SANMARCOS

TRANSPORTATION MASTER PLAN

2018

THE CITY OF SAN MARCOS

DRAFT

INTRODUCTION

The City of San Marcos and Hays County are experiencing significant growth, and San Marcos is among the fastest growing cities in the nation.

To keep pace with the growing community and transportation needs, the City has developed this Update to its 2004 Transportation Master Plan. By reviewing policies, development rules and the existing transportation network, this Update will help the City prepare and prioritize for the future.

This Transportation Master Plan considers new socioeconomic data and information from the City of San Marcos 2013 Comprehensive Plan "Vision San Marcos: A River Runs Through Us".

The improvements identified in this plan will help to enhance transportation safety, minimize congestion, preserve local character and protect the rivers and the San Marcos environment.

In December 2013, San Marcos was named #9 on Business Insider's list of the "10 Most Exciting Small Cities in America."

WHAT DOES A TRANSPORTATION MASTER PLAN DO?

Cities grow. Growth means more people with more places to go, creating increased demand on the roadways and infrastructure. To keep things running smoothly, cities must establish plans and policies to accommodate the growth.

A Transportation Master Plan is a planning tool that outlines goals and policies for the transportation system, and builds on data and analysis to develop recommendations to accommodate growth.

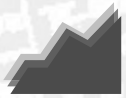
A Transportation Master Plan should protect the environmental, historic and natural resources of the area, while providing safety and mobility for all modes of transportation. The Plan serves the growing and changing needs of the community.

TRANSPORTATION MASTER PLAN DEVELOPMENT PROCESS

Creating a Transportation Master Plan includes a process from which recommendations are developed. The steps in this process are described below and presented in detail throughout the document.

Understand the Goals

Goals established in the Comprehensive Plan are the basis of the Transportation Master Plan. These goals are expanded and refined to inform the transportation recommendations in the Transportation Master Plan.



Document Existing Conditions

Understanding the existing conditions helps establish where the community is in relation to its goals. Data on demographics, bicycle infrastructure, trails, sidewalks, roadway inventory and traffic operations is collected. The projected level of growth based on census data and City planning information is also determined.

Community Engagement

Incorporating the community into the development of Transportation Master Plan is important to gather input and feedback for informed consent.

Develop the Future Scenario

Traffic models are used to evaluate future traffic conditions based on the projected levels of growth. These models along with information from the community engagement are used to identify problem areas and develop infrastructure recommendations. New roadway types are developed to reflect City goals. Performance measures are determined to prioritize projects.

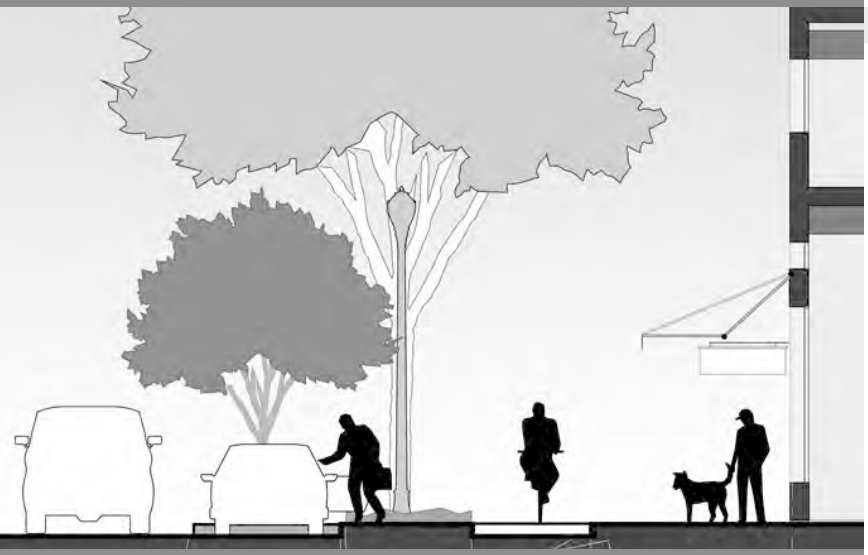
Develop Recommendations, Capital Improvements and Thoroughfare Plans

Using the information from the previous steps, recommendations are developed to help the community reach its goals. Projects are prioritized and a list of projects with costs and timeframe for construction is developed. The Thoroughfare Plan identifies transportation corridors to be implemented as development occurs.

RECOMMENDATIONS

THOROUGHFARE PLAN

San Marcos roadways should be designed and enhanced with Complete Streets policies in mind as the community develops and grows. The Transportation Master Plan recommends new cross-sections (shown in the Appendix) based on these polices. They have been applied to the future Thoroughfare Plan based on several criteria, including type of facility, traffic volumes and speeds. The new cross-sections provide recommended treatments for both new streets as well as for the retrofit of existing ones.



GOAL

- Build a multimodal transportation network that is safe and efficient for all users with direct connection to key land uses.

OBJECTIVES

- Consider the balance of vehicular capacity and public safety with pedestrian and bicycle safety in the development of new cross-sections.
- Preserve and balance the use of right-of-way for all modes of travel.
- Utilize roadway types that create a comfortable pedestrian and bicycle environment, accommodating vehicular traffic in an efficient but calm manner.
- Provide greenways for both recreation and transportation needs with bicycle and pedestrian linkages.
- Implement a transit system that connects key areas of the City to provide the greatest potential to reduce vehicle miles traveled.
- Provide facilities for pedestrian and bicycle through the network.
  Convert 5% of trips less than on mile to walking trips.
  Convert 10% of trips less than five miles to bicycle trips.

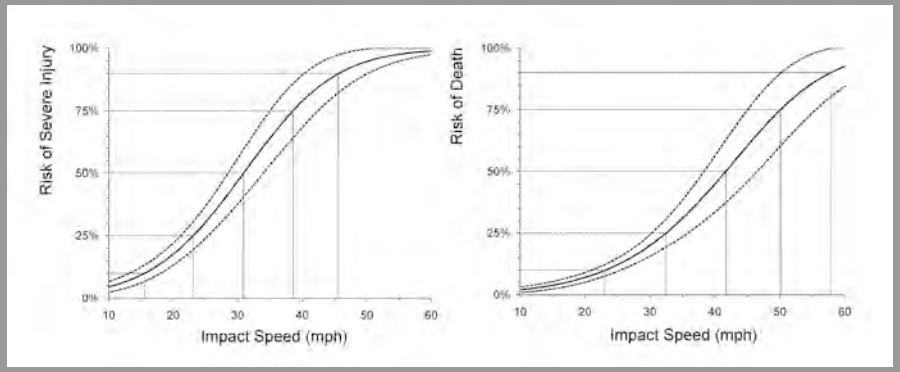
RECOMMENDATIONS

- Utilize the Thoroughfare Plan as a guideline on right-of-way needs for future and enhanced roadways within the City of San Marcos.
- Implement cross-sections to enhance safety and operations of all modes within the transportation network.
- Establish final alignments and cross-sections during the Preliminary Engineering process.
- Maintain flexibility for successful implementation of all roadways within the Transportation Master Plan.
- Reduce design speeds to support safe operations along roadways.
- Consider travel demand management strategies prior to implementation of thoroughfare projects to reduce vehicular demand.

Seven thoroughfare types are proposed for the Transportation Master Plan. The City of San Marcos supports cost-efficient design that follows Best Management Practices for safety throughout the transportation network. Lane widths should be minimized to reduce costs, slow traffic and improve roadway safety for all users. Typical interior lane widths are recommended at 11 feet with exceptions adjacent to curb and gutter or parking facilities or roadways with frequent bus operations. Street sections should be designed with interior lane widths of 10 feet.

The National Association of City Transportation Officials' (NACTO) Urban Street Design Guide details the toolbox and the tactics cities use to make streets safer, more livable and more economically vibrant. NACTO design practices seek to provide communities with streets and spaces where people can safely walk, bicycle, drive, take transit and socialize. This Transportation Master Plan adopts these guidelines and will implement NACTO design recommendations as the network continues to develop and grow.

To reduce the severity of crashes, Best Management Practices recommend narrower streets that promote slower driving speeds. According to research, risk of pedestrian death is 10% at an impact speed of 23 mph. At 32 mph, the risk of death increases to 25% and doubles to 50% at just 42 mph. Pedestrians struck by vehicles traveling at 58 mph have a 90% risk of death.



Impact Speed and a Pedestrian's Risk of Severe Injury or Death, Sept 2011
Source: AAA Foundation for Traffic Safety

Highways are high-speed, limited access facilities that serve as the backbone infrastructure for the transportation network. Highways include freeways and frontage roads that provide connections outside of San Marcos, as well as parkways that are proposed to serve as high-volume connections around the periphery of the City. The primary function of highways is to move vehicles.

Boulevards are 4 and 6-lane roads that connect avenues with highways. Boulevards will serve as the primary routes between intensity zones, downtown and other major areas of the City. Boulevards are divided facilities with limited access and left-turn lanes at intersections.

Avenues are 3-4 lane roadways that serve lower traffic volumes than boulevards. Avenues will serve as the primary travel routes within any given area of the City and connect streets to the boulevards. They do not have raised medians, but do have protected bicycle and pedestrian facilities due to traffic volumes and speeds.

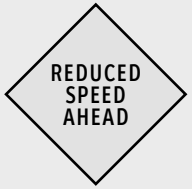
Commercial Streets are 2-lane roadways fronting commercial uses. These streets will serve as primary access for the commercial uses. They are characterized by wide sidewalks and on-street parking to promote safe pedestrian activities.

Residential Streets are 2-lane roadways serving residential neighborhoods outside of a commercial district. They are low-speed, low-volume facilities fronting residential uses.

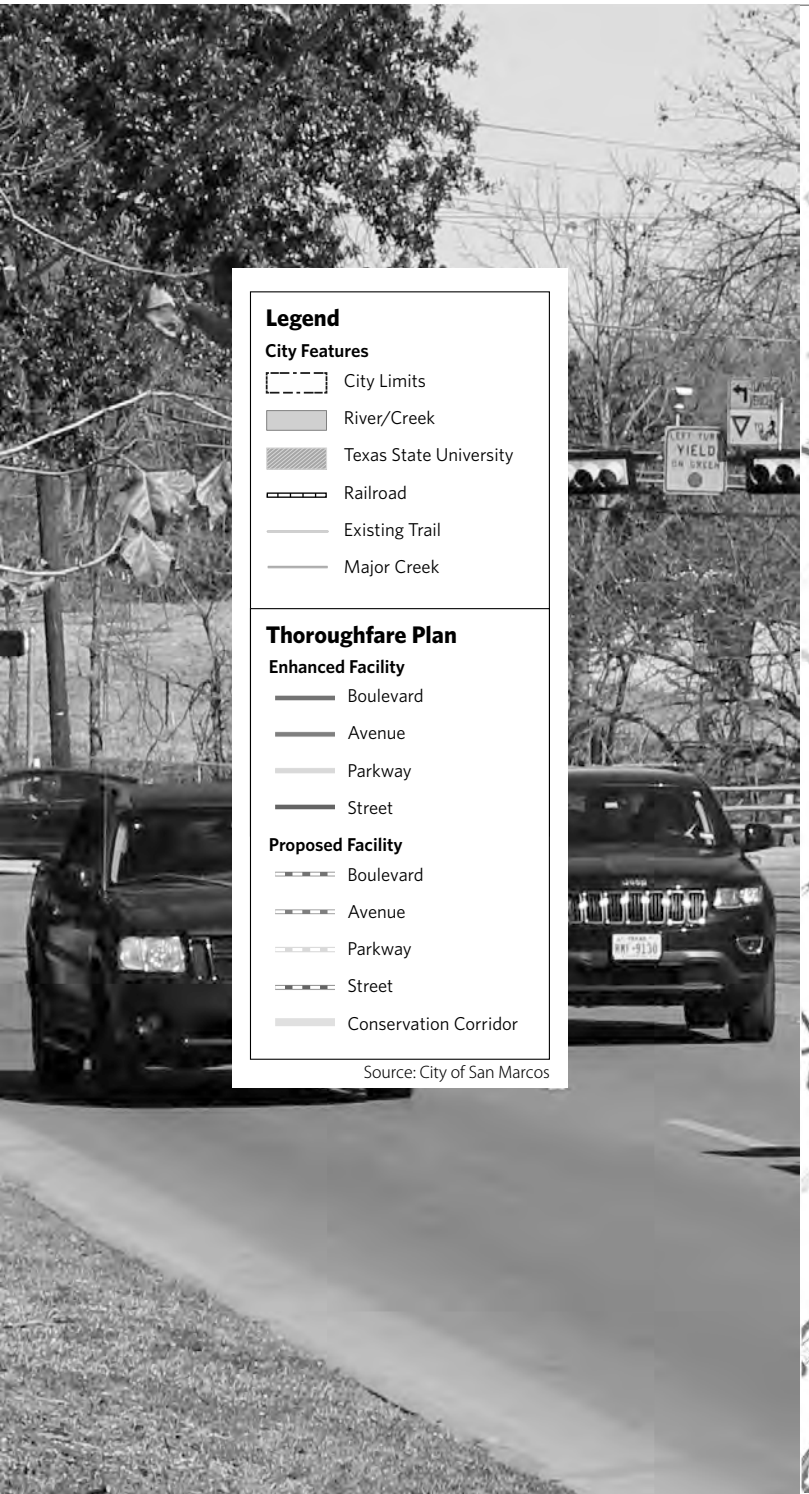
Roads are built in the least intensive and rural parts of the community. Roads may front residential, agricultural or limited commercial uses. They lack curbs and sidewalks.

Allys are narrow roadways providing access or service at rear of residential of commercial properties. They are not designed to serve through vehicles or active transportation modes

Design speeds promote safety and improve a driver's ability to maneuver and react to changes in the driving environment.



MAP 15: PROPOSED 2035 THOROUGHFARE PLAN



Legend

City Features

- City Limits
- River/Creek
- Texas State University
- Railroad
- Existing Trail
- Major Creek

Thoroughfare Plan

Enhanced Facility

- Boulevard
- Avenue
- Parkway
- Street

Proposed Facility

- Boulevard
- Avenue
- Parkway
- Street
- Conservation Corridor

Source: City of San Marcos

PROPOSED BICYCLE NETWORK

The Transportation Master Plan gives equal priority to the safe and efficient movement of pedestrians and bicyclists, and has identified multiple pedestrian and bicycle facility types for integration with the thoroughfare types.

The Bicycle Plan Map is reflective of the roadway facilities identified in the Thoroughfare Plan for the Future 2035 Build Scenario. Interim bicycle facilities should be considered as progress is made towards implementation of the Thoroughfare Plan.

The City of San Marcos has developed a Greenways Master Plan that also introduces bicycle facilities to the network. These facilities will be off-street paths used by cyclists and pedestrians.

Bicycle infrastructure should provide much-needed connectivity between east and west San Marcos across IH 35 in the near future (3-5 years). Hopkins Street and Guadalupe Street are viable options to provide these bicycle facilities.

GOAL

- Increase bicycle use by expanding safe, convenient bicycle lanes and trails throughout the City.
- Implement bicycle performance measures to evaluate proposed routes and identify the appropriate facility to provide maximum safety, comfort, ease of mobility, functionality and connectivity.

OBJECTIVE

- Convert 10% of trips less than five miles to bicycle trips.

RECOMMENDATIONS

- Inventory and complete gaps in the bicycle infrastructure in the short-term.
- Phase bicycle improvements to develop a more robust system.
- Construct protected a bicycle lanes along high volume streets (>5,000 vehicles per day and >35 miles per hour).
- Bicycle facilities shall have a minimum unobstructed width of five feet, and a desirable width of seven feet.
- Shared-use paths shall have a minimum width of eight feet and a desirable width of twelve feet.
- Incorporate Complete Streets strategies to facilitate the development of new bicycle facilities.

DESIRED TYPES OF BIKE FACILITIES

Protected Bicycle Lane

A protected bicycle lane can be one or two-way within the roadway, and is separated from automobile traffic by a physical barrier.

Appropriate for facilities with speeds 35 mph or more; may be considered at lower speeds.

Also recommended for roads with more than 5,000 vehicles per day with high truck traffic and on-street parking.

Buffered Bicycle Lane

Buffered bicycle lanes are on-street lanes with a wider, painted striped buffer to separate it from automobile traffic.

Appropriate for facilities with speeds 35 mph or more; may be considered at lower speeds.

Also recommended for roads with more than 5,000 vehicles per day and with high truck traffic.

Shared-Use Path

A shared-use path is an off-street pedestrian trail that is shared with bicycles.

Bicycle volumes are low enough to share facilities with pedestrians.

May be considered adjacent to green space.

Sharrows

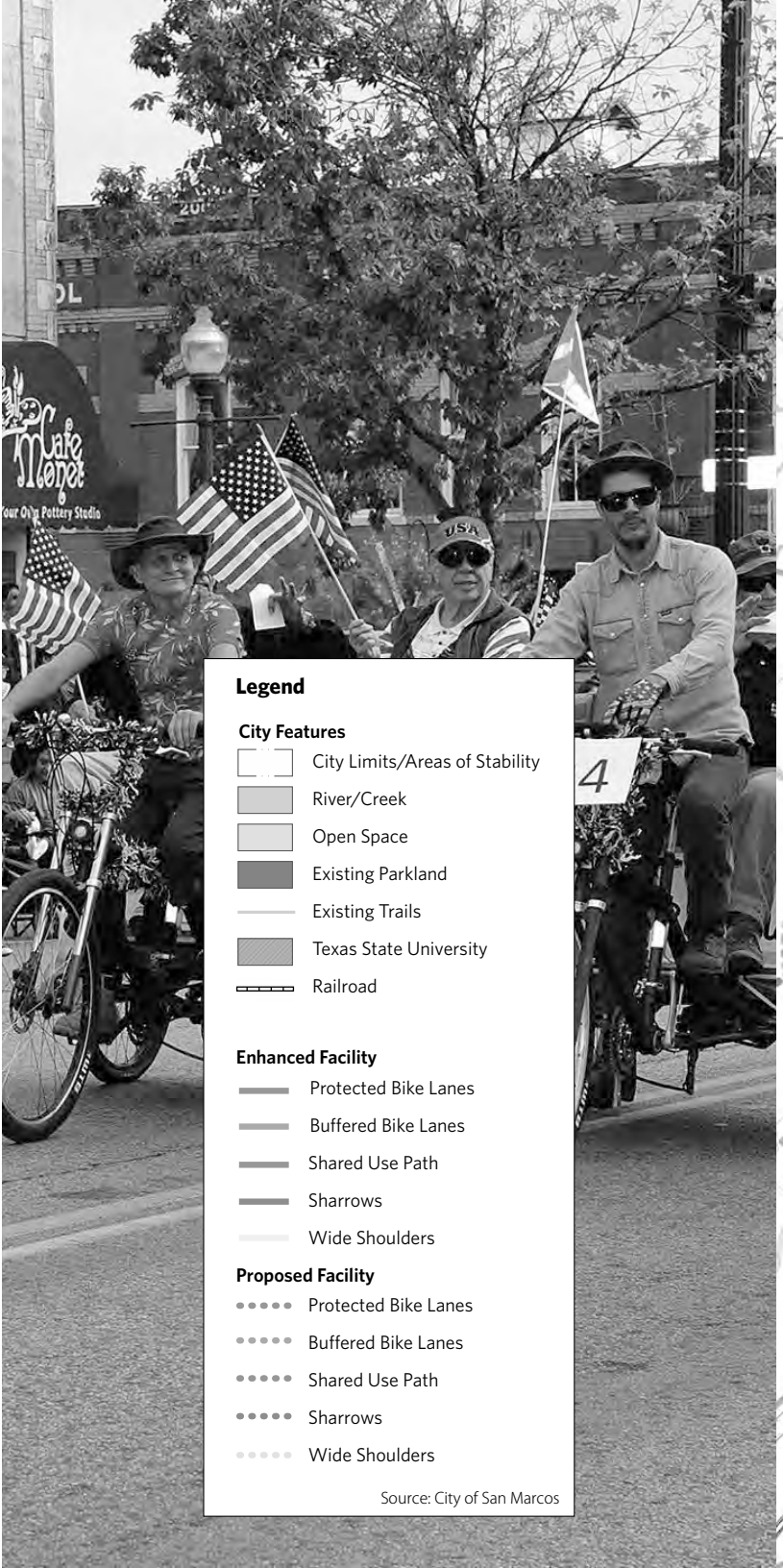
Sharrows are designated lanes within the roadway that are shared with both automobile traffic and bicycles.

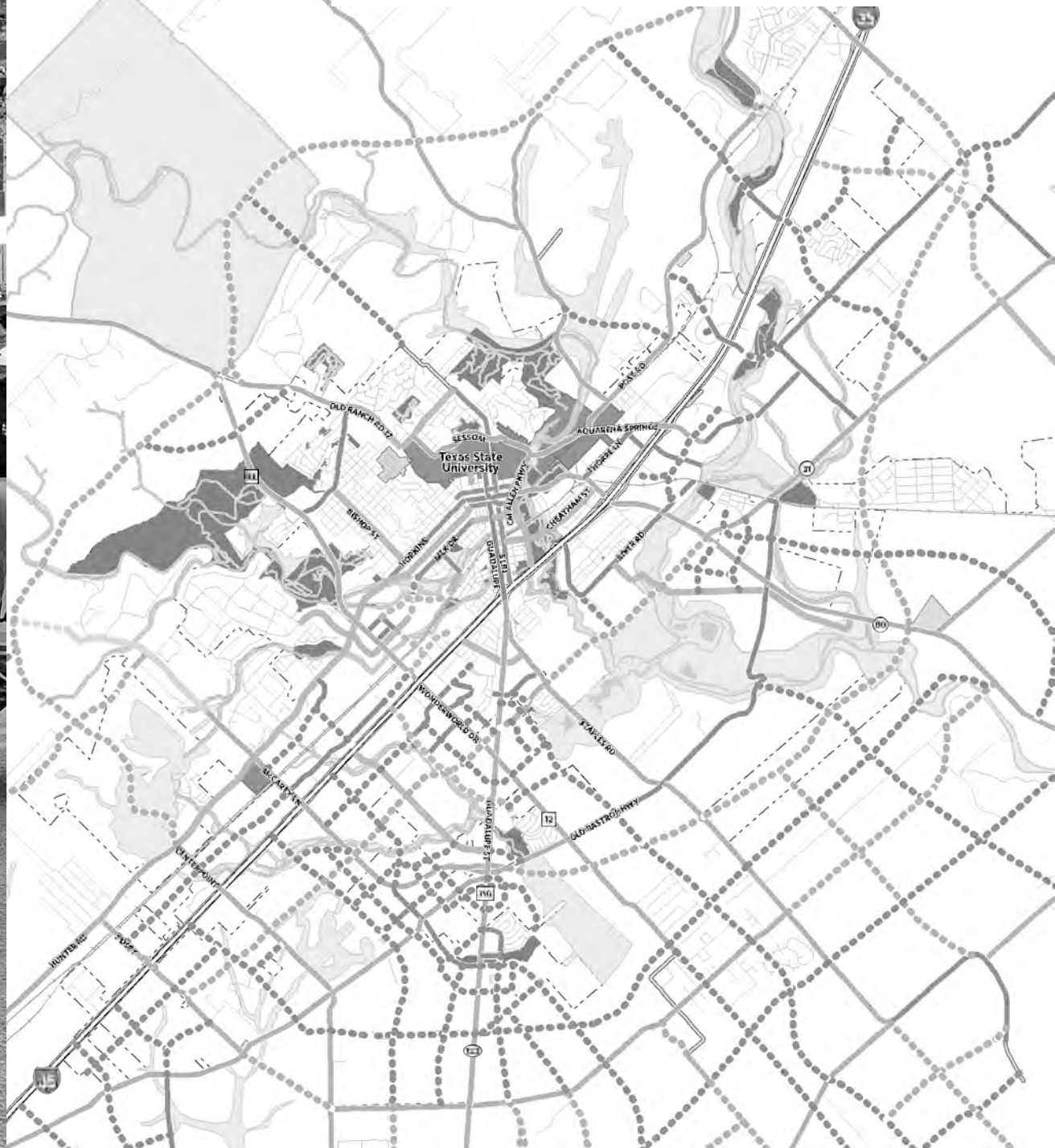
This type of facility is appropriate for roads with speeds of 25 mph or less, with less than 5,000 vehicles per day and on space-constrained roadways.

Other options for bicycle facilities are available if right-of-way or other constraints prohibit installation of the desired facility.

- Bicycle lanes are dedicated, striped on-street facilities, but do not have a buffer from motorized traffic.
- Wider roadways may also be striped to have wide shoulders that function as bicycle facilities.

MAP 16: PROPOSED 2035 BICYCLE PLAN





Legend

City Features

- City Limits/Areas of Stability
- River/Creek
- Open Space
- Existing Parkland
- Existing Trails
- Texas State University
- Railroad

Enhanced Facility

- Protected Bike Lanes
- Buffered Bike Lanes
- Shared Use Path
- Sharrows
- Wide Shoulders

Proposed Facility

- Protected Bike Lanes
- Buffered Bike Lanes
- Shared Use Path
- Sharrows
- Wide Shoulders

Source: City of San Marcos

PROPOSED PEDESTRIAN NETWORK

The pedestrian network includes facilities such as sidewalks, curb ramps, trails, and greenways to facilitate pedestrian movements through the City of San Marcos.

Greenways are travel ways for pedestrians and cyclists that serve as major transportation connections throughout the City.

PROPOSED SIDEWALK PLAN

A safe and connected pedestrian network promotes healthier communities and an enhanced quality of life. Sidewalks are essential to creating a well-connected pedestrian network that encourages more walking as a means for shorter trips. The City of San Marcos is dedicated to completing and maintaining a connected system of sidewalks that are safe and accessible to everyone.

A Sidewalk Master Plan should be developed to identify gaps in the network, and prioritize construction of new sidewalks and repairs. A Sidewalk Master Plan will identify areas of high pedestrian activity and identify existing safety/connectivity issues to prioritize City funding. A Sidewalk Master Plan is a critical document supporting the City's ADA Transition Plan.

GOAL

- Maintain and complete the sidewalk system to form a well-connected, safe, accessible and continuous pedestrian network throughout the City of San Marcos.
- Implement a Sidewalk Master Plan to prioritize sidewalk repairs and installation.
- Utilize pedestrian level of service to better design and prioritize functionality and connectivity of infrastructure.

OBJECTIVE

- Convert 5% of trips less than one mile to walking trips.

RECOMMENDATIONS

- Maintain the existing inventory of sidewalks including missing and planned segments.
- Continue construction of missing sidewalks segments outside the Transportation Master Plan projects.
- Provide sidewalks along both sides of all thoroughfare types.
- Build sidewalks widths to serve the type of facility they support.
- Utilize shared-use paths along major thoroughfares as designated in the Thoroughfare Plan.
- Provide medians where pedestrian crossing distances exceed 40 feet as a protected pedestrian refuge in the center of the roadway.
- Where right-of-way is limited, building set back from the property line should be adequate to provide for wider pedestrian areas.

GREENWAYS MASTER PLAN

Greenways are travel ways for pedestrians and cyclists that can serve as major transportation connections throughout cities. Greenways are built alongside roadways, through parks or other green spaces. Benefits from greenways include transportation, recreation and fitness. They also help preserve the environment.

GOAL

- Expand the Greenways system to provide an alternate bike and pedestrian system to encourage increased mode shift and provide opportunities for recreation and economic development.

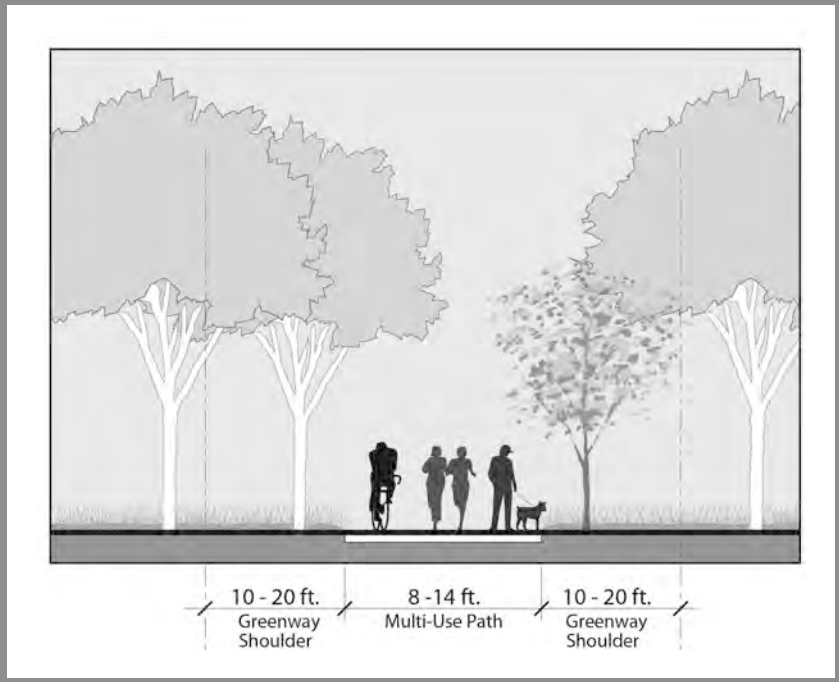
OBJECTIVES

- Support the Transportation Master Plan Goal of converting short trips to walk and bicycle trips.
- Provide opportunities for recreation and access to nature and wildlife by connecting greenways to parks and open space.
- Support tourism and economic development through greenways connected to Activity Centers.

RECOMMENDATIONS

- Greenways should have a minimum unobstructed width of 8 feet, although 12 feet is preferred.
- Easements for off-street greenways are recommended to be 30 feet to 80 feet in width to accommodate maintenance, vegetative buffers and shoulders.
- Utilize a variety of materials for greenways construction depending on location and use.

Multi-Use Greenway



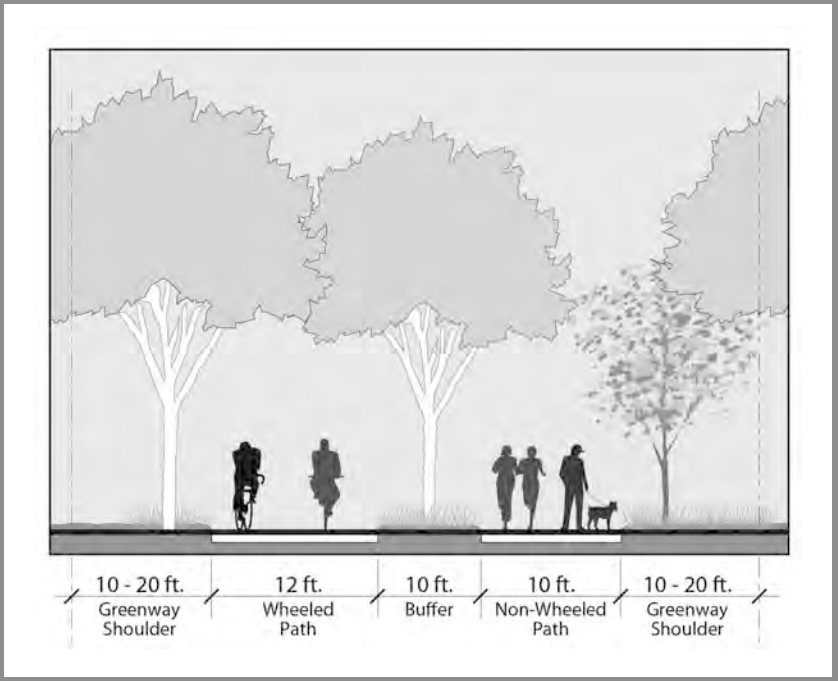
Unimproved and/or nature trails are not considered greenways, though connectivity to existing trails provides a better integrated network.

Several types of greenways are proposed for use within the City.

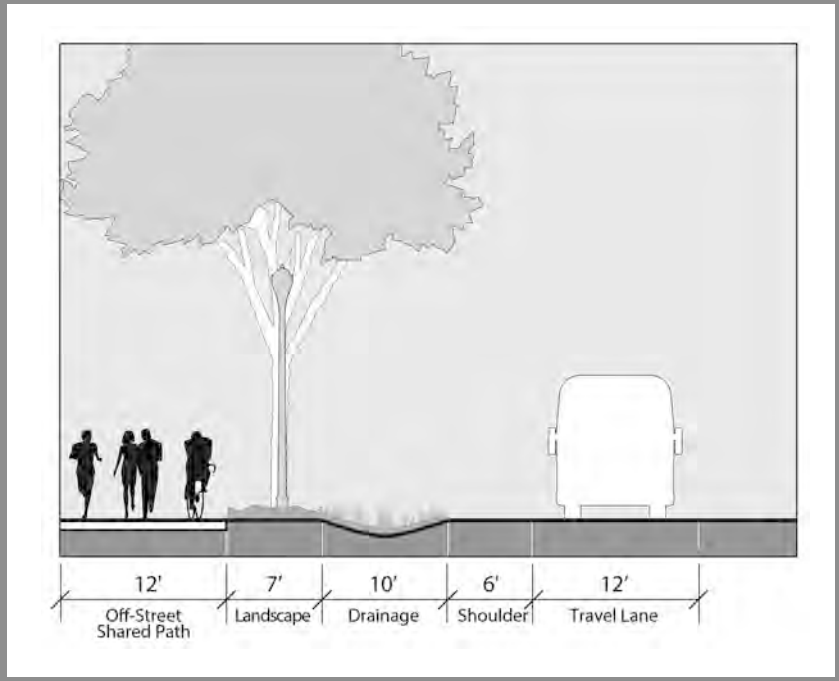
Types of Greenways Facilities

Multi-Use Greenways	Split-Use Greenways	Shared-Use Path
Multi-use greenways are shared off-street facilities for bicycles and pedestrians typically provided through parks and green spaces.	Split-use greenways are off-street facilities that separate paths for bicycles and pedestrians. In urban areas where high potential for pedestrian and bicycle conflicts exists, these facilities are implemented to improve safety.	A shared-use path is an off-street pedestrian trail that is shared with bicycles. These are often located along one side of a roadway facility.

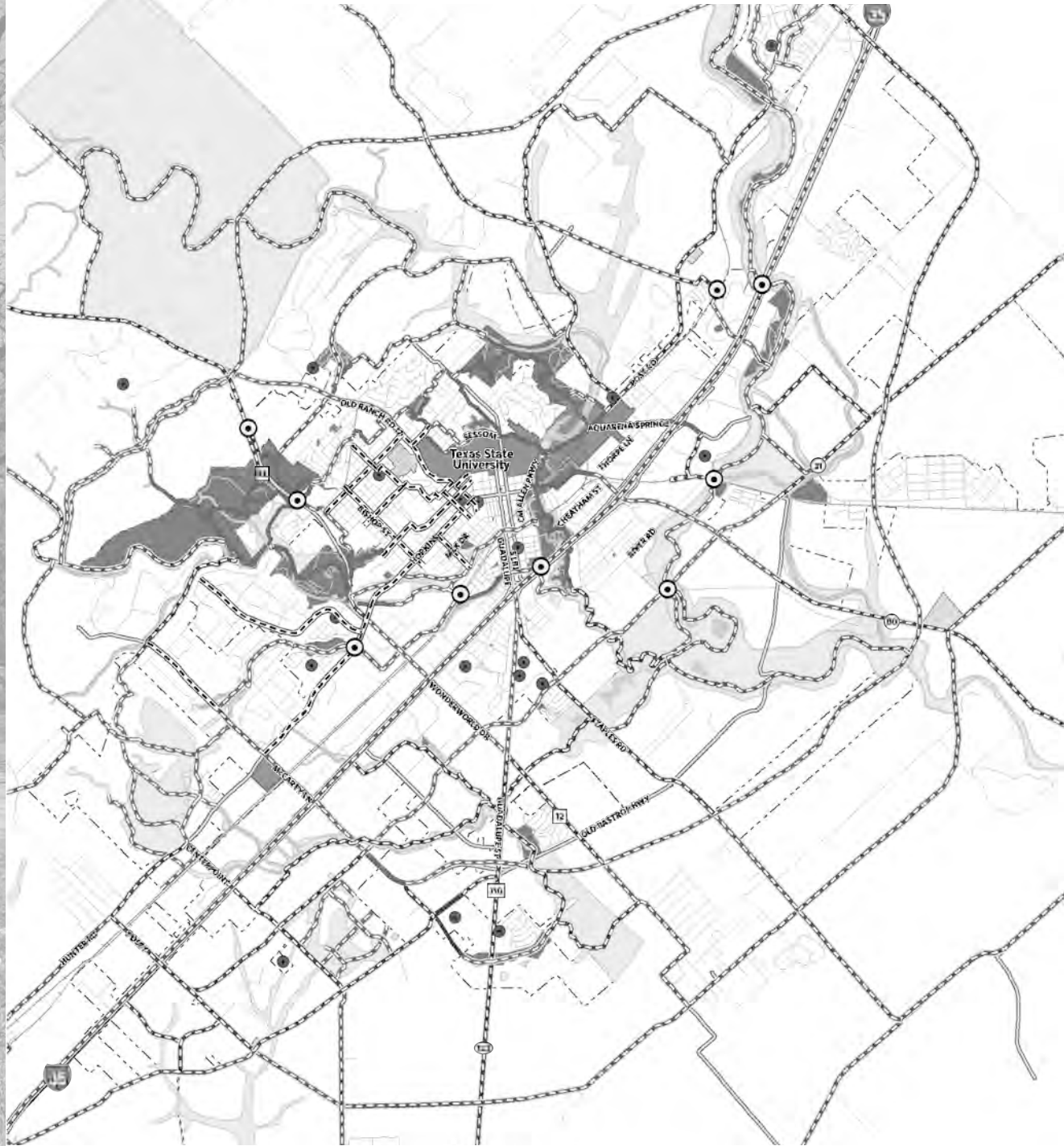
Split-Use Greenway



Shared-Use Path



MAP 17: 2035 PROPOSED GREENWAYS PLAN



Legend

City Features

- City Limits
- River/Creek
- Open Space
- Existing Parkland
- Texas State University
- Railroad
- Existing Trail
- Major Creek

Greenways

Connectivity Priorities

- School
- Proposed Grade Separated Crossings
- Enhanced Sidewalks

Enhanced Facility

- Short-Term (0-10 Years)
- Mid-Term (10-20 Years)
- Long-Term (20+ Years)

Proposed Facility

- Short-Term (0-10 Years)
- Mid-Term (10-20 Years)
- Long-Term (20+ Years)

Source: City of San Marcos

GOAL

- Build on recommendations in the Five-Year Transit Plan and plan a transit network that serves downtown and key intensity zones.
- To encourage ridership for University students faculty and staff, consider a fare-free system as identified in the Five-Year Transit Plan.

OBJECTIVE

- Increase connectivity and provide transit service between key urbanized areas to help reduce auto trips.

RECOMMENDATIONS

- Continue to work with local transit providers to expand services.
- Enhance the existing bus service system.
- Develop a transit system to connect activity centers.
- Plan a summit for transportation leaders to discuss how to improve connectivity and integration with school, University and CARTS bus systems.
- Implement a strategy of concentrating service on a small number of high-demand routes with frequent service.
- Develop a transit oriented performance measure that evaluates the robustness of the transit system.
- Develop intensity zones with transit supportive land use that economically and socially support the effective implementation of transit.

PROPOSED TRANSIT NETWORK

A well-designed transit system that connects key areas of the City has the greatest potential to reduce vehicle miles traveled. In May 2014 the City of San Marcos completed a five-year transit plan to make recommendations for restructured and expanded system route service throughout the area.

Building on this expansion, the Transportation Master Plan analyzed a conceptual transit framework for the 2035 Future Scenario designed to serve trips between intensity zones identified in the Comprehensive Plan.

The intensity zones included were Downtown, Midtown, Triangle, South End, Medical District, Star Park, East Village, Paso Robles and Centerpoint. These centers are expected to grow and place more demand on the surrounding network.

The conceptual transit framework was developed to serve areas with higher trips. A proposed service plan suggests five routes emanating from the intensity zones and serving downtown directly and three circulator routes to distribute passengers close to their destinations.

Assuming five percent of trips are made using transit, these proposed transit routes have the potential to divert about 4,200 daily trips from automobiles between these intensity zones. In addition, the proposed transit framework will help capture additional non-intensity zone related trips.

MAP 18: TRANSIT VISION

Legend

City Features

- City Limits/Areas of Stability
- River/Creek
- Texas State University
- Railroad

Transit Framework

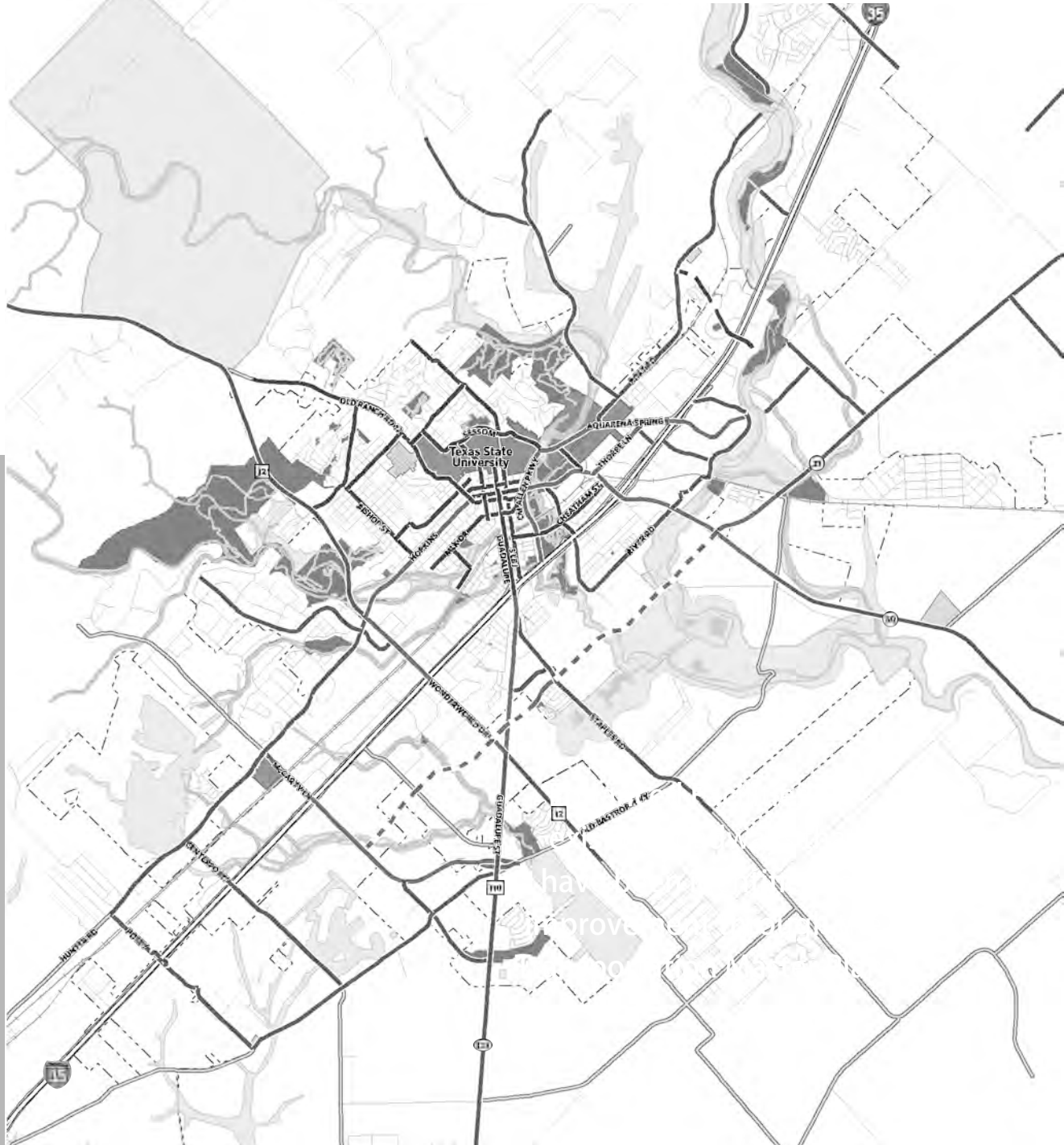
- Route
- 1/4 Mile Route Pedestrian Buffer
- 1/2 Mile Route Bicycle Buffer
- Circulator
- 1/4 Mile Circulator Pedestrian Buffer
- 1/2 Mile Circulator Bicycle Buffer

Source: City of San Marcos

The proposed transit framework will help capture additional non-intensity zone related trips.

CAPITAL IMPROVEMENTS PLAN

MAP 19: CAPITAL IMPROVEMENTS PROJECTS



Legend

City Features

- City Limits
- River/Creek
- Texas State University
- Railroad
- Existing Trail
- Major Creek

Capital Improvements Projects

Facility Features

- Short-Term Priority 1 Enhanced Facility
- Short-Term Priority 1 Proposed Facility
- Short-Term Priority 2 Enhanced Facility
- Short-Term Priority 2 Proposed Facility
- Mid-Term Priority 3 Enhanced Facility
- Mid-Term Priority 3 Proposed Facility

Source: City of San Marcos

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