds, improve the environment and livability of a street, and provide real and perceived safety for non-motorized users of a roadway. The City of Austin Neighborhood Traffic Calming Program utilizes a variety of traffic calming devices, including: speed cushions; traffic circles; chicanes; semi-diverters; and curb extensions. The Federal Highway Administration (FHWA) identifies other traffic calming devices, such as roundabouts, bulb-outs, center islands, and median barriers. Bicycle boulevards may also serve as a traffic calming device.



An FHWA illustration of traffic calming devices.
Source: FHWA, 2006, p. 325

It is questionable whether traffic calming benefits bicyclists or causes more problems. According to the Pedestrian and Bicycle Information Center, bicyclists are concerned that some traditional traffic calming techniques (narrowing streets and speed cushions) have a negative impact on

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bicyclists: narrowing streets force motorists to drive closer to bicyclists when passing and speed humps are uncomfortable to bicyclists and may cause drivers to swerve around to the edges (possibly into a bicyclist) to avoid the speed hump (PBIC, Traffic Calming, para. 5).

However, a report written by Andrew Clarke and Michael Dornfeld in 1994 as part of the National Bicycling and Walking Study concluded that “the experience from Europe clearly shows that bicycle use has been encouraged by traffic calming” (PBIC, Traffic Calming). If designed and implemented properly, with consideration for the impacts on bicyclists, traffic calming devices can have beneficial impacts for bicyclists and pedestrians.

The Bicycle Program shall work closely with the Traffic Calming Program regarding the application of traffic calming devices on bicycle routes in this Plan.

Lane Diets

Lane diets occur through the narrowing of existing lanes to accommodate a bicycle facility.

Bicycle Network Users

Establishing the bicycle network of on and off-street facilities depends on who’s riding and where they are riding. There are two categories of bicycling purpose: utilitarian and recreational. Within each of these, bicyclists are classified based on their skill level: Class A – Advanced; Class B – Beginner or Novice; Class C – Children. Depending on the purpose of the bicycle trip or the expertise of the cyclist, needs of the network change. Recreational bicyclists may be content riding on separated multi-use paths through parks and greenbelts, while utilitarian bicyclists require direct access between their points of origin and destination. Also, both advanced utilitarian and recreational bicyclists may be comfortable riding on streets with the traffic (however their comfort and safety may be enhanced by improved markings and signing), while Class B and C riders prefer a designated bicycle lane, a protected bicycle lane, or even a facility completely separated from vehicular traffic. However, in many instances bicycle facilities that are designed for recreational use are used for commuting, and vice versa. Therefore, on and off-street facilities should be connected to facilitate movement of all bicyclists, and the needs of all users must be considered when building the bicycle network.

A new multi-use path in Mueller.

The directness provided by arterial and collector roadways is vital to providing an efficient multi-modal system. Roadways providing facilities for all classifications of bicyclists (child to advanced), such as an off-road multi-use path, bikeway, or separated bicycle lane, coupled with at

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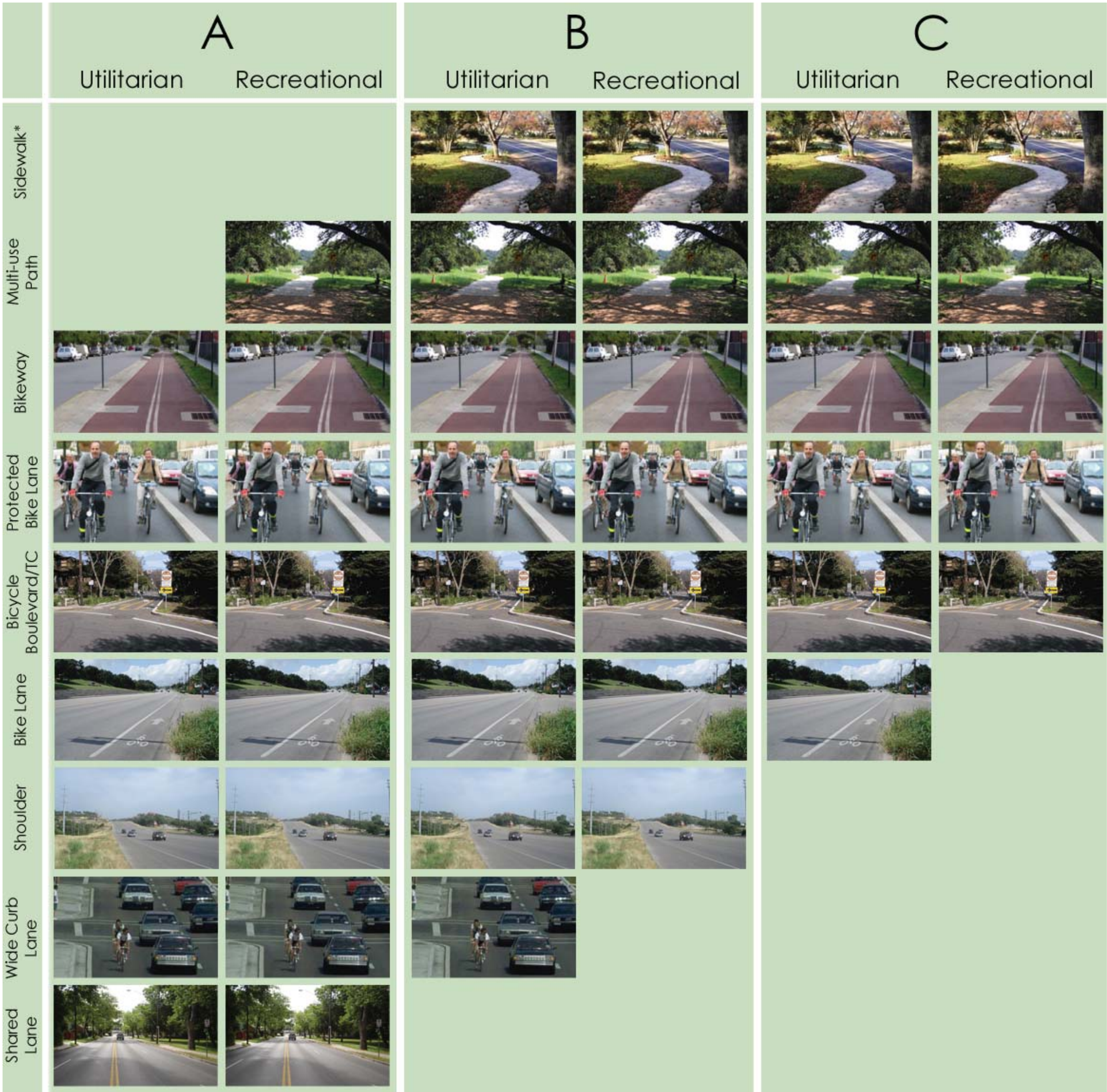

*Except where prohibited by City Ordinance
TC = Traffic Calming

least a wide curb lane, is the best facility to strive for. If there are many destinations connected by the roadway and/or along the roadway, where the assumption is that Class B bicyclists will be present, bicycle lanes should be provided in lieu of wide curb lanes (in addition to the separated facility). Separated bicycle facilities are the entry point for many bicyclists, making them an important tool in increasing bicycle use.

Lastly, forcing cyclists to take circuitous routes through neighborhoods takes away from the attractiveness of choosing a bicycle for transportation. When a separated facility and/or bicycle lane is not feasible on an arterial or collector roadway, or when it is necessary to complete gaps in the system, routing through neighborhoods, using singed and/or marked bicycle streets, is an option. These types or routes, or portions of routes, can complement the arterial/collector network, and provide for completion of routes in areas where route gap solutions are extremely complicated and likely not to be completed in the near future. Figure 2.1 illustrates preferred bicycle facilities for each class of cyclist

Bicycle Planning: The Lessons of the Robert Mueller Municipal Airport Redevelopment

In May 1999, the Robert Mueller Municipal Airport (RMMA) was closed and the transfer of civilian aviation functions was moved to the Austin-Bergstrom International Airport. This allowed for the opening of 700 acres of land situated less than three miles from the downtown core. Redevelopment of RMMA, now called "Mueller," offered Austin a unique opportunity to create a mixed-use, transit-oriented community, employment centers, a variety of residential types and optimal conditions for bicycling and walking. All streets within Mueller are designed to calm traffic, creating comfortable conditions for all levels of bicyclists. The Mueller Plan establishes a network of on-street bicycle facilities on key connector streets and an extensive network of off-street multi-use paths, providing good connectivity and alternative routes for all levels of bicyclists.

Since the redevelopment has started, some lessons have been learned that can be applied to similar future developments within the City of Austin and possibly other cities/jurisdictions:

- New developments should integrate bicycle and pedestrian facilities with existing communities to provide seamless access for bicyclists and pedestrians. Given Mueller's value as a regional destination, the City recognizes the priority of opening up connectivity on all bordering roads, specifically Airport Boulevard, 51st Street, Manor Road, and IH 35. Recommendations in the Austin Bicycle Plan provide for improved bicycle access to Mueller.

Billboard Advertising bicycling at the Mueller Development

- New developments should consider ongoing bicycling and pedestrian access. Despite a multi-phased plan that shows very good non-motorized access in the final phase, this access should be provided as soon as motorized access is constructed, even at the initial phases. For example, the first phase of Mueller Boulevard included only one side of the divided roadway, and did not include final phase bike lanes. Once the roadway is complete, Mueller Boulevard will allow for two-way bicycle lanes, but until this point, bicycles are not accommodated.
- Bicycle parking should be as convenient as motor vehicle parking, per City code section § 25-6-477. To address this point, the Mueller Design Book was amended to require twice the number of bicycle parking spaces currently required by City Code, and to provide explicit guidelines for locating and selecting bike racks. In addition, the Bicycle Program will review the current Code language and offer amendments to improve bicycle rack location requirements

With input, coordination, and collaboration among City departments, the bicycle community, adjacent neighborhood associations and the developer, Mueller's bicycle and pedestrian mobility potential has already improved and will continue to do so.

Adapted from input from ROMA Austin and Mr. Tom Wald, 2008-2009 Bicycle Advisory Council Vice-Chair, Cherrywood Neighborhood Association Transportation Committee Chair, and League of Bicycling Voters Board Member.

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and general purpose (utilitarian or recreational).

Selecting On-Street Bicycle Facilities

Bicycle facility selection for the recommendations in Appendix D of this Plan was done by using a combination of methodologies. Field analysis, alternate routes, potential future roadway changes, and public input influenced facility recommendations. A main influence on the recommendation was the Federal Highway Administration (FHWA) “Design Bicyclist” methodology (Tables 2.1-2.6), which identifies traffic operation characteristics that influence the preferred facility. This method is described later in this section.

First, roadway cross sections were evaluated to determine how the existing roadway could be modified to provide space for the bicycle facility. This evaluation incorporates traffic characteristics, such as on-street parking, traffic volume and speed. Secondly, if an existing roadway could not feasibly accommodate a bicycle facility given the FHWA methodology, potential alternates were identified and evaluated. Future road projects were also considered, including the prospect of widening a road based on the AMATP 2025 Plan, proposed Capital Improvement Projects, and where growth might put pressure on roadway expansion.

Also, facility recommendations identified by the Street Smarts Task Force represent the preferred routes and recommendations by the bicycling community in Austin. Therefore, these recommendations were considered heavily when determining the recommendations in this Plan.

Lastly, public input received during the planning process was also heavily considered and incorporated into the recommendations of this Plan.

<u>FHWA Design Bicyclist Facility Recommendation Methodology</u>

The FHWA methodology suggests a two-tiered approach:

Group A riders are best served by making every street “bicycle friendly” and adopting roadway design standards that include wide curb lanes and paved shoulder to accommodate shared use by bicycles and motor vehicles.

Group B/C riders are best served by identifying key travel corridors (served by arterial and collector streets) and by providing designated bicycle facilities on selected routes through these corridors.

The 1998 Bicycle Plan created a two-level bicycle system whereby the Group A bicycle system was established on arterial streets and the Group B/C bicycle system was established on collectors, with bike lanes, separated path connections, or on residential streets (shared roadways). This philosophy was also used for network and facility selection of the 2009 Bicycle Plan Update.

To determine the appropriate roadway design treatment to accommodate bicyclists, several factors associated with the specific route or project must be assessed:

What types of bicyclists is the route most likely to serve? As discussed, preferred facility recommendations will vary depending on the type of bicyclist, (See Figure 2.1).

What type of roadway project is involved (new construction, reconstruction, or retrofit)? Bicycle facilities are most easily installed with new construction or reconstruction of roadways. Retrofitting an existing roadway typically involves re-striping the existing lanes to accommodate bicycles. When working with existing roadways, planners should investigate the opportunity to make at least minor or marginal improvements. However, where the need is to serve group B/C bicyclists, it is essential to commit the resources necessary to provide facilities that meet the recommended design treatments. Only then can facilities be designated for bicyclists to provide the desired access, increased use, and benefit to the community.

What are the current and anticipated traffic operations and design characteristics of the route that will affect the choice of a bicycle design treatment? There are six factors of traffic characteristics that affect bicycle use and preferred facility:

1. **Traffic volume.** Higher motor vehicle traffic volumes represent greater potential risk for bicyclists and more frequent overtaking situations are less comfortable for group B/C bicyclists unless special design treatments are provided. Recommended ranges for AADT are: 2,000 AADT; 2,000 - 10,000 AADT; and over 10,000 AADT.
2. **Average motor vehicle operating speed.** Average operating speed is more important than the posted speed limit, and better reflects local conditions. Motor vehicle speed can have a negative impact on risk and comfort unless mitigated by special design treatments (traffic calming). Four ranges of average speeds are used: Less than 30 mph; 30-40 mph; 40-50 mph; and over 50 mph.
3. **Traffic mix.** The regular presence of trucks, buses, and/or recreational vehicles can increase risk and have a negative impact on comfort for bicyclists. All types of bicyclists prefer extra roadway width to accommodate greater separation from such vehicles. The recommendations suggest different design treatments and widths depending on whether or not the volume of trucks, buses, and/or recreational vehicles is likely to have a negative impact on bicycle use.

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4. **On-street parking.** The presence of on-street parking increases the width needed in adjacent travel lane or bike lane to accommodate bicycles. This is primarily a concern associated with streets and roadways built with an urban section. It is addressed in the recommendations by including a separate set of tables for urban sections with on-street parking.
5. **Sight distance.** "Inadequate sight distance" relates to situations where bicycles are being overtaken by motor vehicles and where the sight distance is likely less than that needed for a motor vehicle operator to either change lane positions or slow to the bicyclists speed. This problem is primarily associated with rural highways, although some urban streets have sight distance problems due to poor design and/or sight obstructions.
6. **Number of intersections.** Intersections pose special challenges to bicycle and motor vehicle operators, especially when bicycle lanes or separated multi-use paths are introduced. The AASHTO Guide includes general guidelines for intersection treatments. While not included as a selection factor in the tables, the number and/or frequency of intersections should be considered when addressing the use of bicycle lanes, sidewalks, or multi-use paths.

Intersections and the Bicycle Network

Intersections can be intimidating to beginner and child cyclists. For that reason, care should be taken when designing intersections on bicycle routes to assure adequate guidance of the bicyclist through the intersection. The following are issues that should be considered:

- Assurance that traffic signal loops are programmed to detect bicycles, and where bicycle lanes are continued at intersection, provide a signal loop detector in the bicycle lane.
- Carry bicycle lanes as close to the stop bar as possible, or provide guidance to an alternate facility (such as onto a shared use sidewalk).
- Innovative design is encouraged to continue to improve bicycle flow through intersections.

FHWA Recommended Treatment Tables

Tables 2.1 through 2.6 on the following pages indicate the appropriate design treatment given various sets of traffic operations and design factors. They do not include any specific recommendations for separated multi-use paths, which should always be considered (see p. 71) especially along corridors with average operating speeds over 50 mph regardless of the design cyclist.

Recommendations are provided for the width of the various recommended design treatments. These recommended dimensions are considered to be *desirable* widths. They should be treated as minimum widths unless special circumstances preclude such development. The AASHTO Guide for the Development of Bicycle Facilities should also be consulted, as well as any other credible reports or guidelines regardless of the bicycle facility selection.

Finally, these recommendations reflect the current state of the practice in design of bicycle-friendly roadways and should be tested and refined over time. It is anticipated that this section of the plan will be revised, under the direction of the Bicycle Program, to reflect the continuing evolution of the state of the practice in selecting design treatments for roadways to accommodate shared use by bicycles and motor vehicles and will ultimately rely on good engineering and design and good judgement.

Table 2.1: Group A bicyclists, urban section, no parking

	Annual average daily traffic volume (AADT)											
Average motor vehicle operating speed	Less than 2,000				2,000-10,000				Over 10,000			
	Adequate sight distance		Inadequate sight distance		Adequate sight distance		Inadequate sight distance		Adequate sight distance		Inadequate sight distance	
		truck, bus, RV	truck, bus, RV			truck, bus, RV	truck, bus, RV			truck, bus, RV	truck, bus, RV	
Less than 30 mph	sl 12	sl 12	wc 14	wc 14	sl 12	wc 14	wc 14	wc 14	wc 14	wc 14	wc 14	wc 14
30-40 mph	wc 14	wc 14	wc 15	wc 15	wc 14	wc 15	wc 15	wc 15	wc 14	wc 15	wc 15	wc 15
40-50 mph	wc 15	wc 15	wc 15	wc 15	wc 15	wc 15	sh 6	sh 6	wc 15	wc 15	sh 6	sh 6
Over 50 mph	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6

WC and SL numbers represent "usable widths" of outer travel lanes, measured from lane stripe to the edge of the gutter plan, rather than to the face of the curb. If no gutter pan is provided, add 1 foot minimum for shy distance from the face of the curb.

Table 2.2: Group A bicyclists, urban section, with parking

	Annual average daily traffic volume (AADT)											
Average motor vehicle operating speed	Less than 2,000				2,000-10,000				Over 10,000			
	Adequate sight distance		Inadequate sight distance		Adequate sight distance		Inadequate sight distance		Adequate sight distance		Inadequate sight distance	
		truck, bus, RV	truck, bus, RV			truck, bus, RV	truck, bus, RV			truck, bus, RV	truck, bus, RV	
Less than 30 mph	wc 14	wc 14	wc 14	wc 14	wc 14	wc 14	wc 14	wc 14	wc 14	wc 15	wc 15	wc 14
30-40 mph	wc 14	wc 14	wc 15	wc 15	wc 14	wc 15	wc 15	wc 15	wc 14	wc 15	wc 15	wc 15
40-50 mph	wc 15	wc 15	wc 15	wc 15	wc 15	wc 15	wc 16	wc 16	wc 15	wc 15	wc 16	wc 16
Over 50 mph	na	na	na	na	na	na	na	na	na	na	na	na

WC numbers represent "usable widths" of outer travel lanes, measured from left edge of the parking space (8 to 10 feet minimum from the cub face) to the left stripe of the travel lane.

wc=wide curb **sh**=shoulder **sl**=shared lane **bl**=bicycle lane **na**=not applicable

Table 2.3: Group A bicyclists, rural section

Average motor vehicle operating speed	Annual average daily traffic volume (AADT)											
	Less than 2,000				2,000-10,000				Over 10,000			
	Adequate sight distance		Inadequate sight distance		Adequate sight distance		Inadequate sight distance		Adequate sight distance		Inadequate sight distance	
		truck, bus, RV				truck, bus, RV				truck, bus, RV		
Less than 30 mph	sl 12	sl 12	wc 14	wc 14	sl 12	wc 14	wc 14	wc 14	wc 14	wc 14	sh 4	sh 4
30-40 mph	wc 14	wc 14	sh 4	sh 4	wc 14	wc 15	sh 4	sh 4	sh 4	sh 4	sh 4	sh 4
40-50 mph	sh 4	sh 4	sh 4	sh 4	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6
Over 50 mph	sh 4	sh 6	sh 6	sh 4	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6

WC and SL numbers represent "usable widths" of outer travel lanes, measured from lane stripe to the edge of the pavement if a smooth, firm, level shoulder is adjacent. If rough or dropped pavement edges or a soft shoulder exists, add 1 foot minimum for shy distance from the edge of the pavement.

Table 2.4: Group B/C bicyclists, urban section, no parking

Average motor vehicle operating speed	Annual average daily traffic volume (AADT)											
	Less than 2,000				2,000-10,000				Over 10,000			
	Adequate sight distance		Inadequate sight distance		Adequate sight distance		Inadequate sight distance		Adequate sight distance		Inadequate sight distance	
		truck, bus, RV				truck, bus, RV				truck, bus, RV		
Less than 30 mph	wc 14	wc 14	wc 14	wc 14	wc 14	wc 14	wc 14	wc 14	bl 5	bl 5	bl 5	bl 5
30-40 mph	bl 5	bl 5	bl 5	bl 5	bl 5	bl 6	bl 6	bl 5	bl 5	bl 6	bl 6	bl 5
40-50 mph	bl 5	bl 5	bl 5	bl 5	bl 6	bl 6	bl 6	bl 6	bl 6	bl 6	bl 6	bl 6
Over 50 mph	bl 6	bl 6	bl 6	bl 6	bl 6	bl 6	bl 6	bl 6	bl 6	bl 6	bl 6	bl 6

All routes in the City of Austin system are identified as Class B/C bicycle facilities and the facility recommendations in Appendix D should reflect Class B/C recommendations.

WC numbers represent "usable widths" of outer travel lanes, measured from left lane stripe to the edge of the gutter plan, rather than to the face of the curb. If no gutter pan is provided, add 1 foot minimum for shy distance from the face of the curb. BL numbers indicate minimum width from the curb face. The bicycle lane strip should lie at least 4 feet from the edge of the gutter pan, unless the gutter pan is built with adequate width to serve as the bicycle lane itself.

wc=wide curb **sh**=shoulder **sl**=shared lane **bl**=bicycle lane **na**=not applicable

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Table 2.5: Group B/C bicyclists, urban section, with parking												
	Annual average daily traffic volume (AADT)											
Average motor vehicle operating speed	Less than 2,000				2,000-10,000				Over 10,000			
	Adequate sight distance		Inadequate sight distance		Adequate sight distance		Inadequate sight distance		Adequate sight distance		Inadequate sight distance	
		truck, bus, RV	truck, bus, RV			truck, bus, RV	truck, bus, RV			truck, bus, RV	truck, bus, RV	
Less than 30 mph	**wc 14**	**wc 14**	**wc 14**	**wc 14**	**wc 14**	**wc 14**	**wc 14**	**wc 14**	**bl 5**	**bl 5**	**bl 5**	**bl 5**
30-40 mph	**bl 5**	**bl 5**	**bl 5**	**bl 5**	**bl 5**	**bl 6**	**bl 6**	**bl 5**	**bl 6**	**bl 6**	**bl 6**	**bl 6**
40-50 mph	**bl 6**	**bl 6**	**bl 6**	**bl 6**	**bl 6**	**bl 6**	**bl 6**	**bl 6**	**bl 6**	**bl 6**	**bl 6**	**bl 6**
Over 50 mph	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**	**na**

All routes identified in the City of Austin system are identified as Class B/C bicycle facilities and the facility recommendations in Appendix D should reflect Class B/C recommendations.

WC numbers represent "usable widths" of outer travel lanes, measured from left edge of the parking space (8 to 10 feet minimum from the cub face) to the left stripe of the travel lane.

Table 2.6: Group B/C bicyclists, rural section												
	Annual average daily traffic volume (AADT)											
Average motor vehicle operating speed	Less than 2,000				2,000-10,000				Over 10,000			
	Adequate sight distance		Inadequate sight distance		Adequate sight distance		Inadequate sight distance		Adequate sight distance		Inadequate sight distance	
		truck, bus, RV	truck, bus, RV			truck, bus, RV	truck, bus, RV			truck, bus, RV	truck, bus, RV	
Less than 30 mph	**sh 4**	**sh 4**	**sh 4**	**sh 4**	**sh 4**	**sh 4**	**sh 4**	**sh 4**	**sh 4**	**sh 4**	**sh 4**	**sh 4**
30-40 mph	**sh 4**	**sh 4**	**sh 4**	**sh 4**	**sh 4**	**sh 6**	**sh 6**	**sh 4**	**sh 6**	**sh 6**	**sh 6**	**sh 6**
40-50 mph	**sh 6**	**sh 6**	**sh 6**	**sh 6**	**sh 6**	**sh 6**	**sh 6**	**sh 6**	**sh 6**	**sh 6**	**sh 6**	**sh 6**
Over 50 mph	**sh 6**	**sh 6**	**sh 6**	**sh 6**	**sh 8**	**sh 8**	**sh 8**	**sh 8**	**sh 8**	**sh 8**	**sh 8**	**sh 8**

All routes identified in the City of Austin system are identified as Class B/C bicycle facilities and the facility recommendations in Appendix D should reflect Class B/C recommendations.

wc=wide curb **sh**=shoulder **sl**=shared lane **bl**=bicycle lane **na**=not applicable

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Priorities

The recommended bicycle network of the 2009 Bicycle Plan Update includes nearly 900 miles of bicycle lanes, 9 miles of bicycle boulevards, and 107 miles of shared use paths. Implementation of the network will be phased over time based a priorities.

Promotion of existing adequate barrier crossings and improvement to and removal of current barriers to continuous travel by bicycle is the first priority for improving the network. Barriers such as gaps in the network, controlled access highways with few crossing streets, intersections, and arterials with inadequate space to accommodate both bicycles and automobiles should be modified to allow safe access or crossing by bicycle. The Street Smarts Task Force identified 101 gaps in the bicycle network that hinder connectivity and ease of bicycle use. (See Appendix G.)

Another top priority for the system is to provide more complete facilities in areas with current or latent demand, such as employment centers, transit-oriented development areas, schools, and residential areas. There are currently partial links to many of these areas (Kramer Lane, St. Johns Avenue, and William Cannon Drive for example), but cyclists are forced into inadequate roadways in order to complete the trip. Connections should be made to complete the network in these areas.

Because of the opportunities afforded, a priority shall be to include bicycle facilities in all new construction both public and private as described below.

It is assumed that bicyclists want and need to travel in the same corridors as motor vehicles. Therefore, the bicycle network should be convenient, complete, direct, and safe. This plan proposes a one mile grid for the bicycle network, comparable to the city's arterial network spacing. This spacing reduces the distance to the nearest bicycle route to 1/2 mile and will allow convenient access without long detours. In order to create this network, bicycle facilities shall be included in all reconstruction of arterials and collectors in already developed areas of Austin and all new roadway construction in areas under development (City of Austin, 2002, City Council Resolution #20020418-40.) Implementation of this Plan also requires that the development of large land parcels provide bicycle facility connections within the parcels and to the abutting bicycle network (either existing or planned).

Because the planned network will provide only the minimum spacing and number of facilities to provide basic mobility for bicyclists, the deletion of any roadway from the network should be done with the utmost care and only if alternative facilities can be provided. For this reason engineer-only approved "deviations" should not be allowed. Changes to the recommended network facilities shall require input from the City Bicycle

Plan Amendment Process

All amendments shall follow the amendment process described in Appendix H of this Plan. A summary of amendment requirements is provided here:

City Council Amendments are those require approval by City Council, with input from City Staff, the Environmental Board, the Urban Transportation Commission, the Planning Commission and the public. A City Council amendment is required if

- A new bicycle route is to be added,
- A bicycle route or portion of a bicycle route is to be deleted, or extended
- The classification, rights-of-way, or cross-section of a road or portion of a road in the Austin 2009 Bicycle Plan Update is to be changed, or
- The alignment of a road in the Austin 2009 Bicycle Plan Update is to be moved in excess of 1500 feet.
- Per objective 1.0.2b of this Plan, a development or redevelopment seeks to not provide continuity of an existing or planned route through or within their property.

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Program and ultimately be the responsibility of the City's Transportation Department Director. See Appendix H - Amendment Process.

Objective 1.0 Benchmarks

- Complete 50% of bicycle network by 2015, 70% by 2020, and 100% by 2030.
- Provide connectivity at 12 network gaps by 2020.
- Annually contact adjacent jurisdictions to discuss bicycle system and connectivity improvements needed to realize our proposed system.

Objective 1.0 Action Items

1.0.1 Fund and implement the Bicycle Network Infrastructure Recommendations.

1.0.2 Eliminate gaps in the existing bicycle network to allow continuous bicycle travel in the Austin area.

1.0.2a Coordinate bicycle transportation into all roadway and park land design, planning, and construction manuals, standards documents, and projects.

1.0.2b New development that abuts or includes existing or planned City of Austin bicycle routes shall provide continuity of that route (and existing or planned bicycle facility) through the property, or seek an appropriate amendment to the Bicycle Plan as defined in this Plan (See Appendix H).

1.0.2c Annually contact adjacent jurisdictions to discuss bicycle system and connectivity improvements needed to realize our proposed system.

1.0.3 Require interim, first phase of roadway construction to provide bicycle facilities.

1.0.4 Require public process for certain deviations from this Plan.

1.0.5 Make key operational improvements to the existing and recommended Bicycle Network.

1.0.5a Explore new technologies or techniques to detect bicycles at traffic signals – retrofit signals as appropriate with pavement markings instructing bicyclists where to stop to activate detection.

1.0.5b Improve bicycle accommodations on bridges.

1.0.5c Improve intersections to facilitate bicycle use through them.

1.0.5d Utilize innovative options to implement this plan, such as bicycle climbing lanes, lane diets, shared lane markings, colored bicycle lanes, advanced stop lines/bike boxes, road diets, etc.

An Integrated Planning Process

The SSTF recognized that including bicycle facility planning during the planning and development process is an opportunity to prioritize bicycle facilities. The SSTF also identified several planning processes that are currently going on where bicycle planning is an important component:

- Downtown Plan
- Transit-Oriented Development Station Area Plan
- Waller Creek Plan
- North Burnet/Gateway Plan
- Green Water Treatment Plant Redevelopment

Source: SSTF, 2007, pp. 14-15

A bike box at an intersection in Portland, OR directs where automobiles should stop and where bicyclists should wait when stopped at an intersection.

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1.0.6 Amend Land Development Code and Subdivision Regulations to reflect goals and objectives of this Plan.

1.0.6a Establish more detailed criteria for providing bicycling facilities on new streets, including driveways where the driveway serves as a continuation of an existing or planned bicycle route.

1.0.6b Establish and provide incentives for bicycle network facilities and end-use facilities in private developments.

1.0.7 Use consistent standards to identify and design bicycle facilities.

1.0.7a Amend Transportation Criteria Manual and Land Development Code as necessary as it pertains to street design to accommodate bicycle use in the Austin region.

1.0.7b Use the Texas Guide for Retrofit and Planned Bicycle Facilities.

1.0.8 Coordinate with other city departments and public agencies to implement Recommended Bicycle Network

1.0.8a Authorize City Bicycle Program Manager to review all City and applicable private development plans (zoning, subdivisions, site plan, etc.) that add to or affect the operation of the bicycle network. Include Bicycle Program Manager in the review process for applications to vacate rights-of-way and exceptions or variances to these.

1.0.8b Coordinate with Parks and Recreation Department, and other relevant departments, public agencies and non-profits to provide a network of off-street facilities integrated with the on-street system.

1.0.8c Coordinate with Texas Department of Transportation, CAMPO, Travis, Williamson, and Hays Counties and other jurisdictions and agencies to ensure appropriate bicycle connections are planned, constructed, and maintained to promote a regional on-and off-street bicycle network.

1.0.8d Coordinate with Austin Energy to incorporate bicycle facilities in utility rights-of-way and in conjunction of installation of utilities.

1.0.8e Coordinate with The University of Texas and other higher education institutions on improving bicycle access to, from, and within campuses and other major properties owned by those institutions.

1.0.9 Establish guidelines for the street selection and use of shared lane markings.

1.0.10 Update City Council Resolution 02-0418-40 so that it serves as the City's Complete Streets policy.

Burke-Gilman Trail is a 14+ mile separated multi-use path that is jointly maintained by Seattle Department of Transportation and Seattle Parks and Recreation.

Integrating Area TxDOT Roads and Intersections into the Bicycle Network

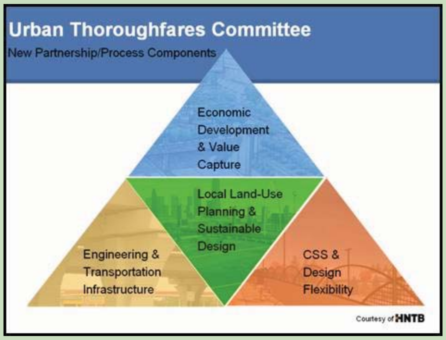
Highways and arterial roads that are operated and maintained or funded by the Texas Department of Transportation (TxDOT) criss-cross (bisect) the City of Austin and its ETJ. These roads are the spine connectors between key destinations in central Texas and often carry significant volumes of vehicular traffic. Austin area bicycle riders recognize that accommodating the heavy vehicular traffic volumes experienced in Austin in a safe manner is TxDOT's primary concern. However, they are also correct in noting that Austin's bicycle usage differs from every other metropolitan area in Texas. Austin has double the percentage of frequent bicycle riders of any other city in Texas, and has a much more complete network of bicycle lanes. With the advent of commuter rail, Austin is very close to becoming a true multi-modal city where viable alternatives to travel by car are real options. But the City of Austin cannot achieve this goal without TxDOT actively helping to integrate its facilities into the citywide bicycle network.

A bicyclist utilizing the sidewalk on the Farwest Blvd Bridge over MoPac.

TxDOT engineers and designers in Austin should be praised for their existing accommodations for bicyclists along area freeways. However, Austin's bicycle community has long declared the difficulty that TxDOT facilities pose to less experienced riders. Many roadways in Austin create significant barriers throughout the City. If Austin's bicycle network is going to be elevated to the next level to truly create a system that actively encourages use by more riders, a higher degree of integration of TxDOT controlled roadways with the City's bicycle network is critically needed.

The bicycle lane along Berkman Dr at US Hwy 290 W ends before the intersection, requiring bicyclists to merge with heavy traffic along Berkman Dr.

In Fall 2007, TXDOT embarked on a process which provides a mechanism that could address these problems. The Urban Thoroughfares Committee was created by the Texas Transportation Commission on October 25, 2007, Minute Order Number 111107. Created as an informal team, the Committee was tasked with the goal of creating and encouraging cooperative partnerships, context sensitive solutions, and design flexibility with respect to planning and developing appropriate transportation projects. Below is a graphic representation of the goals and areas the Committee is examining:



The City of Austin and TxDOT are collaborating to extend the bicycle lanes along the Steck Ave bridge over MoPac to eliminate a bicycle route gap.

The key results of the Committee's work include the revision of the TxDOT Project Development Process Manual to require TxDOT to recognize local plans and community objectives when designing and modifying TxDOT facilities in urban areas. In addition, the Manual for Walkable Urban Thoroughfares by the Institute for Transportation Engineers (ITE) and the Congress for the New Urbanism (CNU), a bicycle-friendly approach, has been formally recognized as a valid set of street design criteria as recommended by the Committee. This context sensitive (CSS)* approach provides an opportunity for transit-friendly and bicycle-friendly design.

It is recognized that this integration and a greater degree of user friendliness for bicycle riders on TxDOT roadways will take time, however progress continues daily. A strong partnership with TxDOT and other jurisdictions will assure that the maximum potential for the implementation of the best possible City of Austin Bicycle system is realized

Adapted from input from Scott Polikov of the Gateway Planning Group and the Texas Department of Transportation.

**CSS is a collaborative, interdisciplinary approach that involves all stakeholders to develop a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic and environmental resources, while maintaining safety and mobility. CSS is an approach that considers the total context within which a transportation improvement project will exist.*
Source: FHWA, http://www.fhwa.dot.gov/context/what.cfm

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Bicycle Network Infrastructure Recommendation 1: Address top 25 barriers along existing routes.

Improve crossings of major barriers, including IH 35, US 183, Loop 1 (MoPac) and Highway 71, as well as crossings of the Colorado River and Ladybird Lake. The location of these key 25 barrier improvements are shown on the map on the following page. Coordination and agreement from TXDOT will be necessary.

Total Estimated Cost: $1,900,000 to $ 5,160,000

Benchmark: Complete at least 12 locations by 2020.

	Table 2.7 Key Barrier Improvements			
Map No.	**Location**	**Solution**	**Sector**	**Projected Cost Range**
1	12th St. @ IH-35	Key connection into downtown, add striping for bike lanes on east bound side of 12th Street. West bound needs existing sidewalk widening, or bicycle bridge.	C	$250,000-$700,000
2	Pleasant Valley @ Longhorn Dam	Improve lane markings and signage, with the addition of shared lane markings; high cost option to create separate bridge solution	C	$50,000-$2,000,000
3	Manor Rd. @ IH-35	Key connection to UT campus, Widen outside curb lane, with the addition of signage and shared lane markings	C	$50,000-$75,000
4	51st St. @ IH-35	Widen outside curb lane, with the addition of signage and shared lane markings	C	$85,000-$110,000
5	Steck @ Loop 1	Re-stripe right turn lane at ramp, striping for bike lane and improve signage. Alternative solution: road reconfiguration (cost not included)	NW	$50,000-$75,000
6	Shoal Creek @ US 183	Off-street facility along rail corridor. Key connection to Shoal Creek route terminus	NE	$150,000-$250,000
7	Berkman @ US 290	Key route to Reagan HS, improvements include signage, striping for bike lanes, and painted lanes at intersections	NE	$80,000-$100,000
8	Springdale @ US 183	Widen outside curb lane, with the addition of signage and shared lane markings	NE	$45,000-$65,000
9	Farwest @ Loop 1	Widen outside curb lane, with the addition of signage and shared lane markings	NW	$50,000-$75,000
10	St. John's @ IH-35	Key connection to Lamar Station, road diet from 4 lanes to 3 lanes, cost includes re-striping and signage	NE	$75,000-$125,000
11	Hancock @ Loop 1	Existing narrow travel lanes, improvements would include, road diet from 4 lanes to 3 lanes, striping for bike lanes, signage, and painted lanes at intersection	C	$100,000-$150,000
12	32nd St. @ IH-35	Widen outside curb lane, add signage and shared lane markings; off-street facility needs to added along north bound IH-35 frontage road to connect to 32nd street	C	$150,000-$250,000
13	Great Hills @ US 183	Widen outside curb lane and improve signage. Alternate for Loop 360 @ US 183 crossing	NW	$40,000-$75,000
14	Riverside @ IH-35	Widen outside curb lane, with the addition of signage and shared lane markings	C	$65,000-$90,000
15	Duval @ Loop 1	Improve intersection with shared lane markings, signage, and signals. Connect to PARD Walnut Creek Trail	NE	$95,000-$150,000
16	Duval @ US 183	Signage and Painted Lanes at intersections	NW	$40,000-$70,000
17	Todd Ln. @ US 71	Widen outside curb lane to add bicycle lanes, with the addition of signage and shared lane markings	SW	$40,000-$70,000
18	Braker Ln. @ Loop 1	Widen outside curb lane, with the addition of signage and shared lane markings	NE	$50,000-$75,000
19	Northcrest @ US 183	Widen outside curb lane, with the addition of signage and shared lane markings	NE	$50,000-$75,000
20	Burnet @ US 183	Improvement to proposed Cap-Metro Rail-Trail. Widen outside curb lane, with the addition of signage and shared lane markings	NE	$60,000-$80,000
21	Montopolis @ US 71	Widen outside curb lane, with the addition of signage and shared lane markings	SW	$45,000-$75,000
22	Congress @ Ben White	Key connection to the urban core area. Widen outside curb lane, with the addition of signage and shared lane markings	SW	$75,000-$150,000
23	Woodward @ US 71	Improve lane markings and signage, with the addition of shared lane markings	SW	$80,000-$100,000
24	Westover @ Loop 1	Widen outside curb lane, with the addition of signage and shared lane markings	C	$50,000-$75,000
25	McNeil Dr. @ US 183	Widen outside curb lane, with the addition of signage and shared lane markings	NW	$75,000-$100,000

This is a preliminary estimate of probable construction costs, and was prepared prior to actual design. Actual design may require additional or different improvements that may change the estimated cost shown. This estimate is intended only to provide an order of magnitude cost for projection of potential future funding requirements. All such estimates should be reviewed and updated periodically to reflect the most current cost information. Costs are based on 2008 unit prices, and do not include escalation.

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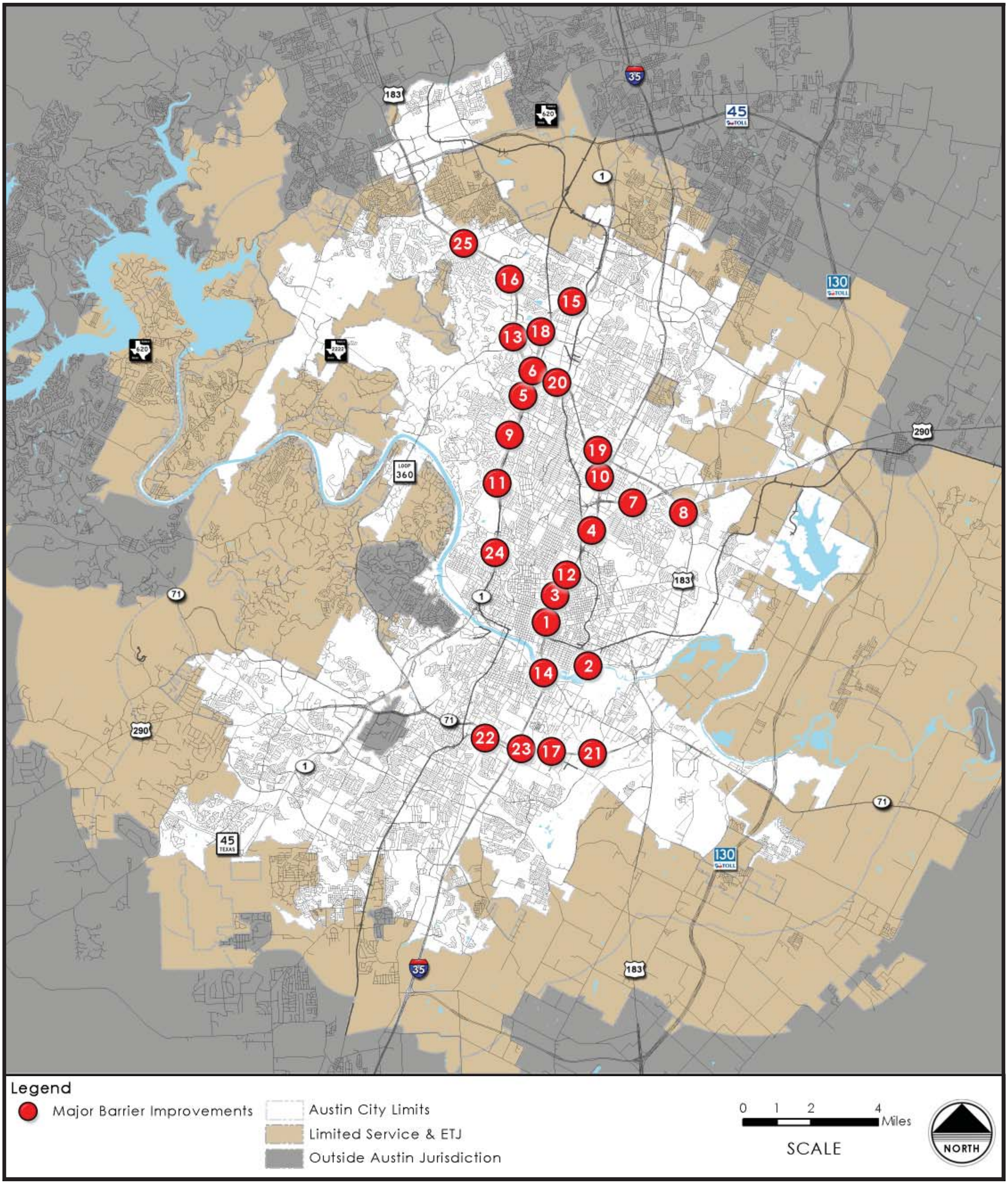
Key Barrier Improvements



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Bicycle Network Infrastructure Recommendation 2: Complete Improvements to Key Existing and Proposed Routes in the City of Austin

Improve routes in the City of Austin, where a large number of trips made via bicycle is already happening and where a significant further increase is possible. Recommended facility improvements in the city are shown in the table below.

Total Estimated Cost: $7,748,000 to $12,364,000

Benchmark: Complete 80% of the recommended improvements within five years from adoption of the plan and 100% by 2020.

Table 2.8 Key City of Austin Gap Improvements

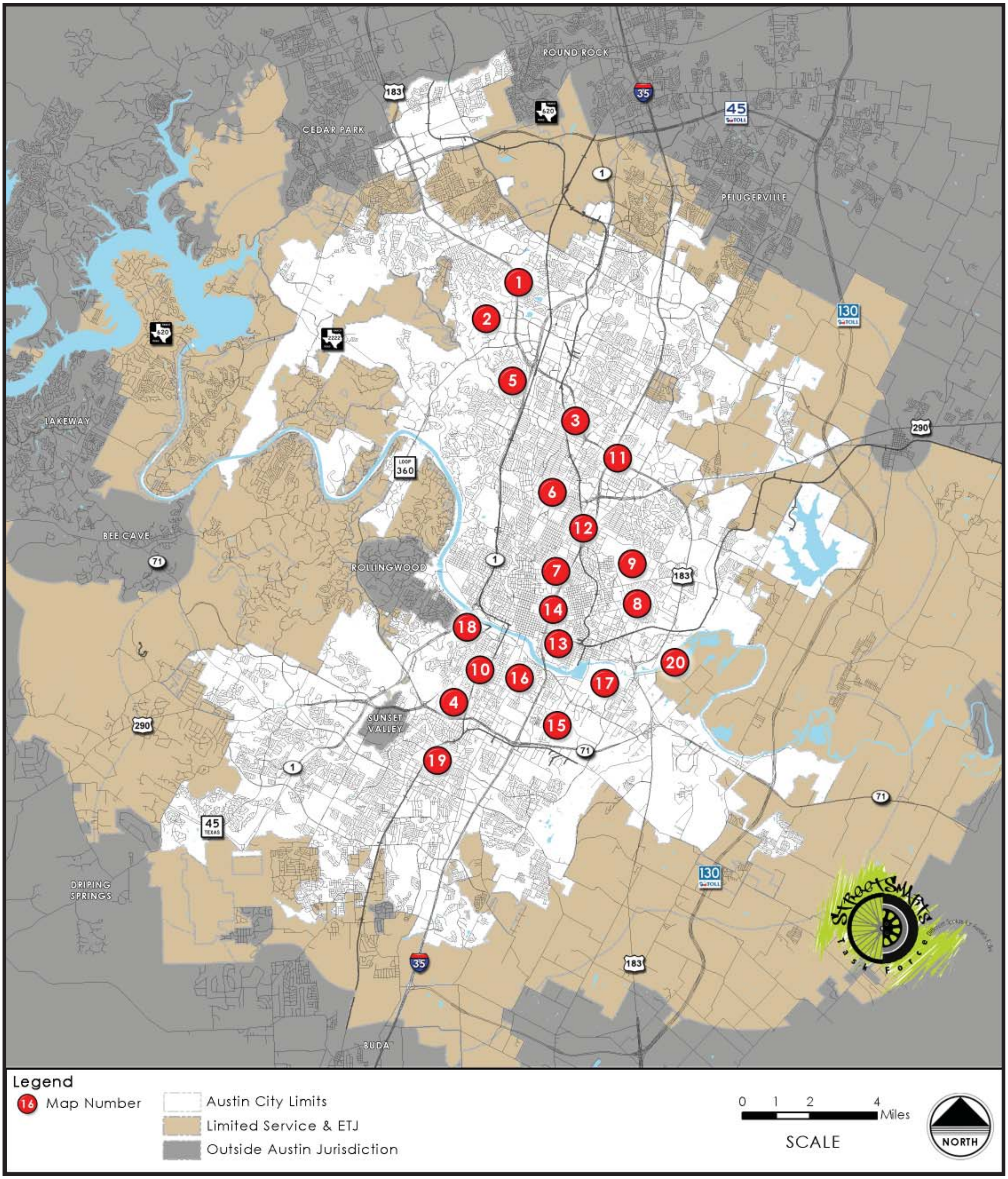
Map No.	Route-Segment #	Street	Segment From	Segment To	Recom-mended Facility	Solution	Projected Cost Range
1	6.05	DUVAL RD	SANTA CRUZ	AMHERST	BIKE LANE	Widen outside lane to accommodate bike lane, an d improve signage	$50,000 - $80,000
2	10.06-10.08	W BRAKER LN	JOLLYVILLE RD	METRIC BLVD	BIKE LANE	Narrow median to widen pavement width and install bike lane	$4,000,000 - $5,000,000
3	20.06 - 20.09	MORROW	HARDY	TISDALE	SHARED LANE/ BIKE LANE	Remove on-street parking and stripe bicycle lane; section between Tisdale & Lamar would have 3.5' bicycle lanes	$105,000 - $130,000
4	27.01-27.02	MANCHACA RD	LAMAR	BEN WHITE	WIDE CURB / BIKE LANE	Low estimate is for road diet and stripe for bicycle lanes; high end is for parallel off-street facility	$150,000 - $800,000
5	31.01-31.05	SHOAL CREEK	FOSTER	38TH ST W	SHARED USE PARKING AREA	As directed by City Council*	
6	33.02-33.06, 347.18, 47.31-47.32	GUADALUPE ST	51ST ST	24TH ST	BIKE LANE	Stripe bike lane in both directions; some areas require parking removal, while some can accommodate parking; Some areas will require road widening.	$908,000 - $1,972,000
7	36.15-36.18	E 38TH HALF ST / ANCHOR	RED RIVER	MANOR	BIKE LANE	Stripe bike lane and signage	$101,000 - $155,000
8	39.22-39.24	AIRPORT BLVD	MLK	SPRINGDALE	BIKE LANE	Off-street facility due to high traffic volumes	$300,000 - $900,000
9	42.15-42.17	MANOR RD	AIRPORT	EM FRANKLIN	BIKE LANE	Road diet with striping for a bike lane and signage	$40,000 - $90,000
10	43.30-43.35	LAMAR BLVD S	BARTON SPRINGS	BEN WHITE BLVD	BIKE LANE	Lane diet and stripe bicycle lane and signage	$1,000,000 - $1,250,000

Map No.	Route-Segment #	Street	Segment From	Segment To	Recom-mended Facility	Solution	Projected Cost Range
11	47.22, 47.24	GEORGIAN / NORTHCREST	ELLIOT	PRINCE	BIKE LANE	Road diet to accommodate bike lane; see Table 2.7, No. 19 for recommendation for intersection at US 183	$37,000 - $47,000
12	47.33, 300.01	46TH ST	SPEEDWAY	GUADALUPE	SHARED LANE / WIDE CURB / BICYCLE BLVD	Low end for wide curb, improved signage; High estimate for bicycle boulevard	$20,000 - $60,000
13	51.18-51.23	RED RIVER ST / DAVIS ST / RAINEY ST / CUMMINGS ST / EAST AVE	E CESAR CHAVEZ	IH 35	SHARED LANE / BIKE LANE	Stripe bicycle lane and install traffic calming and signage; Portion of route requires widening for bicycle lane	$222,000 - $425,000
14	55.03-55.04	CHICON ST	MLK	ROSEWOOD	BIKE LANE	Stripe bike lane and signage	$85,000 - $115,000
15	59.28	PARKER LN	GLENN SPRINGS	WOODWARD	BIKE LANE	Stripe bike lane and signage	$55,000 - $75,000
16	60.05-60.07	RIVERSIDE DR	S. 1ST	IH 35	BIKE LANE	Widen road to accommodate bike lane or design off street facility	$250,000 - $600,000
17	62.01-62.02	S LAKESHORE BLVD	RIVERSIDE	PLEASANT VALLEY	BIKE LANE	Stripe 5 ft. bike lane and signage	$55,000 - $80,000
18	64.22-64.24	BARTON SPRINGS RD	BOULDIN	CONGRESS	BIKE LANE	From Bouldin to Riverside Dr., lane diet and stripe bicycle lane; between Riverside and Congress, remove parking and stripe bicycle lane	$115,000 - $125,000
19	76.01	W STASSNEY LN	WESTGATE	MANCHACA	BIKE LANE	Lane diet, add bike lanes and signage in both directions	$125,000 - $300,000
20	150.03-150.05	BOLM RD	SPRINGDALE RD	US 183	BIKE LANE	Stripe bicycle lane and signage	$130,000 - $160,000
						Total	**$7,748,000 - $12,364,000**

This is a preliminary estimate of probable construction costs, and was prepared prior to actual design. Actual design may require additional or different improvements that may change the estimated cost shown. This estimate is intended only to provide an order of magnitude cost for projection of potential future funding requirements. All such estimates should be reviewed and updated periodically to reflect the most current cost information. Costs are based on 2008 unit prices, and do not include escalation.

Recommendations in Table 2.8 will be implemented only after further technical and feasibility analysis is completed by all City departments and other governmental agencies to determine the potential impact to transportation and public safety response as a whole. If it is determined that a specific bicycle facility is infeasible due to its impact on transportation and public safety response as a whole, an alternate route or facility should be pursued and shall follow amendment process if criteria for amendment is met.

Key City of Austin Gap Improvements



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Bicycle Network Infrastructure Recommendation 3: Develop "super-routes" throughout the city.

Develop a series of "super routes" that are intended to serve as attractors to less experienced bicyclists. These routes are intended to provide superior (real and perceived) comfort and sense of safety for the bicyclist as well as provide the most direct route to major destinations. Super routes will link sectors of the city together, provide routes to downtown and to the University of Texas, and provide stronger connectivity to Austin's rail and transit systems. The total estimated cost to construct the entire super route network is approximately $22 to $36 million.

Listed here are the key super routes to be focused on in the next 10 years. These routes should be off-street and/or separated or protected from motor vehicle traffic, as much as possible. In some cases, the shared use of the roadway is sufficient, such as roads with low traffic volumes and speeds and are super routes identified as an alternative to parallel arterials. Some of these routes may be required to be constructed in park land and should be conceived and developed in concert with the Parks and Recreation Department (see City of Austin City Council Resolution 20080424-064).

The first phase includes implementing the "spine" super routes that provide the most direct connectivity from each of the sectors into the central core area.[1] Subsequent phases of the super route network includes construction of those routes that connect to the primary sector spines.

Total Estimated Cost: $4,884,500 to $9,635,000

Benchmark: Complete the initial phase of "super route" improvements within five years from adoption of the plan, or by the beginning of 2020. Complete the remaining second phase improvements by the year 2030.

Table 2.9 Key Super Route Improvements

Route-Segment #	Street	Segment From	Segment To	Recommended Facility	Projected Cost Range
Lance Armstrong Bikeway					
54.07-54.08	W 3RD ST	NUECES	TRINITY ST	BIKE LANE	$55,000 - $85,000
54.09	E 4TH ST	TRINITY	IH 35	PROTECTED BICYCLE LANE	$100,000 - $125,000
54.11-54.13	E 4TH ST	IH 35	COMAL ST	PROTECTED BIKE LANE / BIKE BOULEVARD	$100,000 - $125,000
54.20-54.21	E 5TH ST	TILLERY	SHADY LN	BIKE BOULEVARD	$85,000 - $120,000
954.02	LANCE ARMSTRONG BIKEWAY	LAMAR	CONNECTOR TO CESAR CHAVEZ	MULTI-USE PATH	$65,000 - $90,000
954.22	LANCE ARMSTRONG BIKEWAY	SHADY	BASTROP HWY	MULTI-USE PATH	$175,000 - $315,000
Downtown & UT Super Routes					
48.18-48.20	E 12TH ST	TRINITY ST	BRANCH ST	BIKE LANE	$105,000 - $190,000
48.27	E 12TH ST	SPRINGDALE	WEBBERVILLE	BIKE LANE	$15,500 - $30,000

1 Bounded by Highway 71 to the south, MoPac and US 183 to the east and west, and to US 183/290 to the north.

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Table 2.9 Key Super Route Improvements					
Route-Segment #	Street	Segment From	Segment To	Recommended Facility	Projected Cost Range
49.09-49.10	SAN JACINTO BLVD	DEAN KEETON ST E	MLK BLVD E	BIKE LANE	$76,000 - $115,000
49.18	TRINITY ST	SAN JACINTO	MLK BLVD E	BIKE LANE	$10,000 - $25,000
49.26-49.28	TRINITY ST	5th STREET E	CESAR CHAVEZ E	BIKE LANE	$52,000 - $105,000
31.09-31.12	RIO GRANDE ST	29TH ST W	MLK BLVD W	BIKE BOULEVARD	$125,000 - $150,000
31.14-31.16	NUECES ST	GUADALUPE ST	MLK BLVD W	BIKE BOULEVARD	$125,000 - $150,000
31.18; 31.20-31.24	NUECES ST	MLK BLVD W	3RD ST W	BIKE BOULEVARD	$230,000 - $280,000
40.08	29TH ST W	RIO GRANDE ST	EAST DR	BIKE BOULEVARD	$55,000 - $75,000
40.09	EAST DR	29TH ST W	30TH ST W	BIKE BOULEVARD	$30,000 - $50,000
40.11-40.12	30TH ST	EAST DR	SPEEDWAY	BIKE BOULEVARD	$60,000 - $90,000
47.33	46TH ST W	GUADALUPE	SPEEDWAY	BIKE BOULEVARD	$60,000 - $90,000
47.34-47.37	SPEEDWAY	46TH ST W	31ST ST E	BIKE BOULEVARD	$150,000 - $180,000
47.38	31ST ST E	SPEEDWAY	WALLING	BIKE BOULEVARD	$30,000 - $50,000
47.39-47.41	SPEEDWAY	31ST	DEAN KEETON ST E	BIKE BOULEVARD	$35,000 - $55,000
Northeast Austin and Mueller Super Routes					
57.17	BERKMAN DR	CORONADO HILLS	51ST ST E	BIKE LANE	$120,000 - $165,000
57.18	BERKMAN DR	51ST ST E	MANOR RD	BIKE LANE	$75,000 - $100,000
57.19	PERSHING DR	MANOR RD	EM FRANKLIN	BIKE LANE	$15,000 - $35,000
57.20-57.21	E M FRANKLIN AVE	PERSHING	12TH ST E	BIKE LANE	$55,000 - $90,000
59.20-59.22	PLEASANT VALLEY RD	7TH ST E	LAKESHORE	BIKE LANE	$162,000 - $235,000
61.02	S PLEASANT VALLEY RD	RIVERSIDE	WILLOW HILL	BIKE LANE	$40,000 - $60,000
61.04	S PLEASANT VALLEY RD	OLTORF	END OF ROAD	BIKE LANE	$45,000 - $65,000
63.10*	SPRINGDALE RD	CAMERON RD	US 183	BIKE LANE	$225,000 - $315,000
63.11-63.12	MANOR RD/ SPRINGDALE	US 183	MLK BLVD E	BIKE LANE	$195,000 - $2,750,000
63.16	SPRINGDALE RD	7TH ST E	5TH ST E	BIKE LANE	$7,000 - $20,000
Southwest Austin Super Routes					
31.29	S 5TH ST	ANNIE	MARY	WIDE CURB	$5,000 - $10,000
64.23	BARTON SPRINGS RD	LAMAR	BOULDIN	BIKE LANE	$35,000 - $55,000

Table 2.9 Key Super Route Improvements							
Route-Segment #	**Street**	**Segment From**	**Segment To**	**Recommended Facility**	**Projected Cost Range**		
131.15-131.16	DAWSON/S 5TH ST.	BARTON SPRINGS RD	ANNIE	BIKE LANE	$57,000	-	$80,000
154.01-154.05	E 5TH ST	COMAL ST	TILLERY ST	BIKE LANE	$110,000	-	$160,000
Northwest Austin Super Routes							
907.01	SHOAL CREEK TRAIL	40TH ST W	3RD ST W	MULTI-USE PATH	$2,000,000	-	$3,000,000
				Total Projected Cost:	**$4,884,500**	**-**	**$9,635,000**

This is a preliminary estimate of probable construction costs, and was prepared prior to actual design. Actual design may require additional or different improvements that may change the estimated cost shown. This estimate is intended only to provide an order of magnitude cost for projection of potential future funding requirements. All such estimates should be reviewed and updated periodically to reflect the most current cost information. Costs are based on 2008 unit prices, and do not include escalation.

Recommendations in Table 2.9 will be implemented only after further technical and feasibility analysis is completed by all City departments and other governmental agencies to determine the potential impact to transportation and public safety response as a whole. If it is determined that a specific bicycle facility is infeasible due to its impact on transportation and public safety response as a whole, an alternate route or facility should be pursued and shall follow amendment process if criteria for amendment is met.

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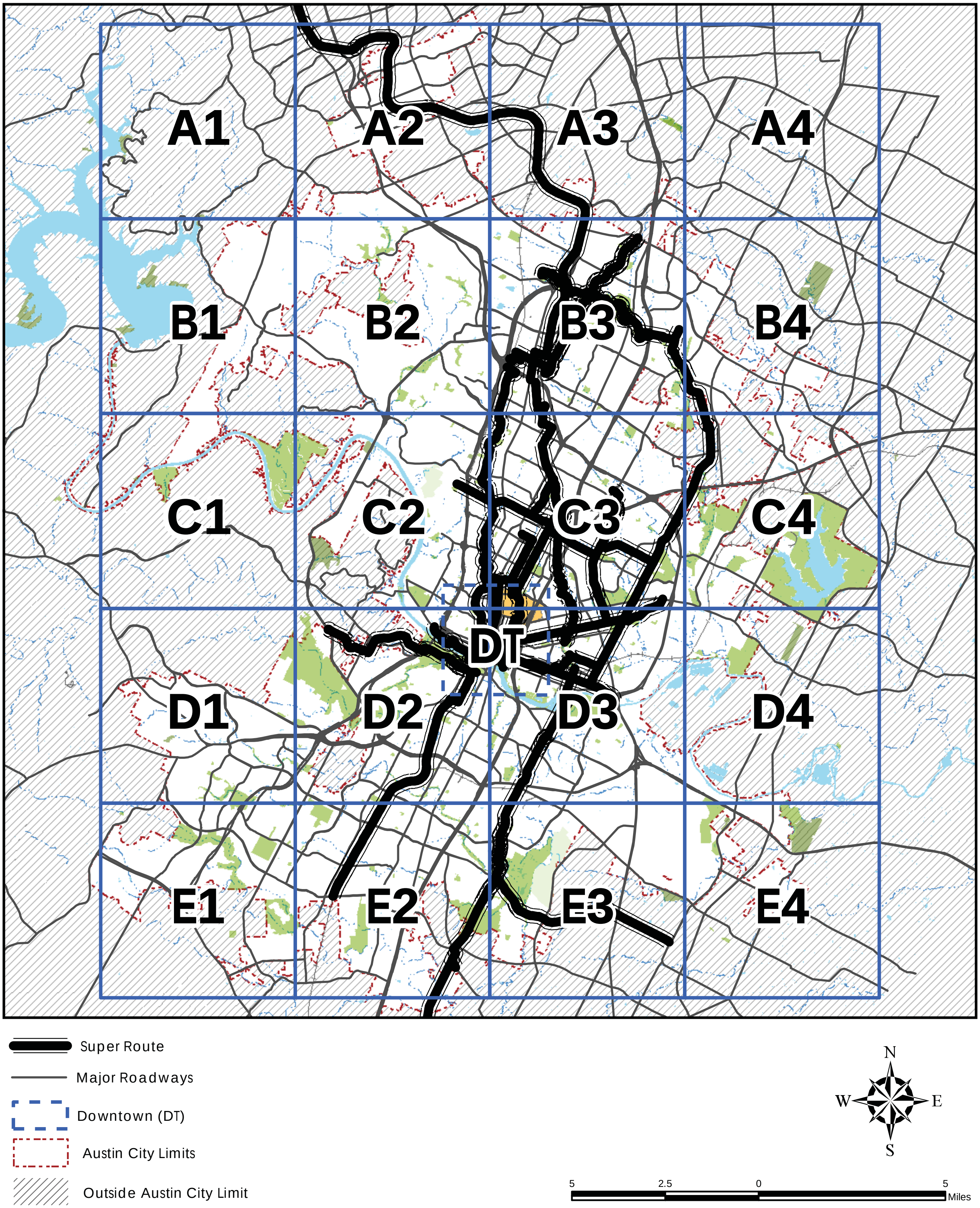
Super Routes: Citywide



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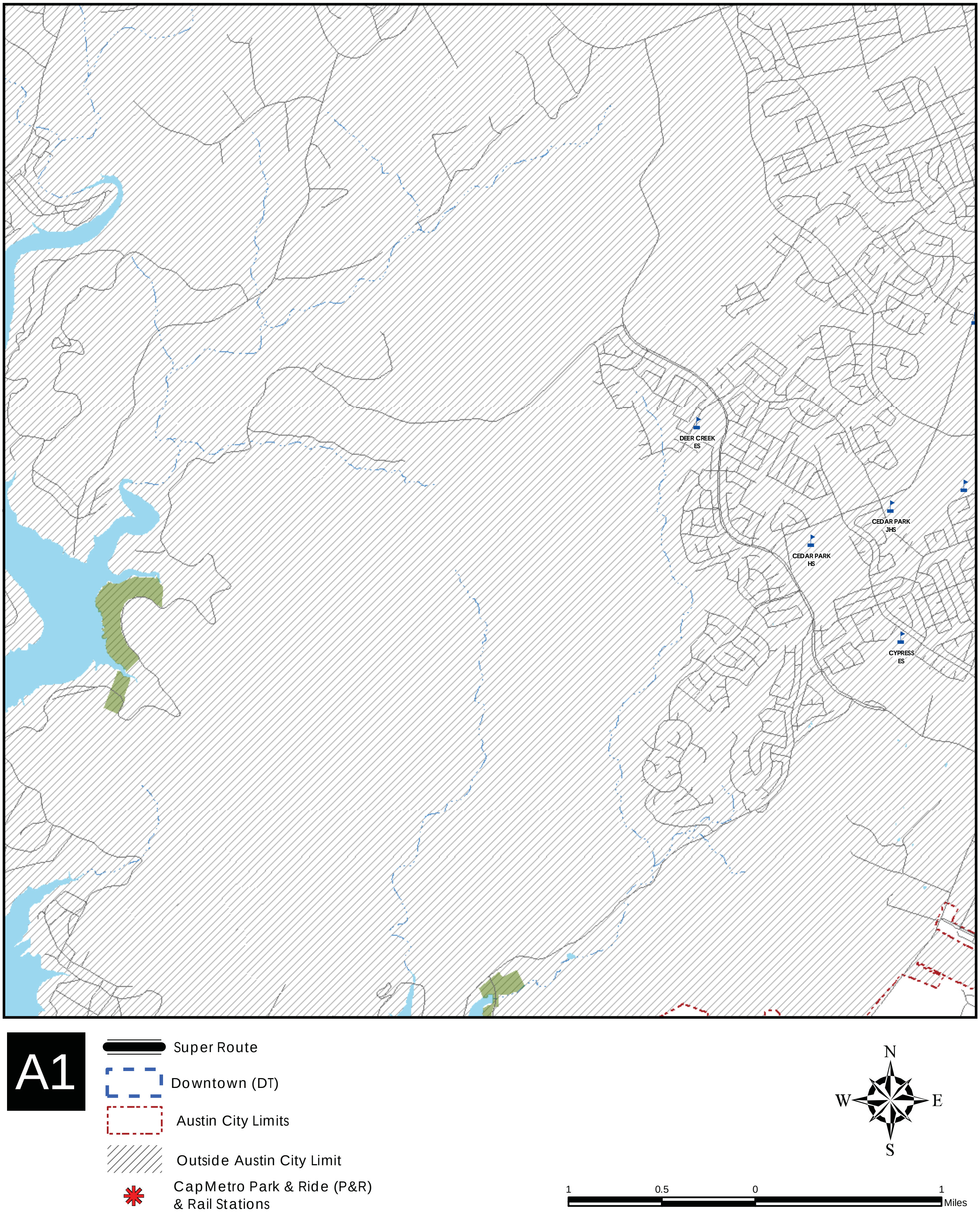
Super Routes: Sector A1



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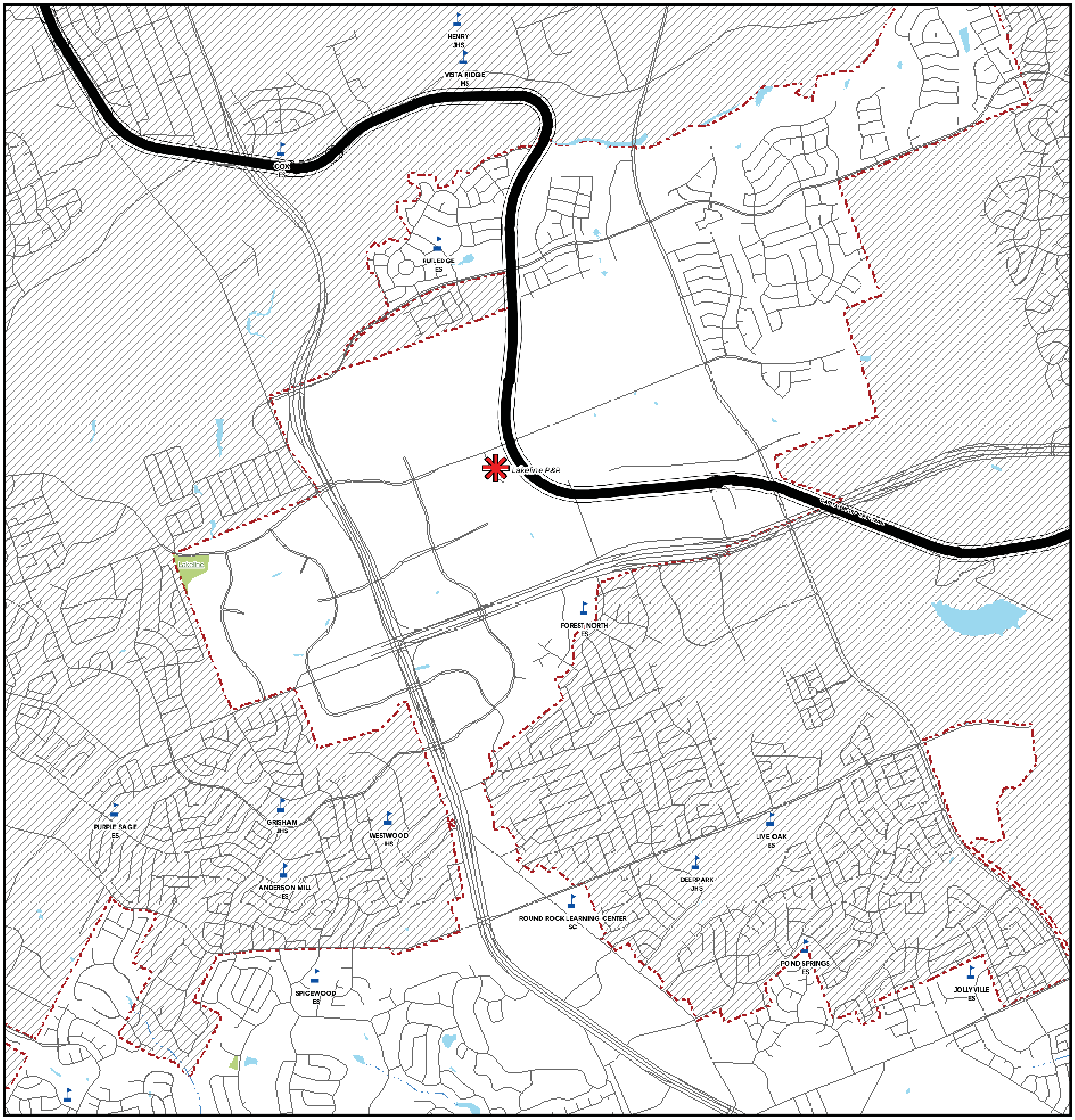
Super Routes: Sector A2



A2

- Super Route
- Downtown (DT)
- Austin City Limits
- Outside Austin City Limit
- CapMetro Park & Ride (P&R) & Rail Stations

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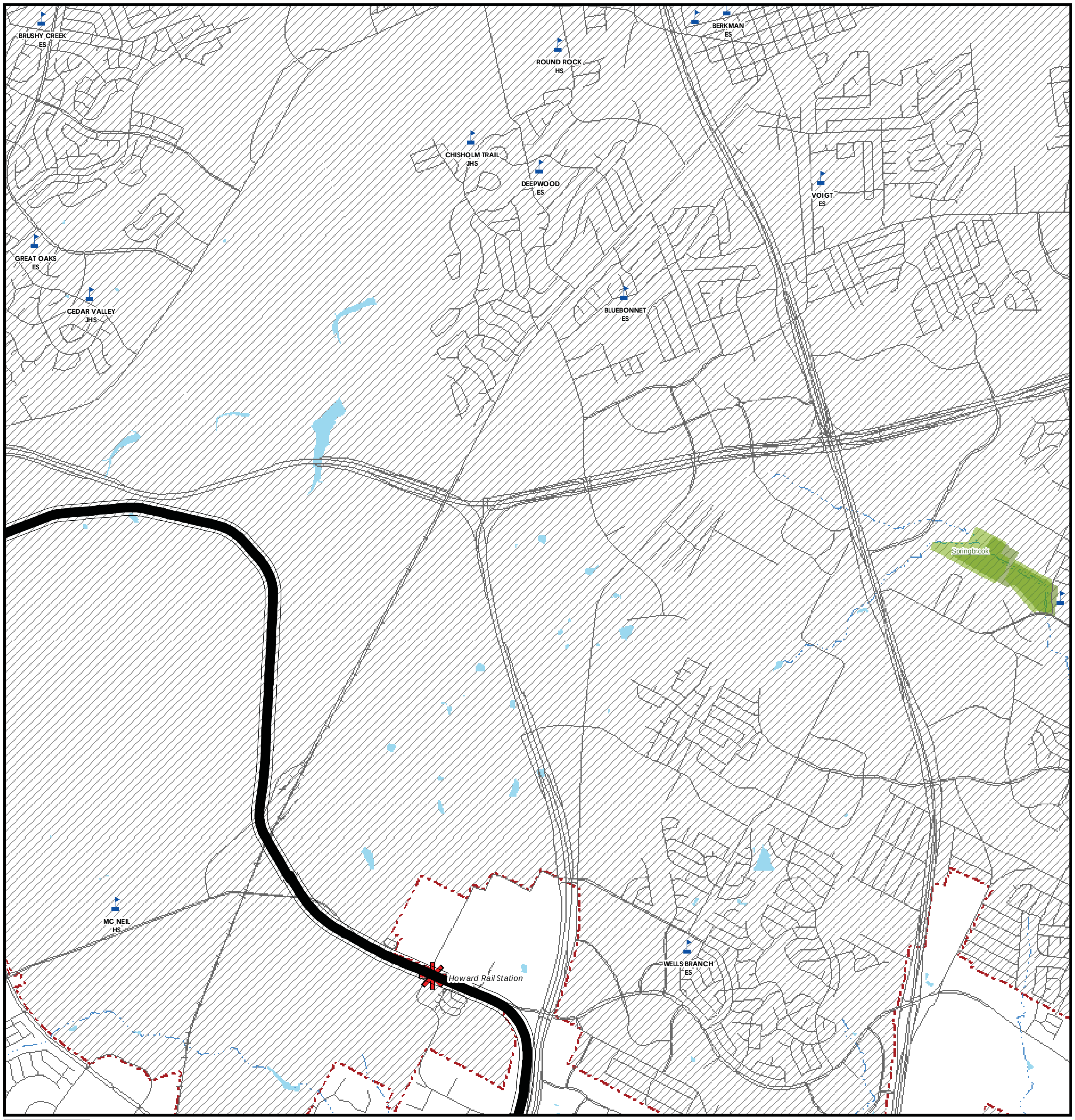
Super Routes: Sector A3



A3

Super Route

Downtown (DT)

Austin City Limits

Outside Austin City Limit

CapMetro Park & Ride (P&R)
& Rail Stations

N W E S

1 0.5 0 1 Miles

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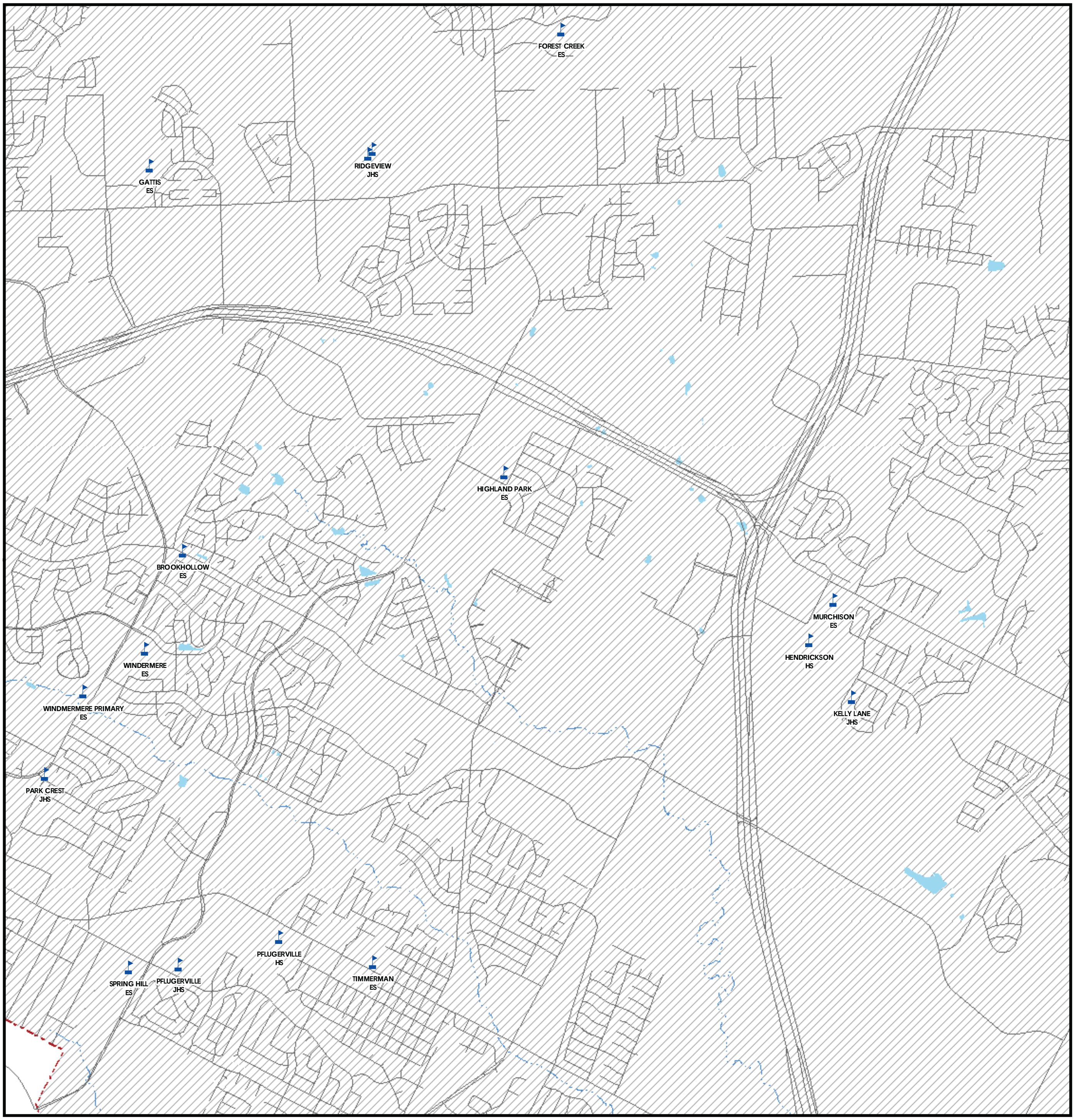
Super Routes: Sector A4



A4

Super Route

Downtown (DT)

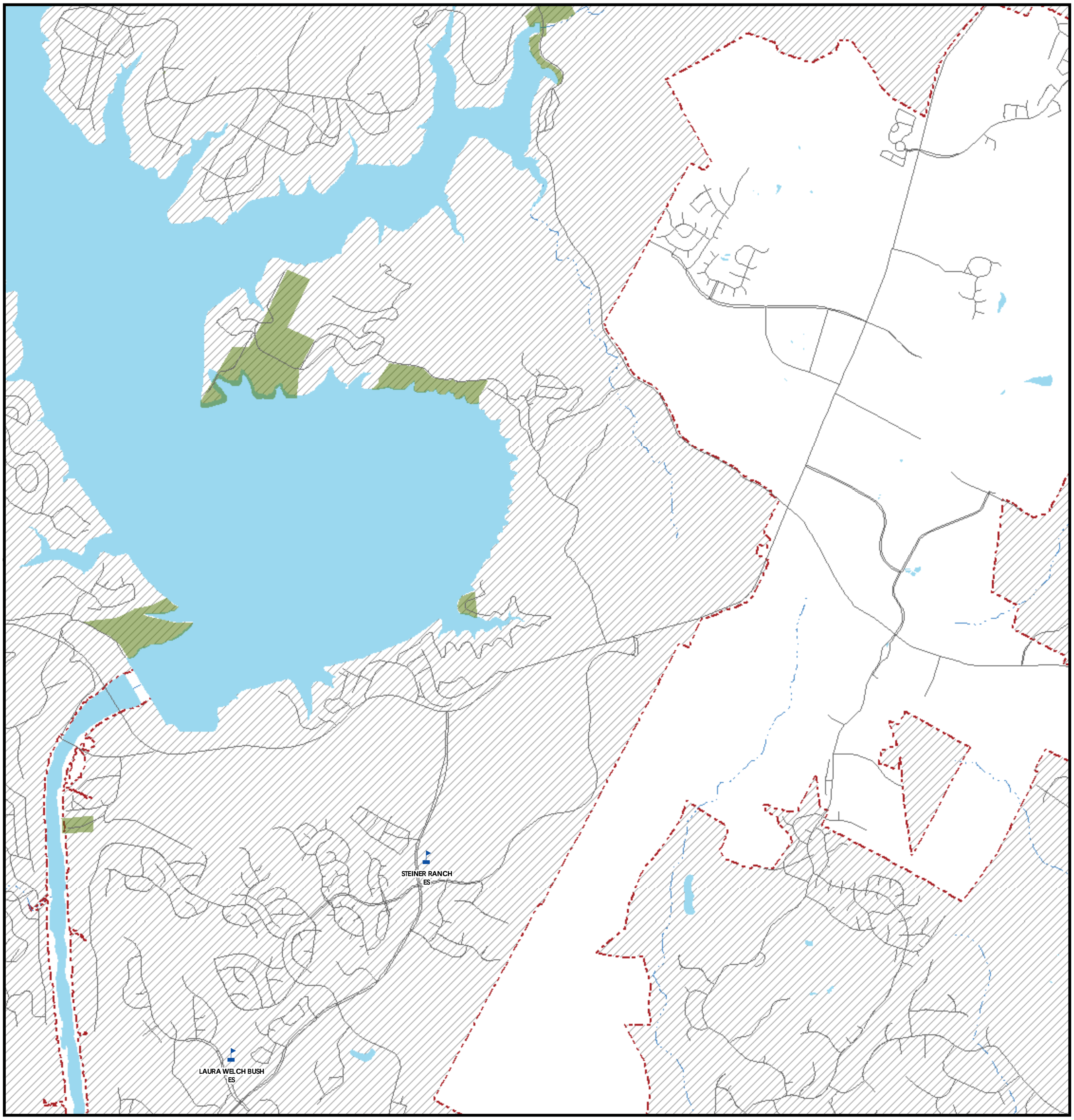
Austin City Limits

Outside Austin City Limit

CapMetro Park & Ride (P&R)
& Rail Stations

DRAFT

Super Routes: Sector B1



B1

Super Route

Downtown (DT)

Austin City Limits

Outside Austin City Limit

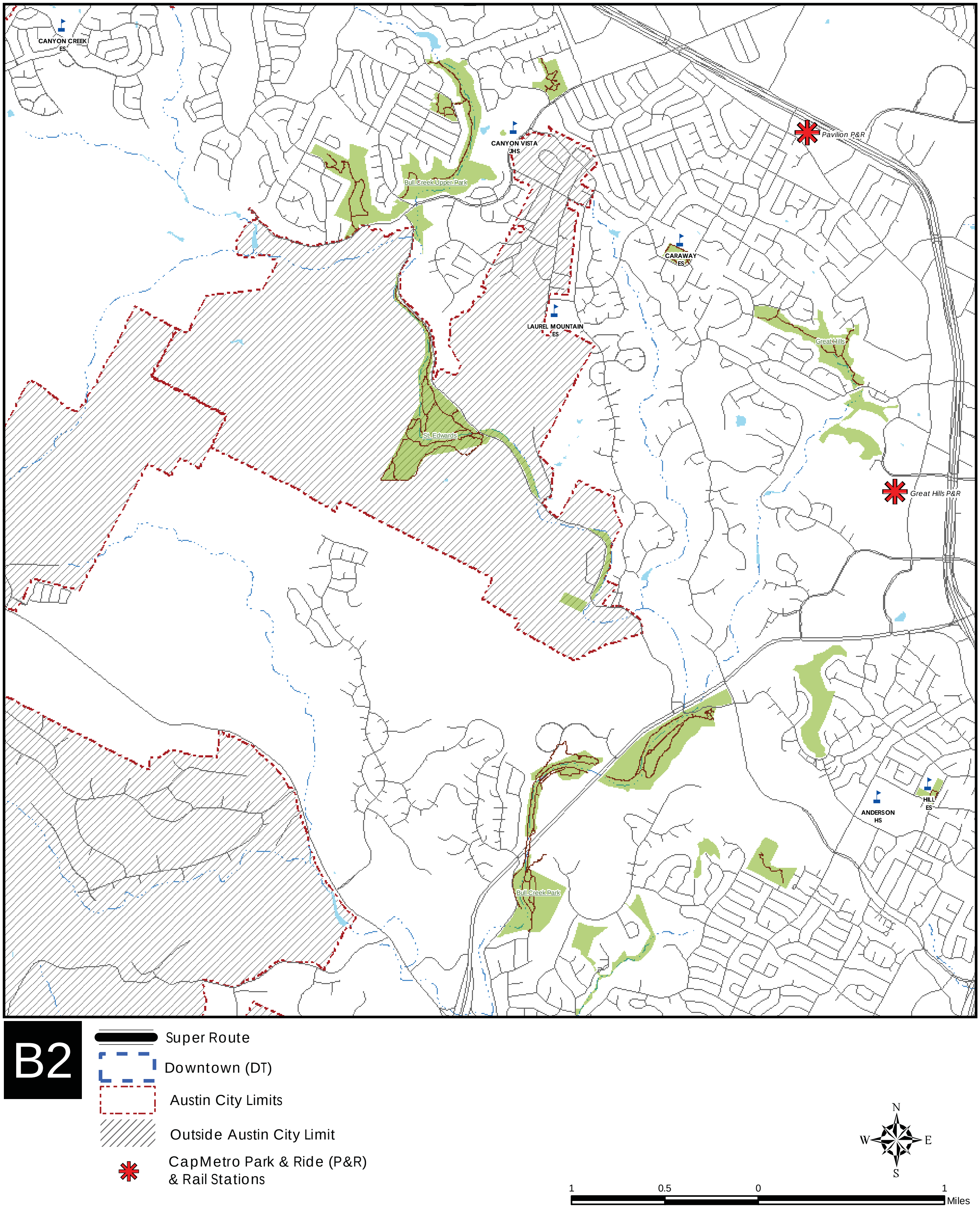
CapMetro Park & Ride (P&R)
& Rail Stations

N
W E
S

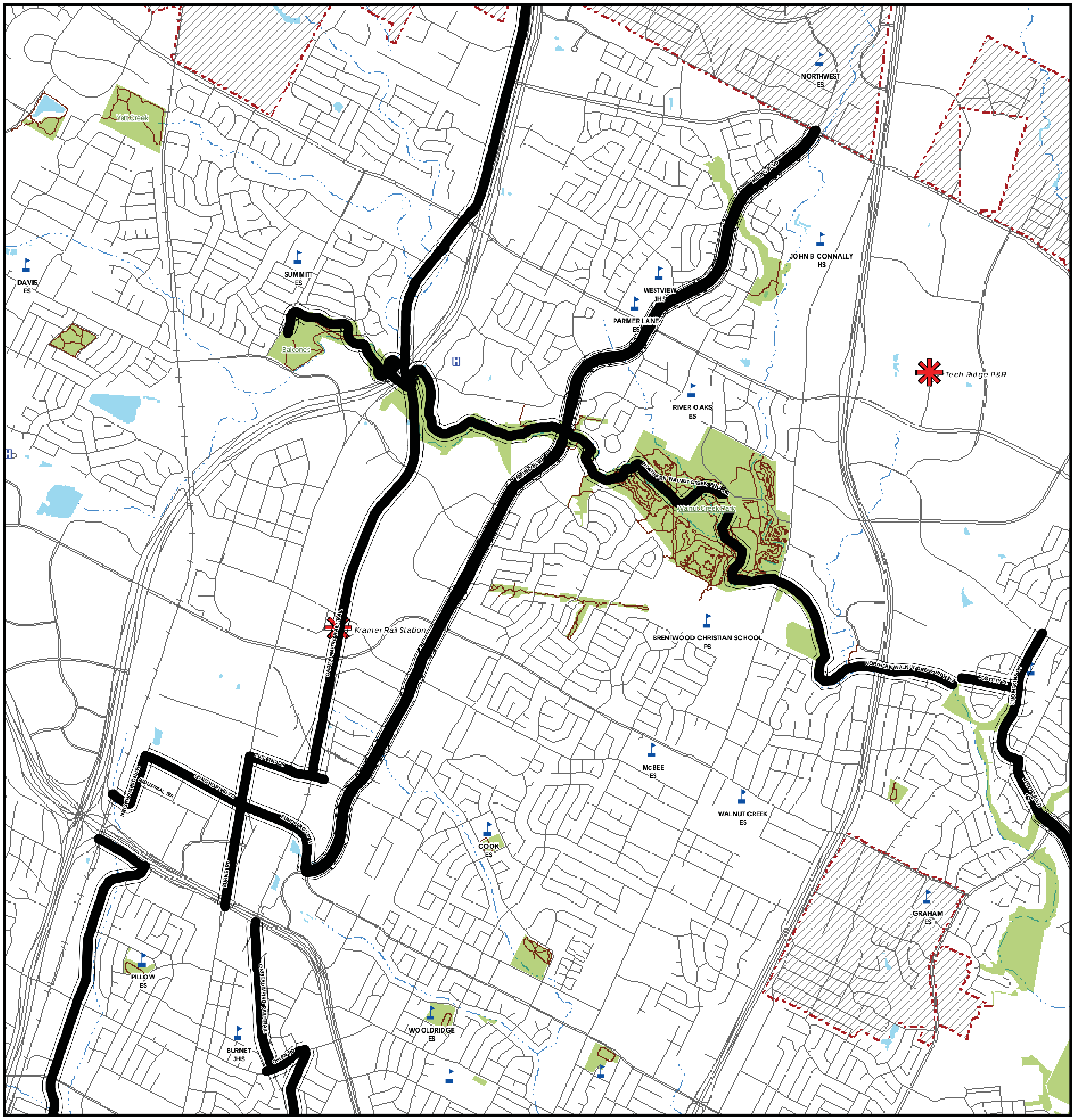
1 0.5 0 1
Miles

DRAFT

Super Routes: Sector B2



Super Routes: Sector B3



B3

Super Route

Downtown (DT)

Austin City Limits

Outside Austin City Limit

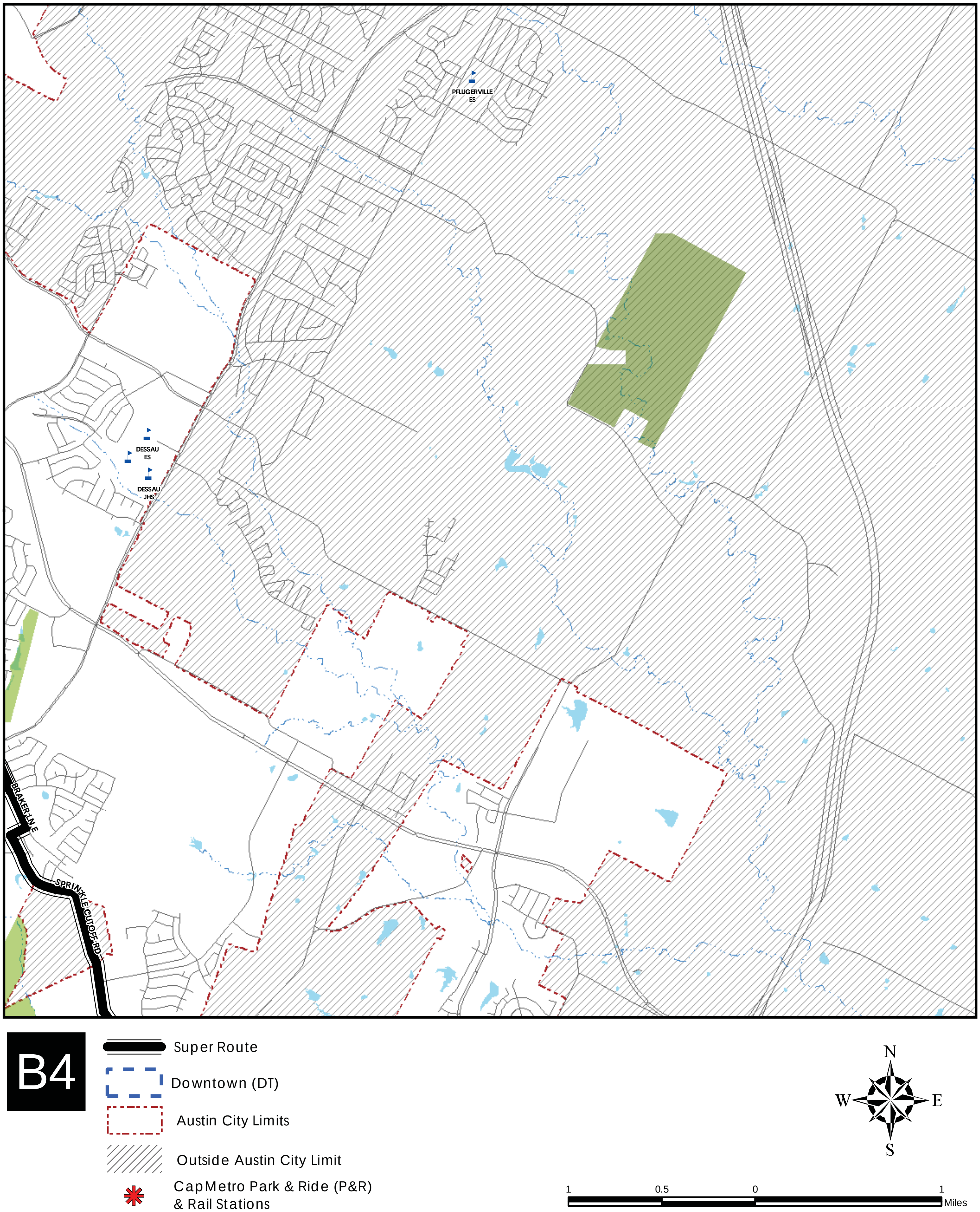
CapMetro Park & Ride (P&R)
& Rail Stations

N
W E
S

1 0.5 0 1
Miles

DRAFT

Super Routes: Sector B4



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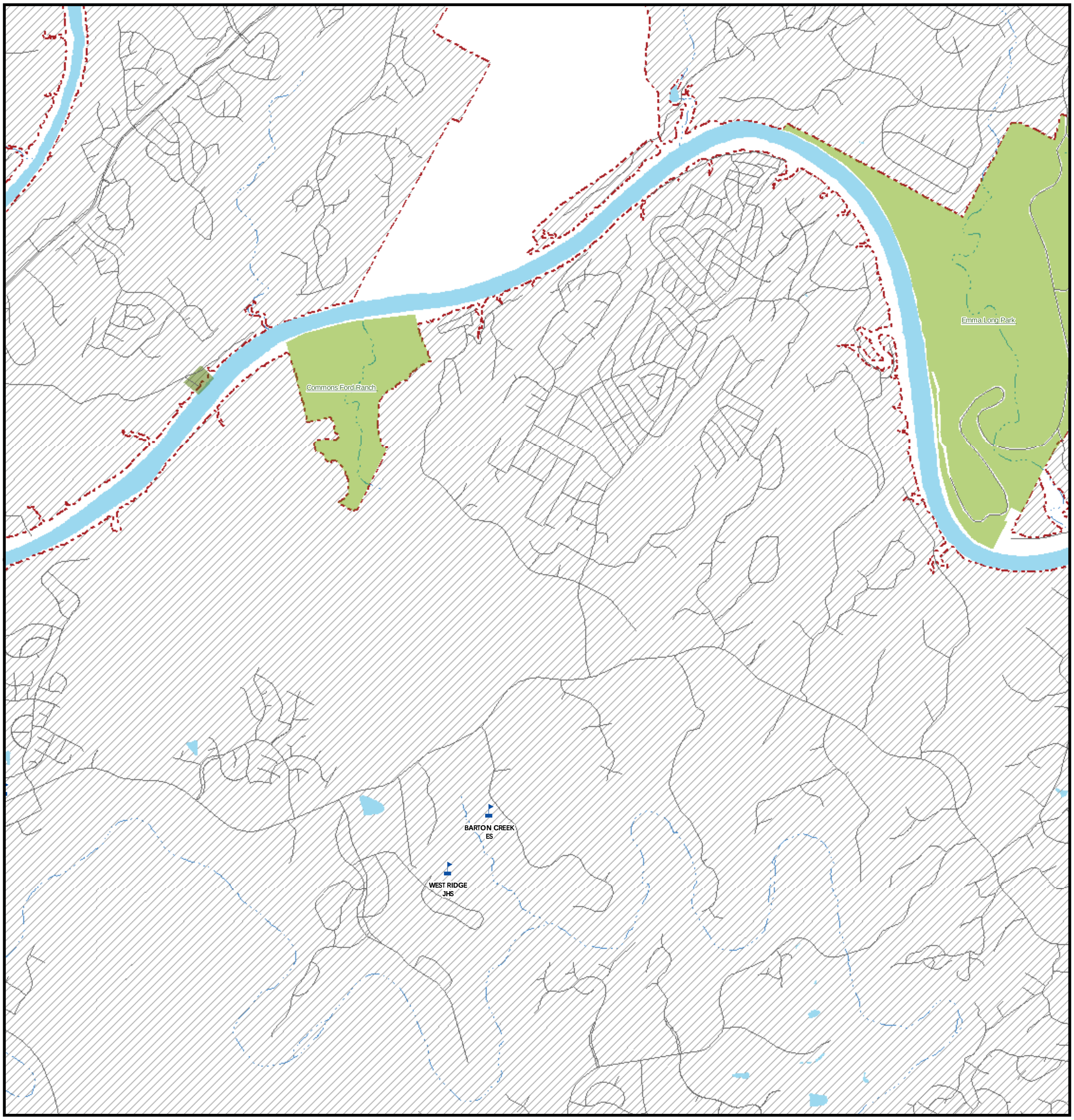
Super Routes: Sector C1



C1

Super Route

Downtown (DT)

Austin City Limits

Outside Austin City Limit

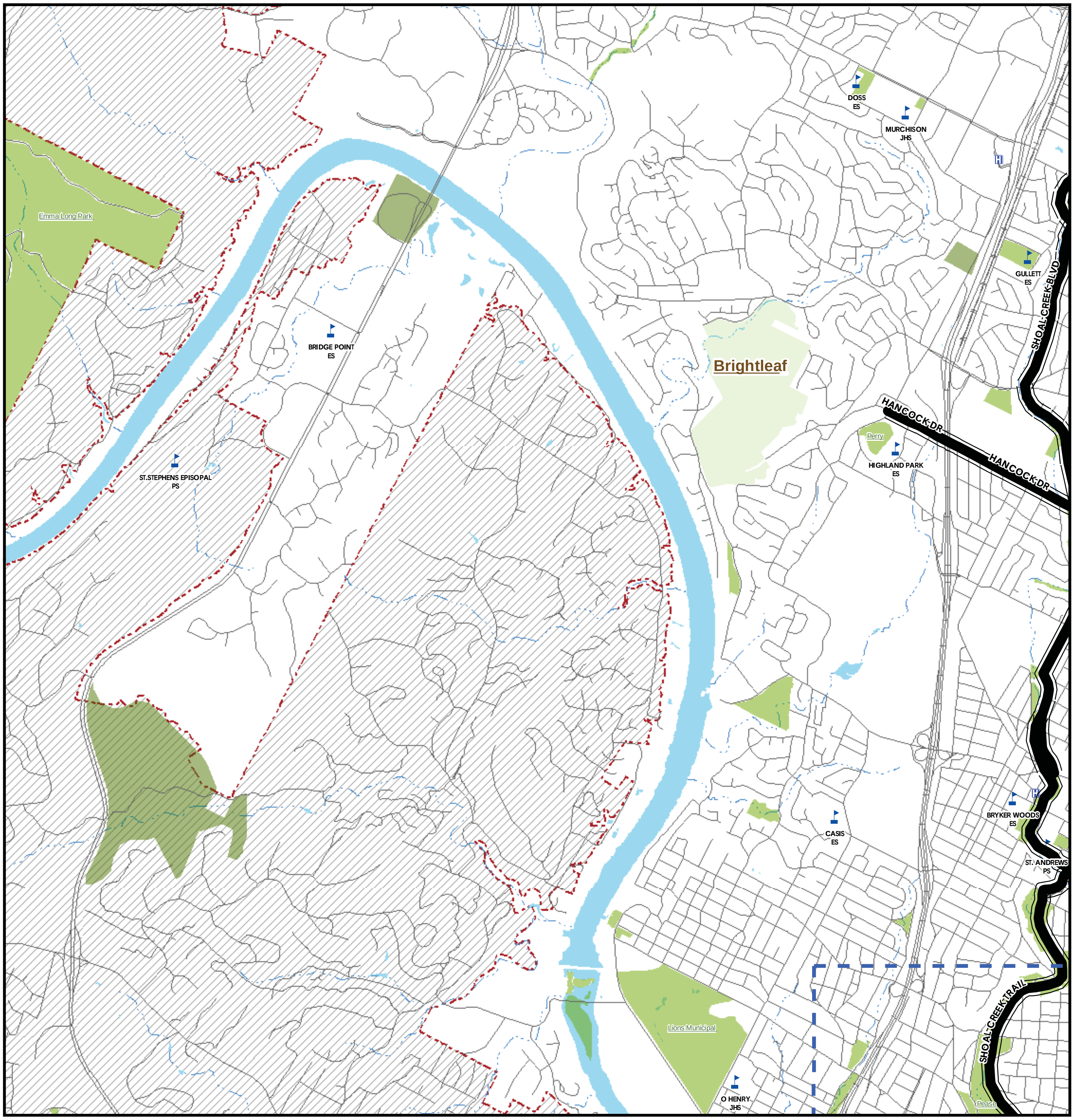
CapMetro Park & Ride (P&R) & Rail Stations

N W E S

1 0.5 0 1 Miles

DRAFT

Super Routes: Sector C2



C2

Super Route

Downtown (DT)

Austin City Limits

Outside Austin City Limit

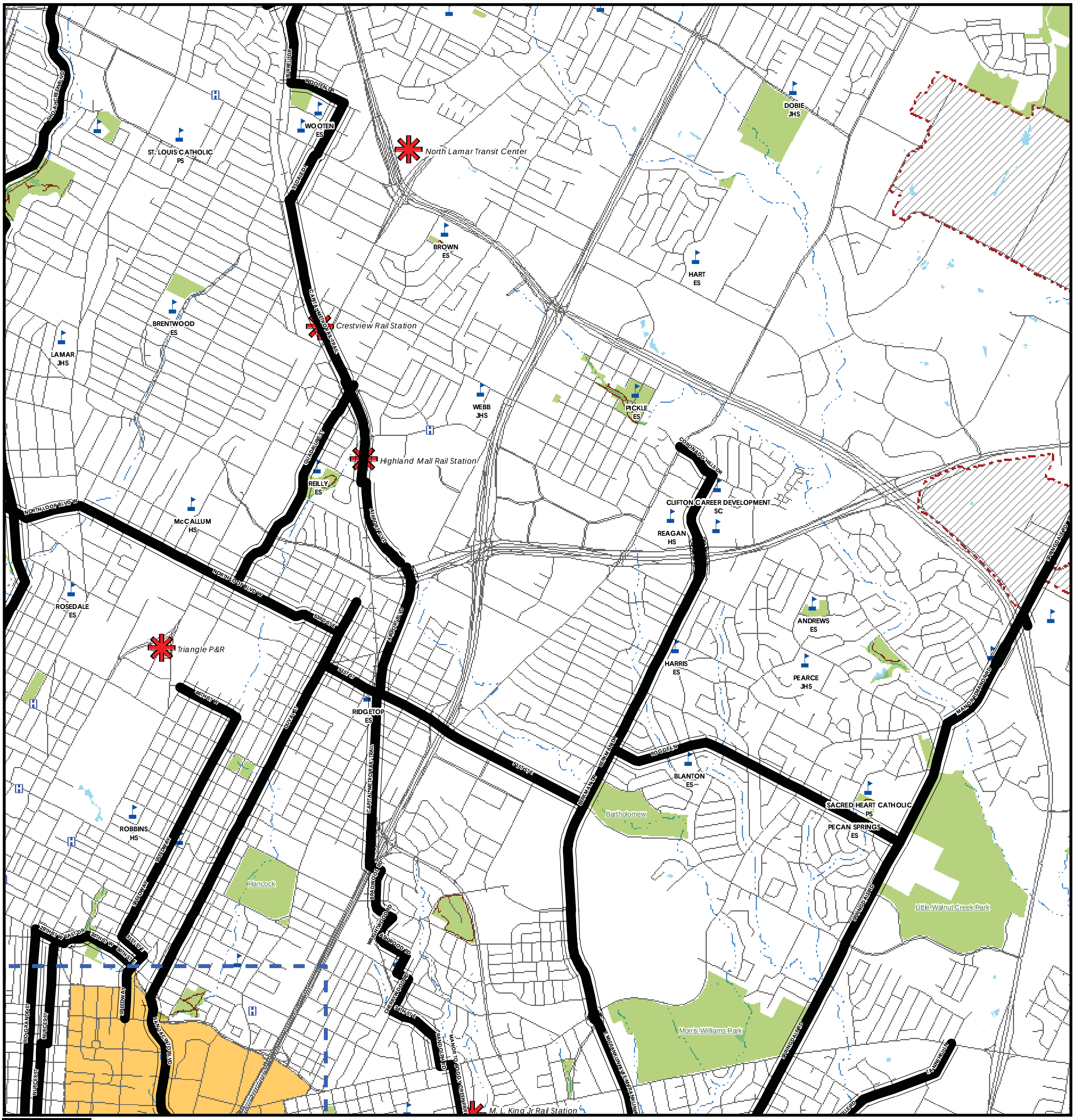
CapMetro Park & Ride (P&R)
& Rail Stations

N
W E
S

1 0.5 0 1
Miles

DRAFT

Super Routes: Sector C3



C3

Super Route

Downtown (DT)

Austin City Limits

Outside Austin City Limit

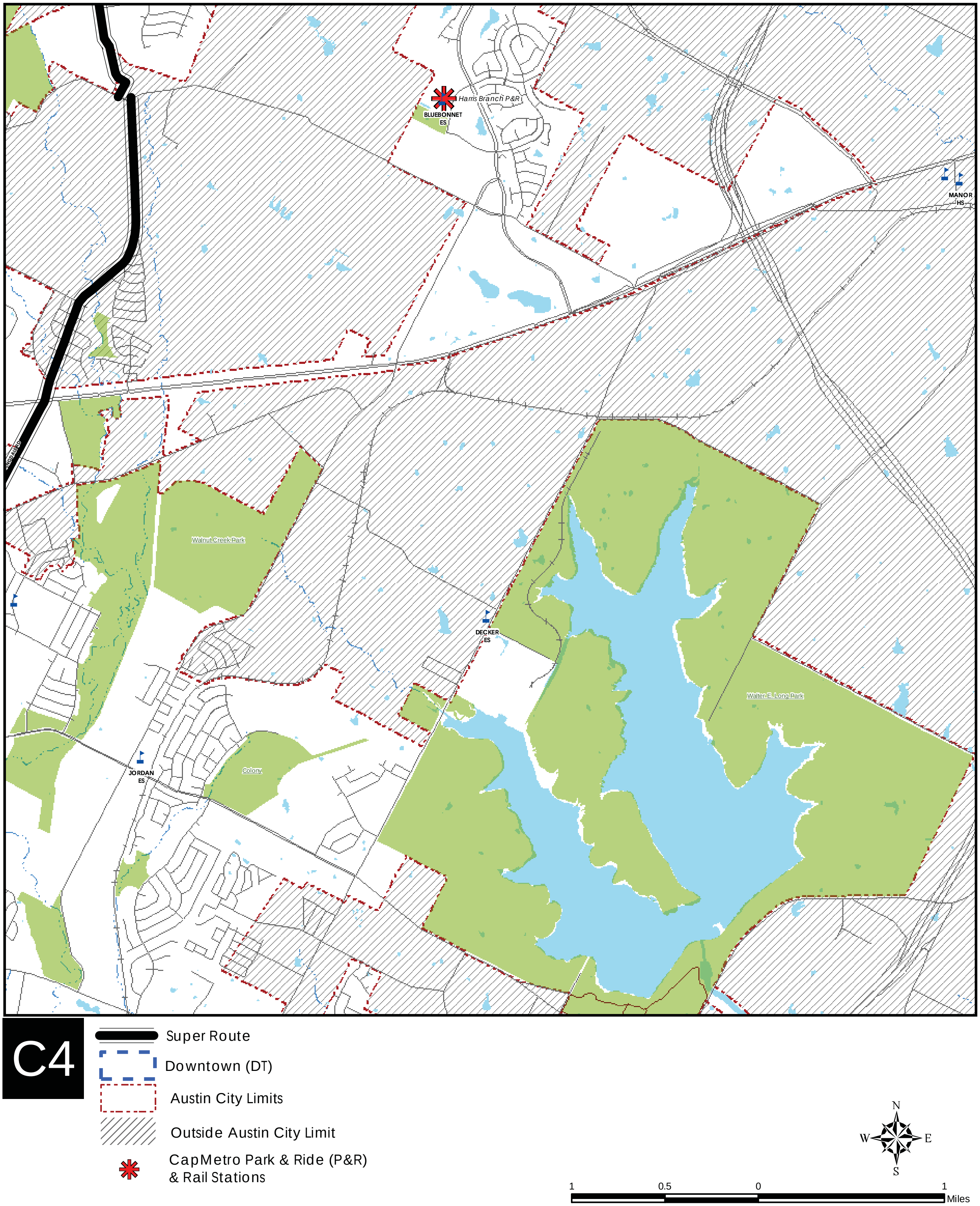
CapMetro Park & Ride (P&R) & Rail Stations

N
W E
S

1 0.5 0 1 Miles

DRAFT

Super Routes: Sector C4



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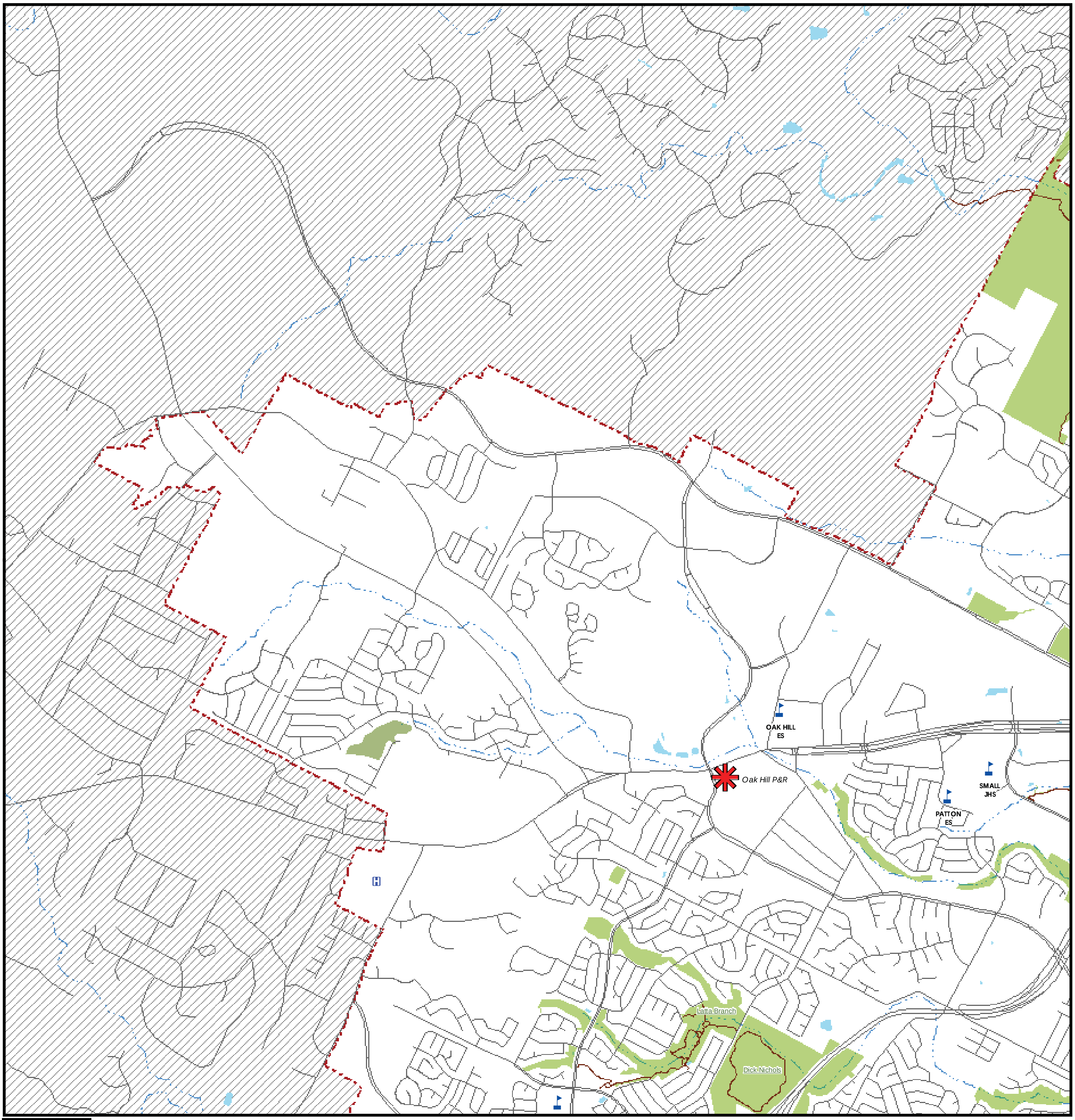
Super Routes: Sector D1



D1

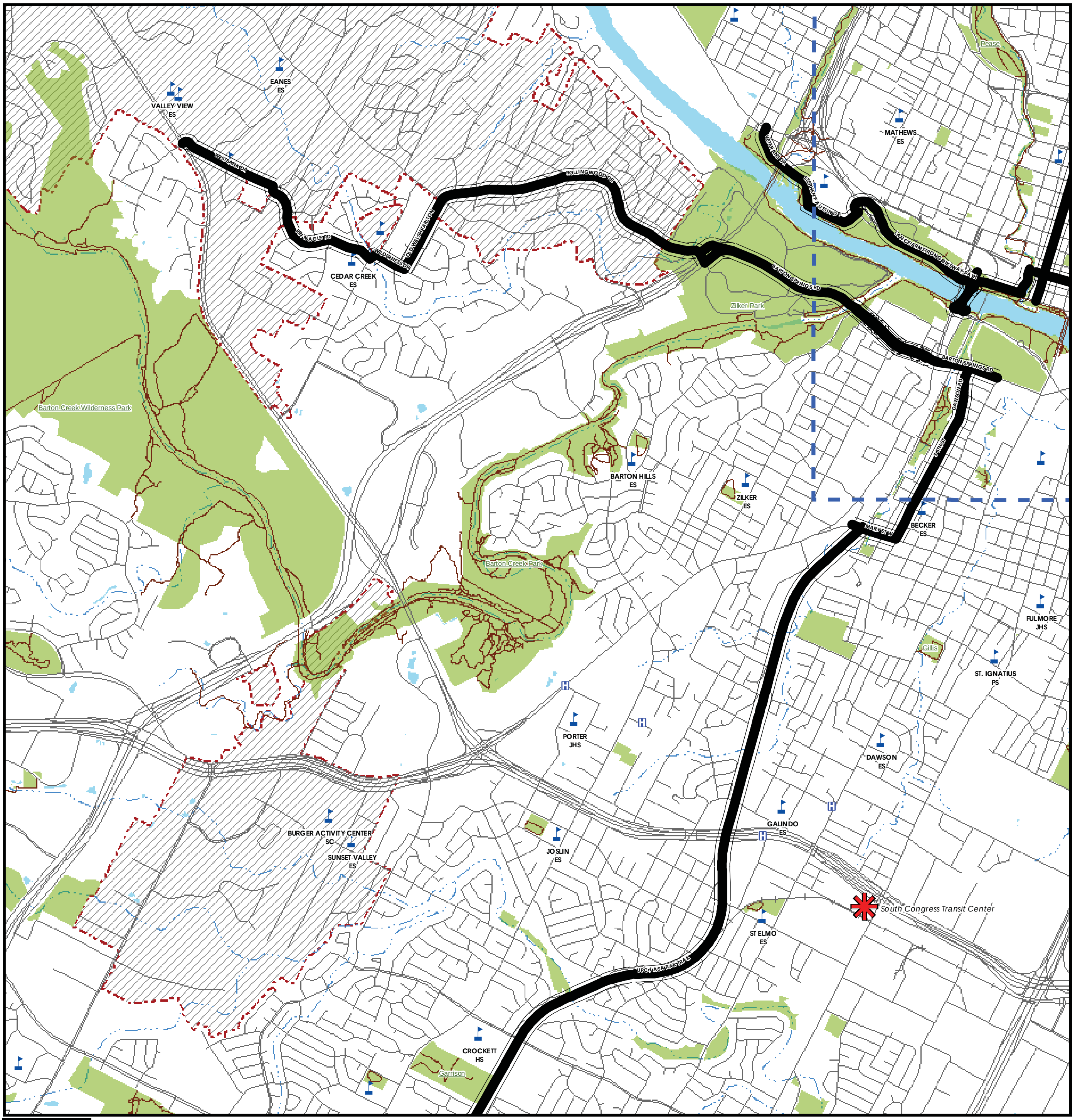
- Super Route
- Downtown (DT)
- Austin City Limits
- Outside Austin City Limit
- CapMetro Park & Ride (P&R) & Rail Stations

N W E S

1 0.5 0 1 Miles

DRAFT

Super Routes: Sector D2



D2

Super Route

Downtown (DT)

Austin City Limits

Outside Austin City Limit

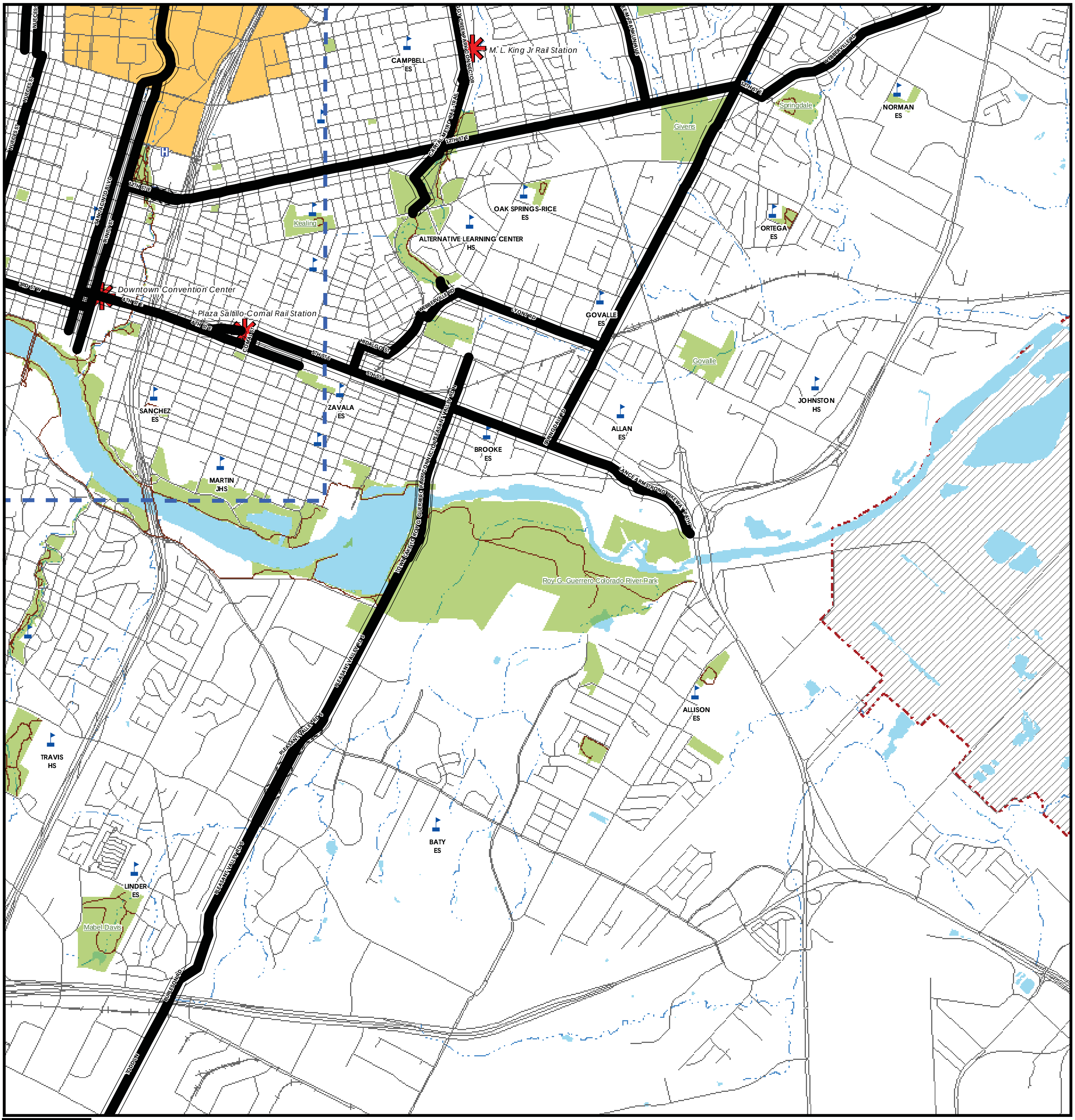
CapMetro Park & Ride (P&R)
& Rail Stations

N
W E
S

1 0.5 0 1
Miles

DRAFT

Super Routes: Sector D3



D3

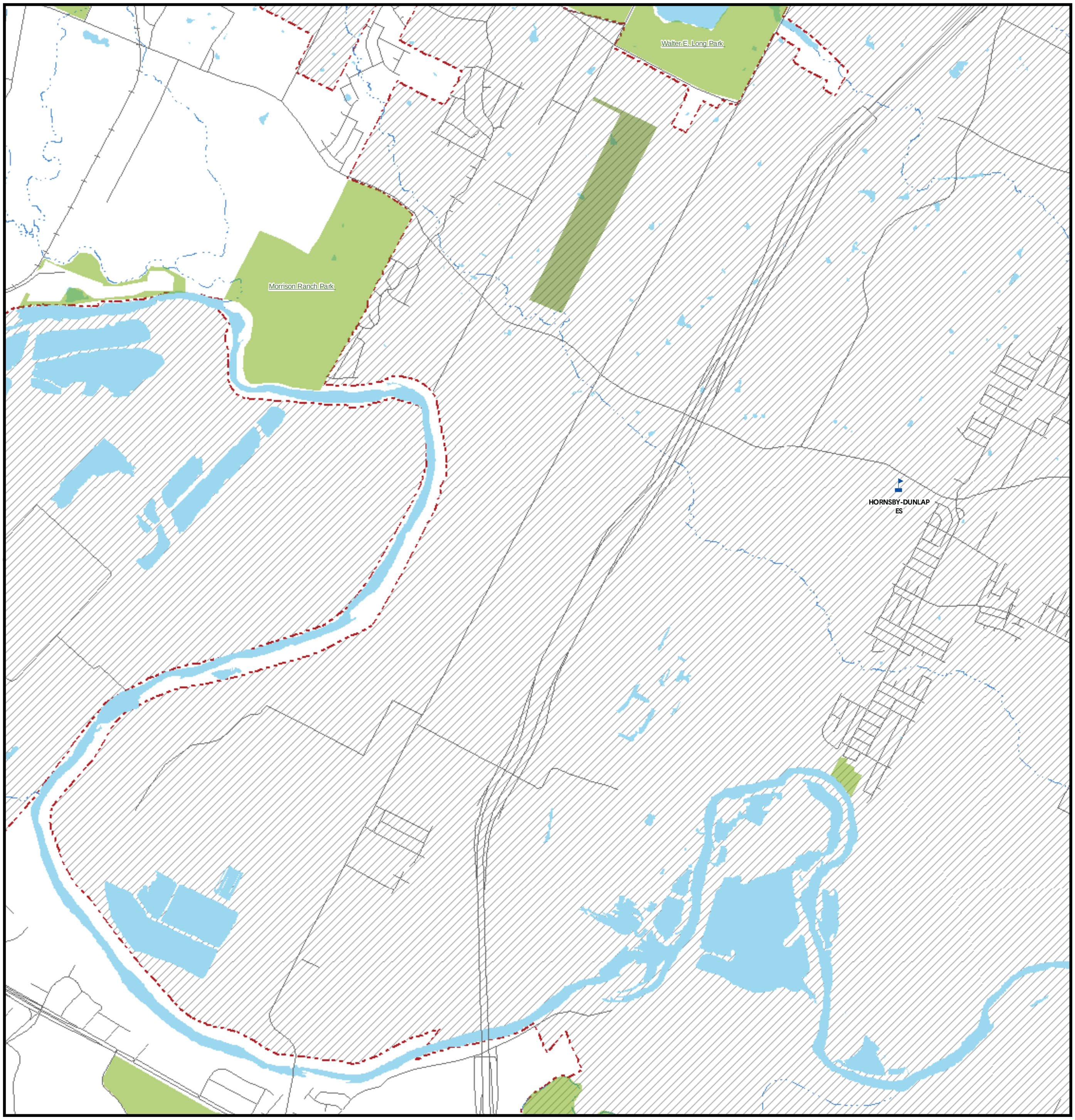
- Super Route
- Downtown (DT)
- Austin City Limits
- Outside Austin City Limit
- CapMetro Park & Ride (P&R) & Rail Stations

N W E S

1 0.5 0 1 Miles

DRAFT

Super Routes: Sector D4



D4

Super Route

Downtown (DT)

Austin City Limits

Outside Austin City Limit

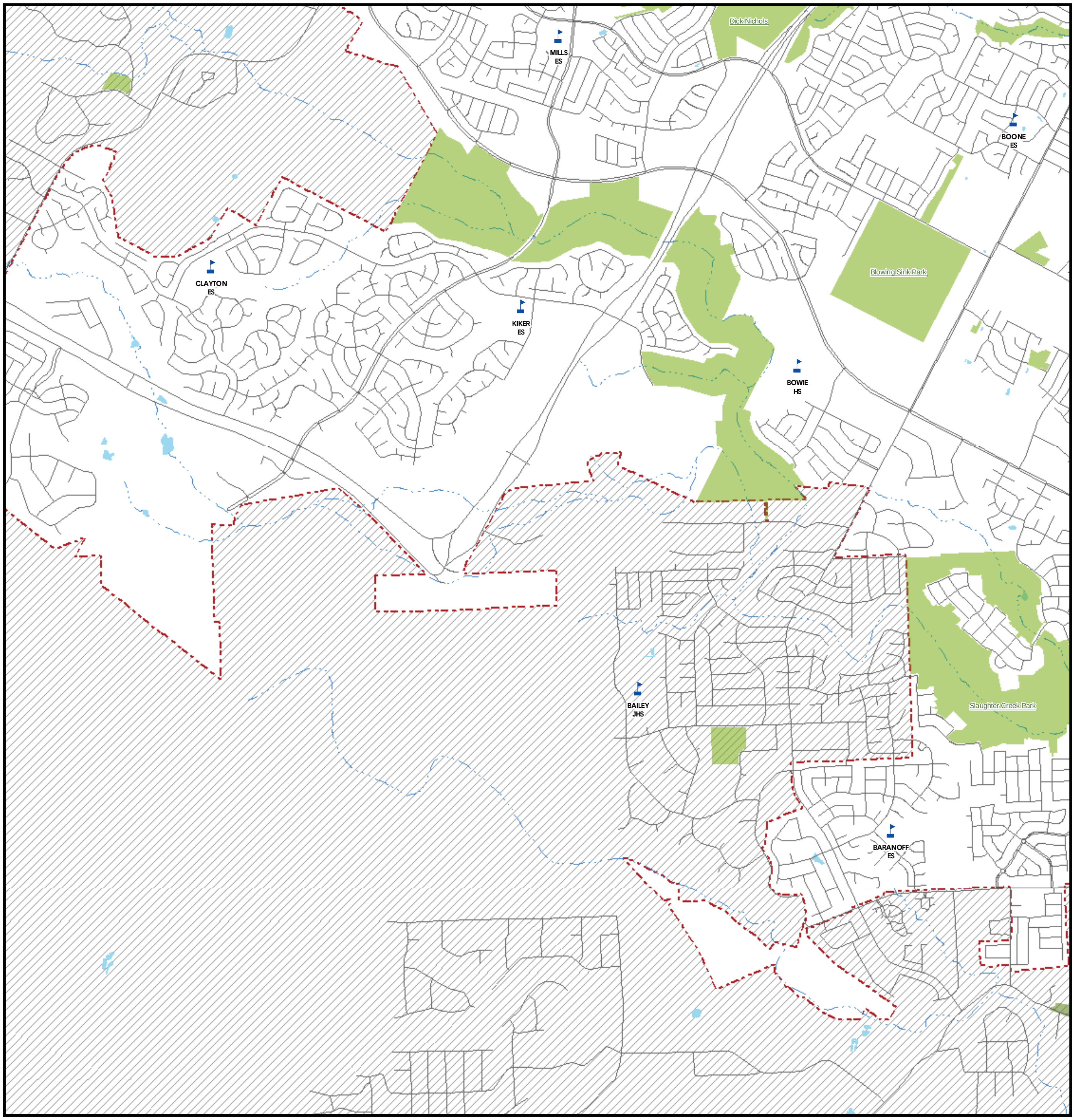
CapMetro Park & Ride (P&R)
& Rail Stations

N
W E
S

1 0.5 0 1
Miles

DRAFT

Super Routes: Sector E1



E1

Super Route

Downtown (DT)

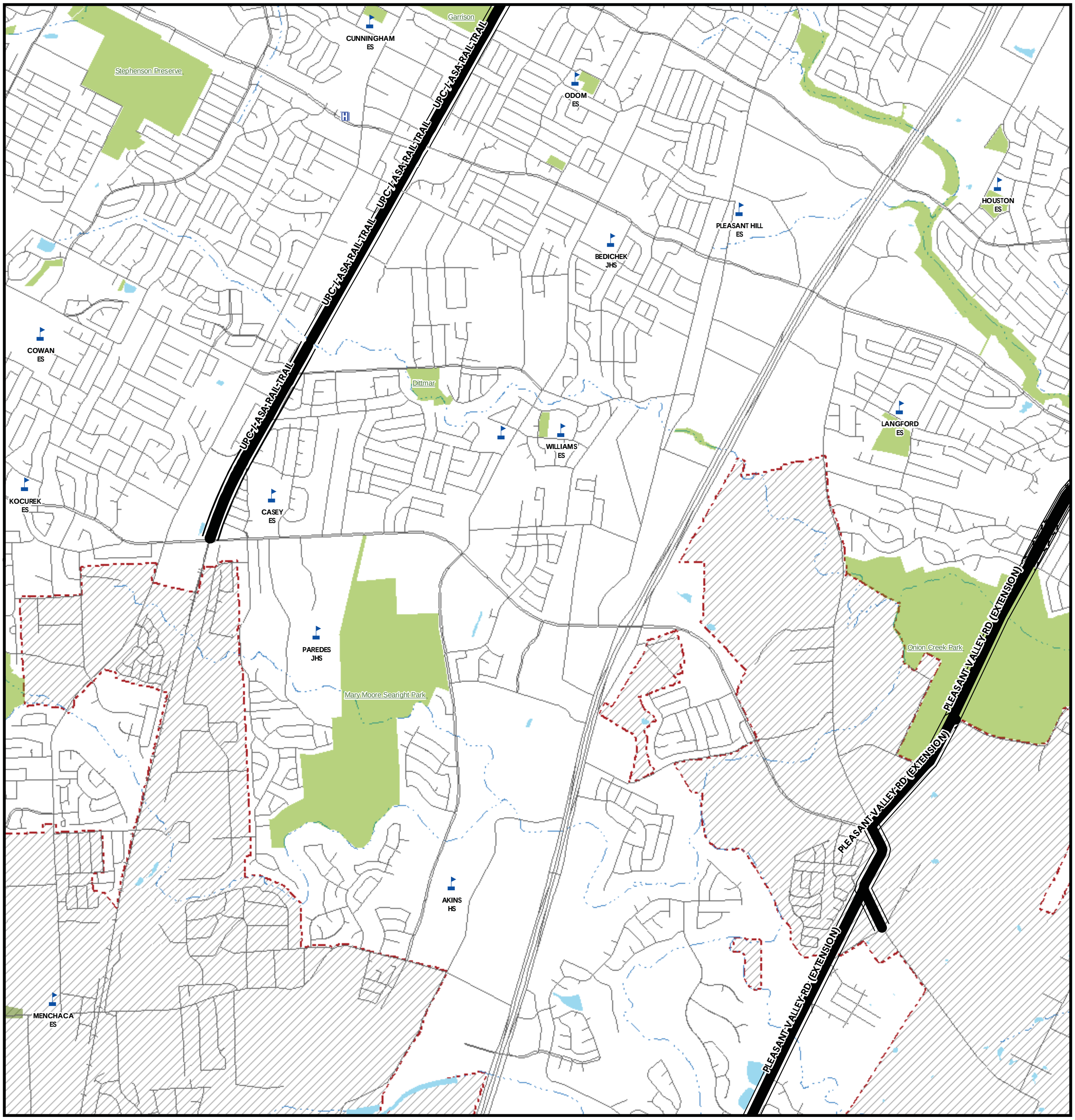
Austin City Limits

Outside Austin City Limit

CapMetro Park & Ride (P&R)
& Rail Stations

DRAFT

Super Routes: Sector E2



E2

Super Route

Downtown (DT)

Austin City Limits

Outside Austin City Limit

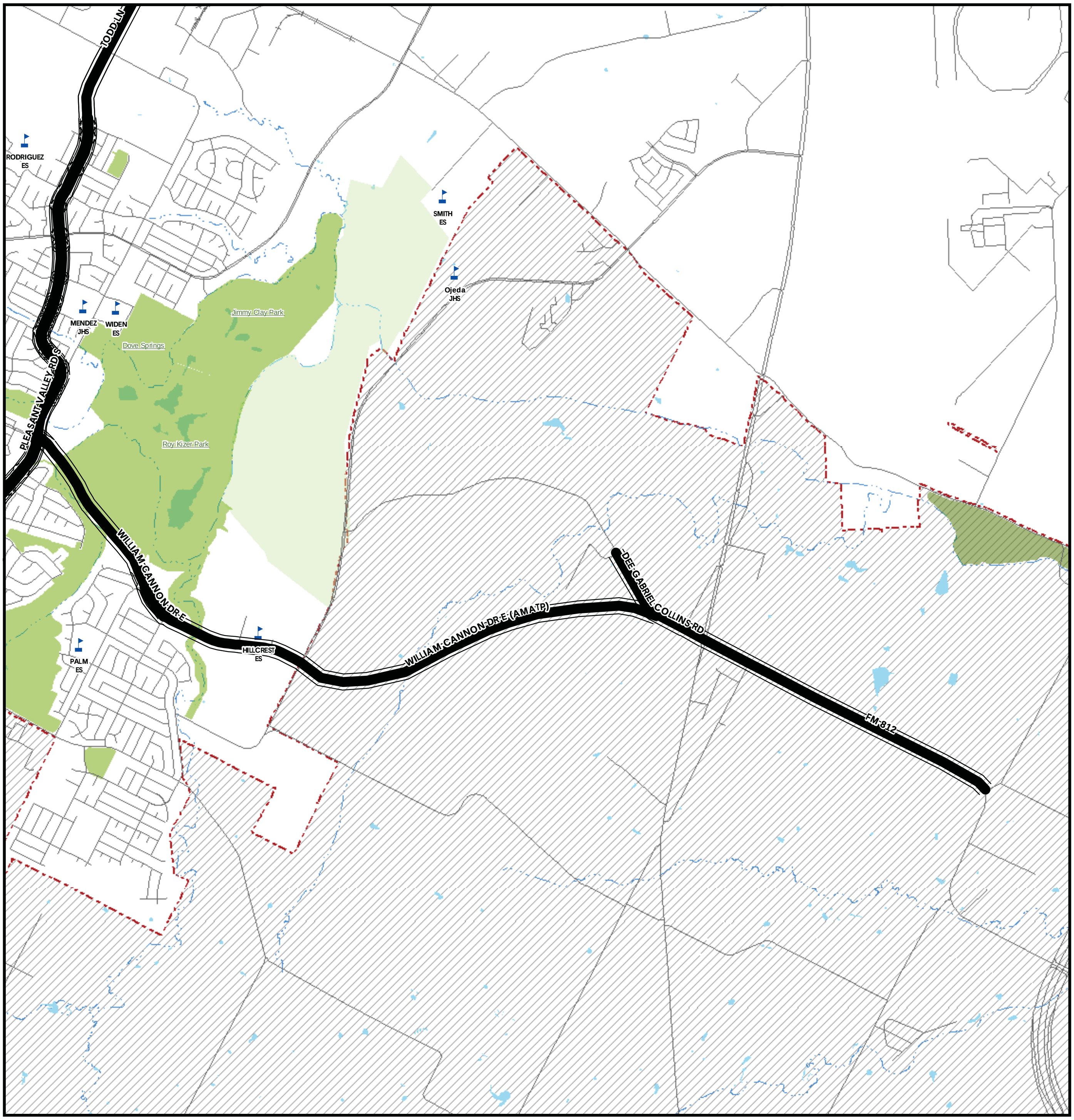
CapMetro Park & Ride (P&R)
& Rail Stations

N W E S

1 0.5 0 1 Miles

DRAFT

Super Routes: Sector E3



E3

Super Route

Downtown (DT)

Austin City Limits

Outside Austin City Limit

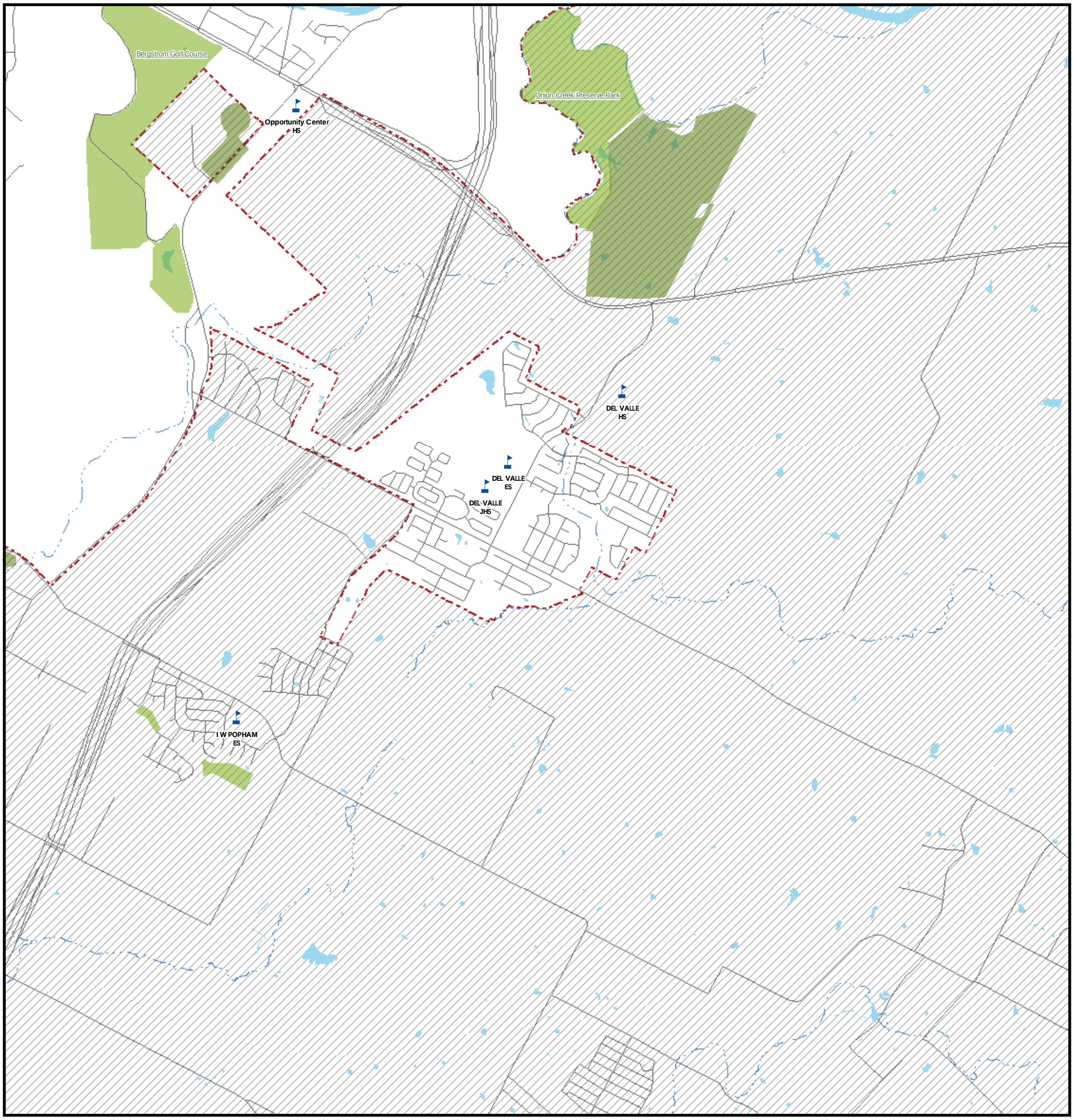
CapMetro Park & Ride (P&R)
& Rail Stations

N W E S

1 0.5 0 1 Miles

DRAFT

Super Routes: Sector E4



E4

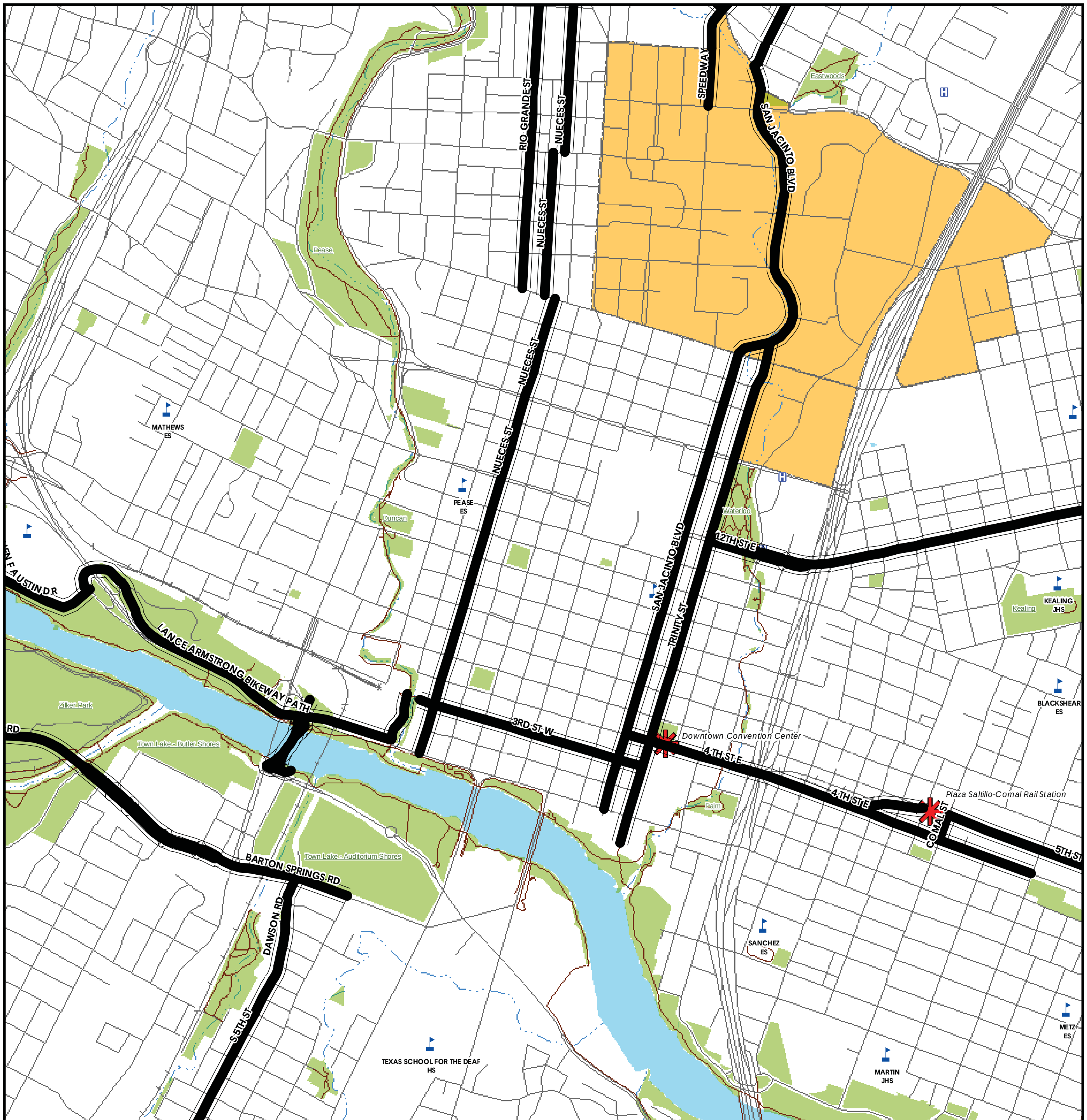
Super Route
Downtown (DT)
Austin City Limits
Outside Austin City Limit
CapMetro Park & Ride (P&R)
& Rail Stations

N
W E
S

1 0.5 0 1
Miles

DRAFT

Super Routes: Sector DT



DT

- Super Route
- Downtown (DT)
- Austin City Limits
- Outside Austin City Limit
- CapMetro Park & Ride (P&R) & Rail Stations

N W E S

0.5 0.25 0 0.5 Miles

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