



SAN MARCOS

# TRANSPORTATION MASTER PLAN 2018



DRAFT



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# TRANSPORTATION MASTER PLAN

2018



SAN MARCOS

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# 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.”**



# TRANSPORTATION PLANNING AND LAND USE







Transportation planning is the preparation of plans, policies, funding, and project identification to facilitate development of a successful transportation system. The Transportation Master Plan influences land use and community planning, and plays an important role in the City of San Marcos Vision.

This Transportation Master Plan is guided by the City's Comprehensive Plan, Preferred Scenario Map and community input.

This Plan seeks to implement the policies of the Comprehensive Plan by framing a future transportation network focused on multimodal mobility, connectivity and accessibility, implemented in an environmentally sensitive manner.

The coordination of land use and transportation planning is essential to smart growth and sustainable development within the City of San Marcos.



# TRANSPORTATION GOALS



The Transportation Master Plan guides the development of transportation infrastructure in the City of San Marcos.

At the beginning of the planning process, City plans and policies were reviewed to identify related transportation goals and objectives. This Transportation Master Plan considered each of these goals and objectives throughout the planning process.

The City of San Marcos' Comprehensive Plan, "Vision San Marcos: A River Runs Through Us", envisions a more integrated transportation network that supports all types of users and modes.

It embraces the concept of "Complete Streets" - the approach to planning streets that are designed, operated, and maintained to enable safe, convenient and comfortable travel and access for users of all ages and abilities.

## COMPREHENSIVE PLAN VISION GOALS

- A connected network of efficient, safe and convenient multimodal transportation options while protecting the environment.
- A safe, well-coordinated transportation system implemented in an environmentally sensitive manner.
- A multimodal transportation network to improve accessibility and mobility, minimize congestion and reduce pollution.

## TRANSPORTATION MASTER PLAN GOALS

- Implement roadway cross-sections that preserve the character of neighborhoods while encouraging appropriately located economic development.
- Build a multimodal transportation network that is safe, efficient and provides direct access to key land uses.
- Increase bicycle use by expanding safe, convenient and fun bicycle lanes and trails throughout the City.
- Continue to build a well-connected pedestrian network with an emphasis on safety and accessibility.
- Plan for a transit network to serve downtown and key intensity zones by the year 2035.
- Expand the Greenways system to provide opportunities for recreation and economic development, and to encourage increased mode shift.
- Use national best practices to maximize transportation efficiency.

To achieve the vision of a more comprehensive and integrated transportation network that is multimodal, compact, and sustainable, these goals are defined as part of the Transportation Master Plan.



EXISTING CONDITIONS



**EXISTING  
CONDITIONS**





An important first step in developing an effective transportation plan is to document existing conditions in the study area. There are many factors to consider when planning for future demand on a community's transportation network.

Understanding how the existing infrastructure operates and how it is used helps planners shape a system that will best serve the community it supports.

Data about the community is also gathered to better build a transportation network that supports the needs of the people using it.

Understanding the demographics, existing transportation network, and environmental constraints of a community helps to define how the transportation network is being used, and to plan for change.



## DEMOGRAPHICS

San Marcos' central position along IH 35 between San Antonio and Austin makes it an ideal location for industry. The City enjoys access to major transportation facilities, with proximity to international and regional airports.

The City also offers business incentives and support for small businesses and entrepreneurs such as local and state resources, Energy Efficiency Reward Programs, Workforce Development Assistance, tax credits, rebates and bonds. A continual source of new talent from the region's higher educational facilities, including Texas State University, Austin Community College, and other career training programs work in industries ranging from education, retail and government, to manufacturing, aviation and corporate operations.

### POPULATION

Over the past fifteen years, the City's population has grown by 31%.


The Capital Area Metropolitan Planning Organization predicts that the population of San Marcos will reach 90,500 by 2025, a 37% increase in growth since 2015.

If current growth trends continue, by 2035, the population of San Marcos will reach 130,200 - a 96% increase since 2015.

### EMPLOYMENT

Employment projections indicate that the labor force will increase by 37% in 2025 and by up to 77% in 2035 from 2015.

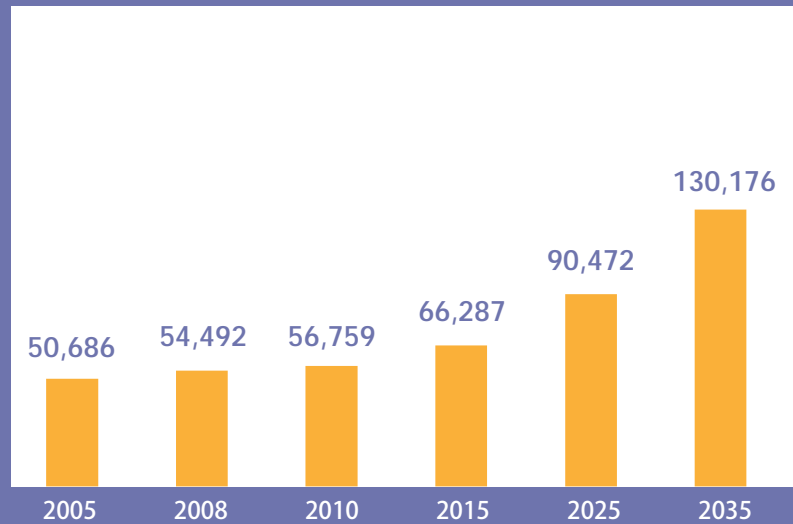
This robust growth is expected to place a heavy demand on City's infrastructure including water, sewer, energy and transportation.



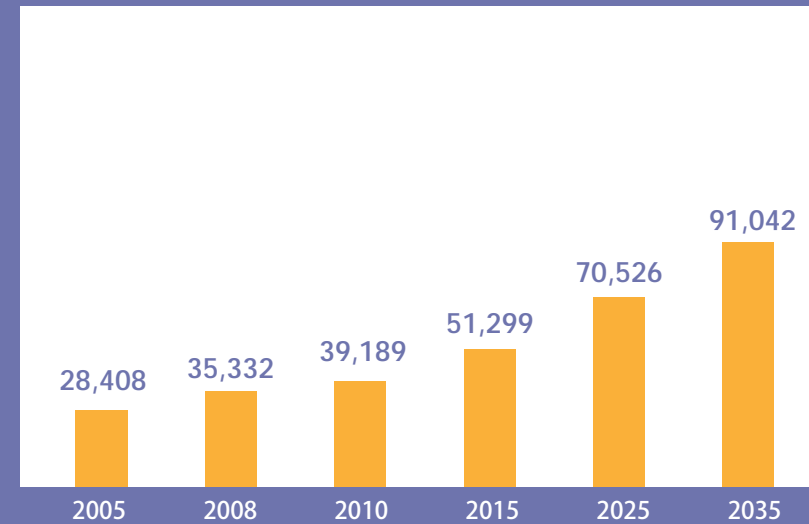
The City of San Marcos has been ranked by the Census Bureau as one of the fastest growing cities in the U.S.



## Population Growth



## Employment Growth



Source: Growth data for population and employment obtained from the Capital Area Metropolitan Planning Organization



## LAND USE

The City's existing land uses include a mixture of single and multi-family residential, commercial, industrial and institutional uses including Texas State University and multiple City Parks.

The City's downtown core is home to the historic Hays County Courthouse, as well as many local businesses including professional offices, retail, restaurants and bars.

Bounded by historic residential neighborhoods and the San Marcos River, downtown San Marcos has maintained a 'small town' feel, and has become a popular destination within the community.

Growth in the small town has spurred a need for more intensive urban planning. Developers have been collaborating with the City of San Marcos to build master-planned communities such as La Cima, Trace and Kissing Tree.



### Zoning District Legend

	Agriculture Ranch (AR)
	Community Commercial (CC)
	Duplex (D)
	Duplex Restricted (DR)
	Future Development (FD)
	General Commercial (GC)
	Heavy Commercial (HC)
	Heavy Industrial (HI)
	Light Industrial (LI)
	Multi-Family 12 (MF-12)*
	Multi-Family 18 (MF-18)*
	Multi-Family 24 (MF-24)*
	Manufactured Home (MH)
	Manufactured Home/Residential (MR)
	Mixed Use (MU)
	Neighborhood Commercial (NC)
	Office/Professional (OP)
	Public/Institutional (P)
	Planned Development District (PDD)
	Patio Home, Zero-Lot-Line (PH-ZL)
	Single Family 4.5 (SF-4.5)*
	Single Family 11 (SF-11)*
	Single Family 6 (SF-6)*
	Single Family Rural (SF-R)*
	Townhouse Residential (TH)
	Vertical Mixed Use (VMU)
	Smart Code Civic Space (CS)
	Smart Code General Urban (T4)
	Smart Code Urban Center (T5)
	Smart Code District (SC)

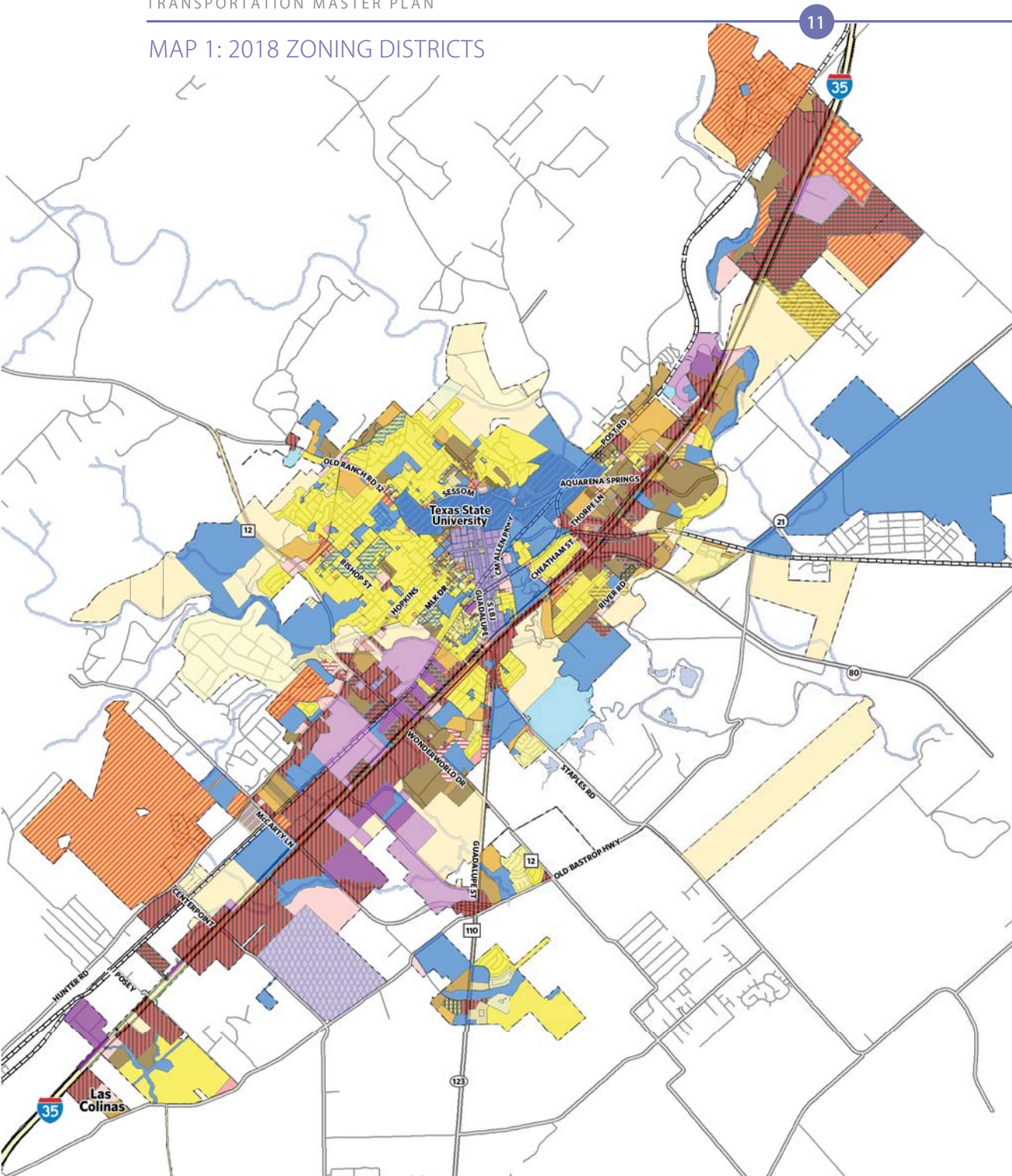
#### \*Residential District Definitions:

Multi-Family 12: maximum 12 units per gross acre  
 Multi-Family 18: maximum 18 units per gross acre  
 Multi-Family 24: maximum 24 units per gross acre  
 Single Family 4.5: minimum 4,500 square foot lots  
 Single Family 11: minimum 6,000 square foot lots  
 Single Family 6: minimum 11,000 square foot lots  
 Single Family Rural: minimum 1-acre lots

Source: City of San Marcos



MAP 1: 2018 ZONING DISTRICTS





## ROADWAY NETWORK AND TRAFFIC OPERATIONS

Functional classifications of roadways are designed to describe the hierarchical arrangement and interaction within a transportation network. These classifications may change over time, as the function of a roadway changes to serve different land uses or demand on other transportation facility changes.

### 2004 FUNCTIONAL CLASSIFICATIONS

The City of San Marcos' 2004 Transportation Master Plan classified the roadway network into four categories. The 2004 Functional Classifications Map shows the previous distribution of roadway types.

#### 2004 classifications of roadway facilities

**FREEWAYS**



**ARTERIAL  
STREETS**



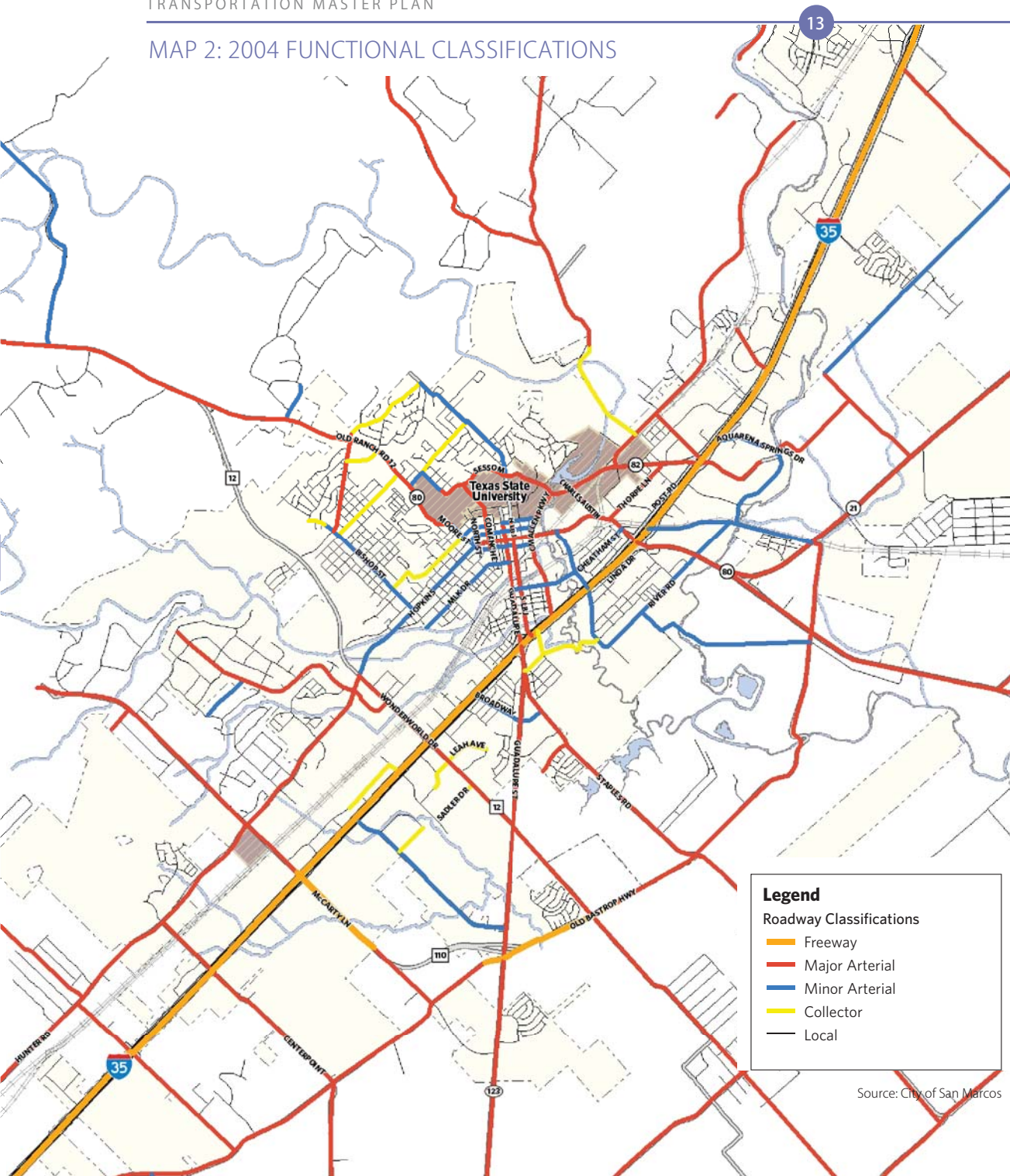
**COLLECTOR  
STREETS**



**LOCAL  
STREETS**



MAP 2: 2004 FUNCTIONAL CLASSIFICATIONS



## MAJOR ROADWAYS

Several roadways serve as major connecting facilities in San Marcos.

- **IH-35** is the only freeway that services San Marcos and nearby communities. It is accessed by grade separated interchanges with frontage roads on both sides.
- **SH 80** serves the east side of San Marcos and connects to RR 12, via Hopkins Street, through downtown.
- **SH 123**, a four-lane facility, originates in Seguin and becomes Guadalupe Street west of IH 35 as it approaches downtown.
- **SH 21** begins at SH 80 on the east side of San Marcos and runs northeast toward Bastrop County.
- **Loop 82**, also known as Aquarena Springs Drive, begins at IH 35 and runs through San Marcos where it intersects with IH 35 again as CM Allen Parkway.
- **RR 12 (Wonder World Drive)** connects the City of Wimberley and IH 35 on the south side of San Marcos.



MAP 3: 2015 EXISTING 24-HOUR COUNTS

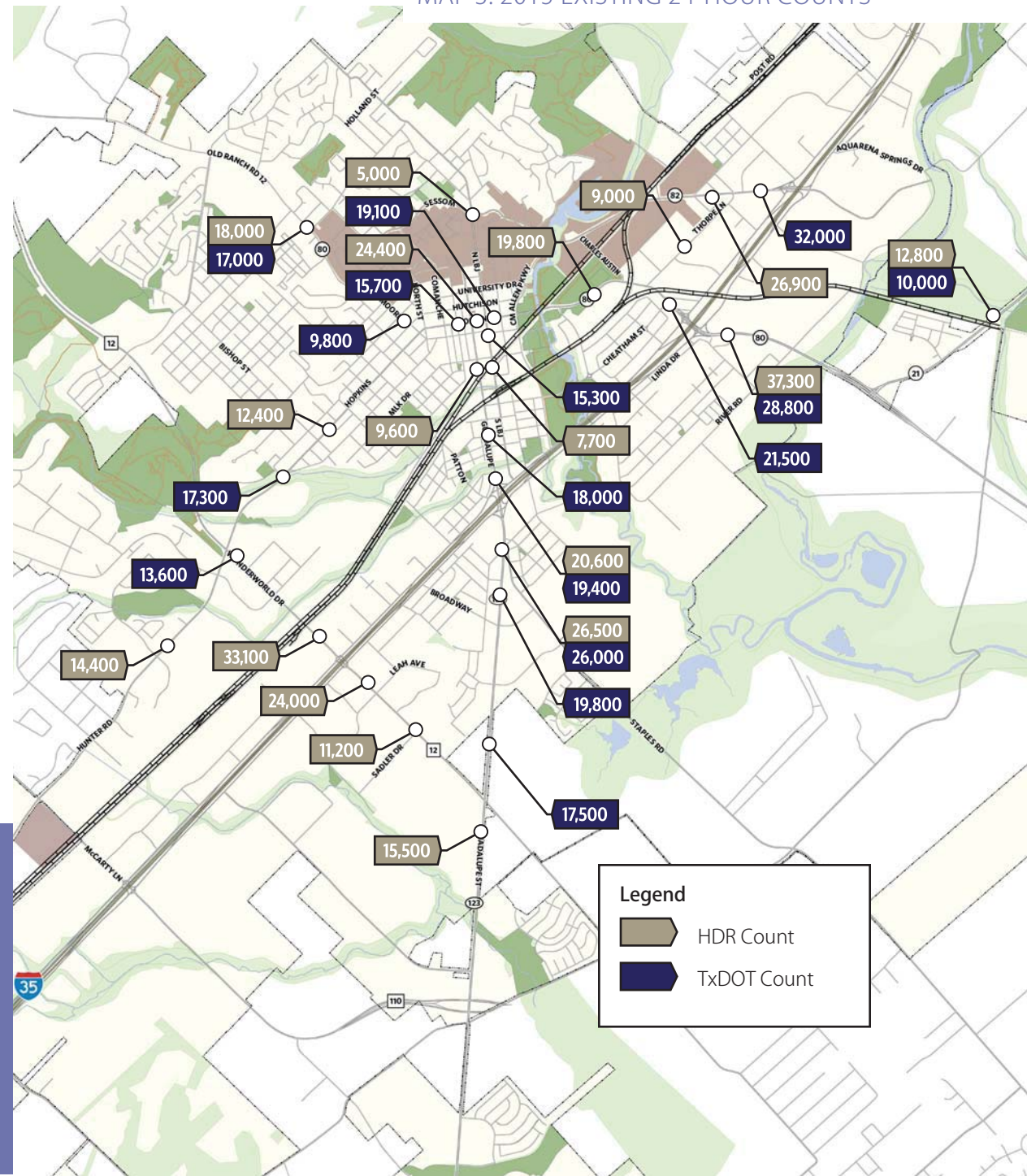
## TRAFFIC VOLUMES

Long-range transportation plans are developed based on current and projected traffic volumes on the major streets and intersections of interest.

Traffic volumes are used to identify problem areas and analyze how the transportation system may be improved. Detailed traffic volume information is provided in the Appendix.

To help identify current issues affecting streets in San Marcos, daily traffic volumes were collected on several major corridors. These counts served as a base to determine where issues such as safety and roadway deficiencies need to be addressed.

Traffic counts are collected along major roadways to determine where problems may exist in the network.



MAP 4: 2010 EXISTING ROADWAY OPERATIONS

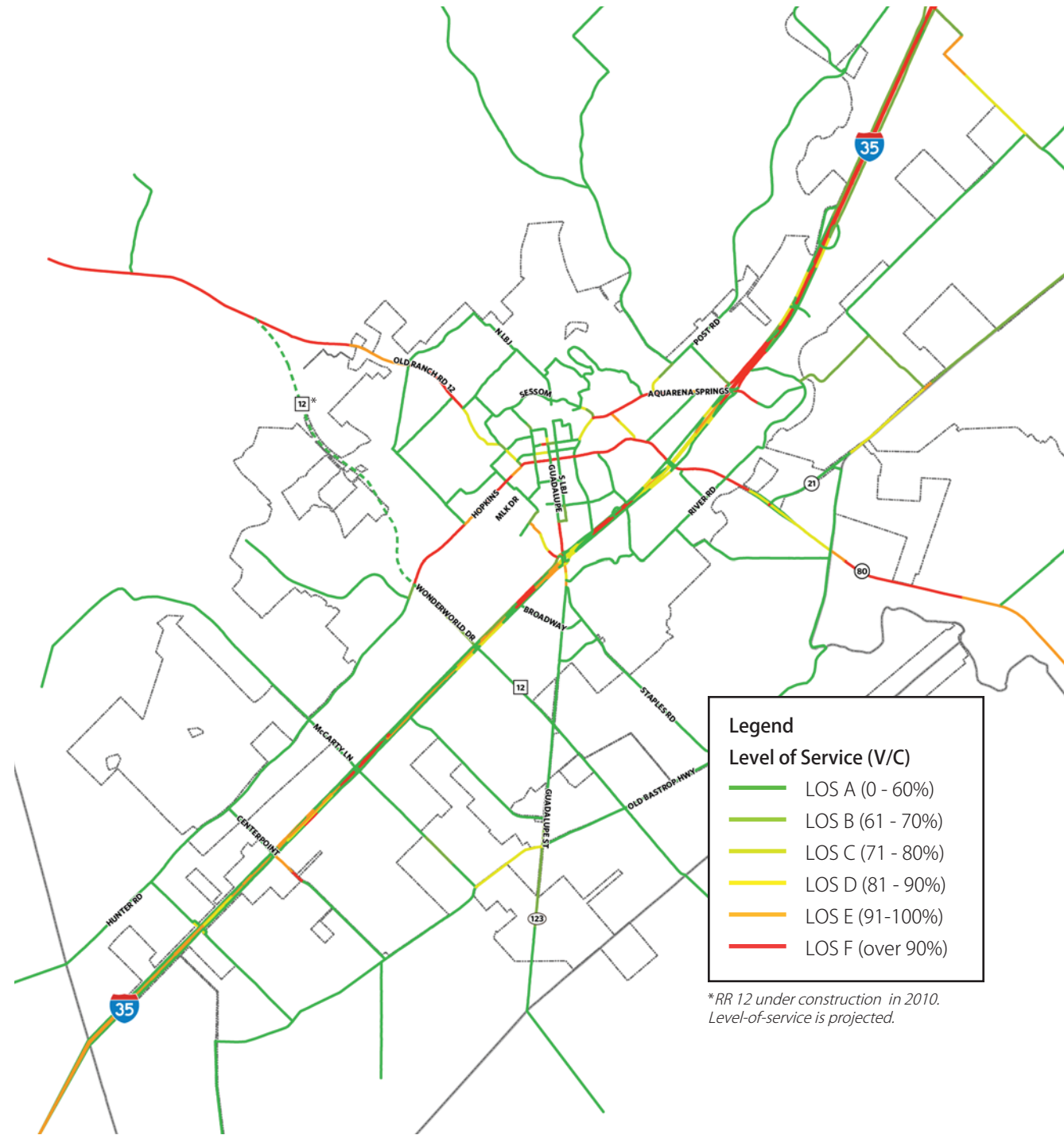
## ROADWAY CAPACITY

When planning for new roadways, they are designed large enough to carry the number of vehicles predicted to use the facility through a specific build year, often 30 or 40 years in the future.

Using simulation software, planners compare roadway demand (number of vehicles on the road) with roadway supply (carrying capacity). If a roadway begins to approach or reaches its fully carrying capacity, congestion occurs.

Volume-to-capacity (V/C) ratio measures congestion levels on a roadway. When the V/C ratio begins to reach 100% of the roadway capacity, level of service for the facility degrades.

V/C and level of service for the City's existing transportation network show the facilities where traffic improvements should be considered.







Twenty-two intersections were identified for detailed analysis, 19 of which are signalized. Turning movement counts were collected during the AM and PM travel peaks.

## INTERSECTION OPERATIONS

The standard measure used to evaluate vehicular traffic conditions at intersections is known as level of service (LOS). LOS measures the effect a number of factors can have on operating conditions at an intersection.

Factors that can affect intersection LOS include:

- Speed
- Volume of traffic and freedom to maneuver
- Geometric features
- Traffic interruptions
- Safety
- Driving comfort and convenience

LOS helped to determine where safety and roadway deficiencies need to be addressed within the transportation network. Improvements to several intersections were identified as short-term enhancements that could have an immediate impact on mobility within the City of San Marcos. Traffic analysis results are included in the Appendix.

These improvements are identified as short-term projects on the Capital Improvements Projects list.

### Legend

#### Signalized (Seconds of Delay per Vehicle)

- Less than 35 seconds
- Between 35 and 55 seconds
- 55 seconds or more

#### Unsignalized (Seconds of Delay per Vehicle)

- Less than 25 seconds
- Between 25 and 35 seconds
- 35 seconds or more

### YEAR 2015 LEVEL OF SERVICE

SIGNALIZED		AM Peak	PM Peak
Aquarena Springs Drive @	Thorpe Lane	B ●	C ●
	Charles Austin Drive	D ●	C ●
	Sessom Drive	C ●	C ●
SH 123 @	Staples Street (FM 621)	C ●	B ●
	Broadway Street	C ●	C ●
	Old Bastrop Highway	C ●	C ●
	FM 110	C ●	A ●
Hopkins Street @	Bishop Street	C ●	D ●
	Moore Street	C ●	C ●
	LBJ Street	B ●	B ●
	Guadalupe Street	B ●	D ●
Wonder World Drive@	Leah Avenue	C ●	C ●
	Sadler Drive	B ●	C ●
	IH 35	D ●	E ●
McCarty Lane @ Hunter Road		B ●	B ●
University Drive @ CM Allen Parkway		A ●	B ●
Loop 80 @ Clarewood Drive		A ●	C ●
Old RR 12 @ Holland Street		B ●	C ●
N. LBJ and Sessom Street@		B ●	C ●
UNSIGNALIZED			
Hopkins Street @ North Street		A ●	A ●
McCarty Lane @ IH 35 <sup>1</sup>		E ●	C ●
SH 21 @ SH 80		C ●	C ●

<sup>1</sup>A signal has been installed since the 2015 analysis was performed.



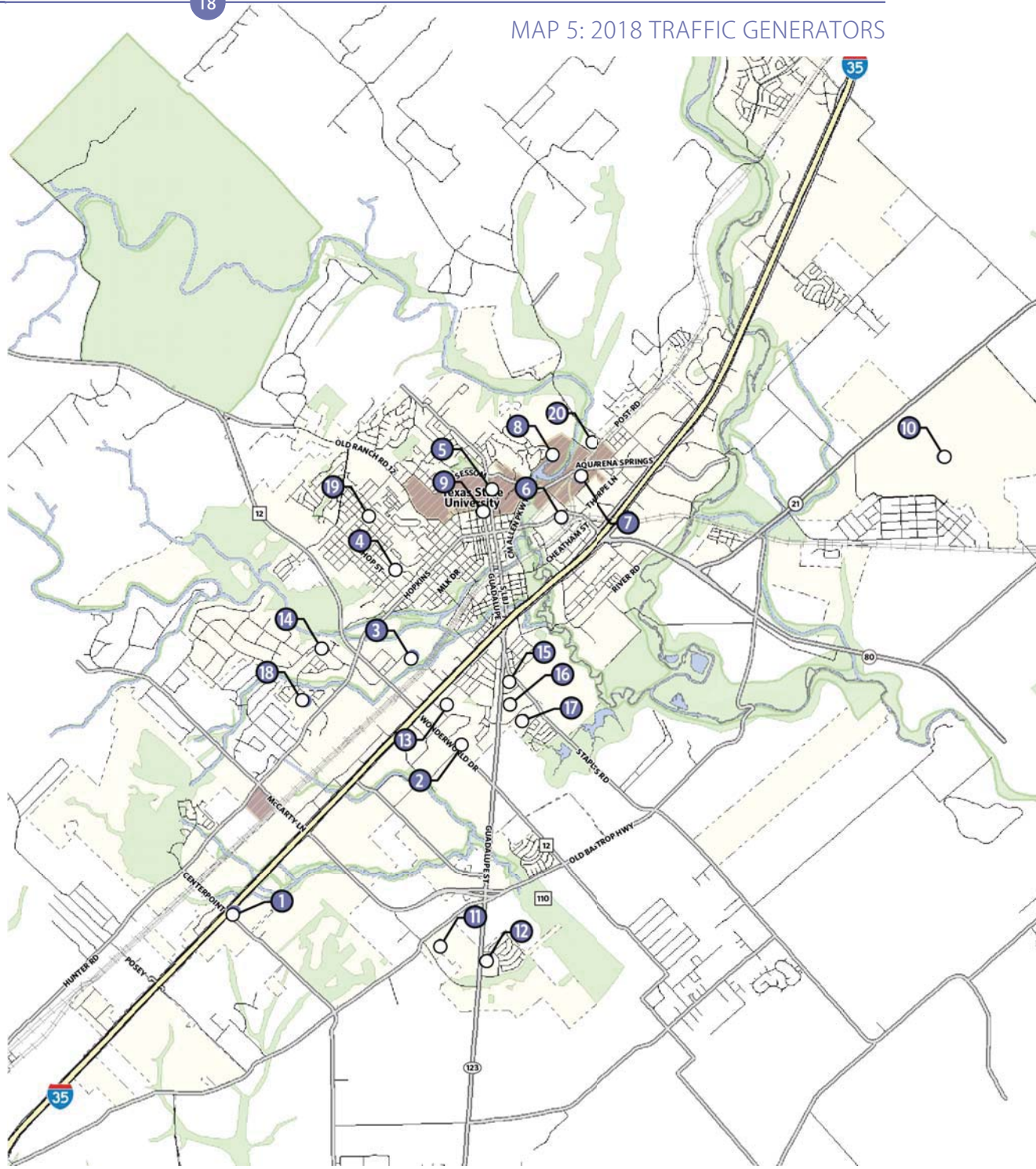
MAP 5: 2018 TRAFFIC GENERATORS

## TRAFFIC GENERATORS

A traffic generator is a land use that creates vehicular trips including homes, schools, offices, or a movie theater. There are several key traffic generators which create a sufficient number of trips to have unique impacts on traffic patterns in the City of San Marcos.

They include:

- 1 Tanger and Premium Outlet Centers
- 2 Central Texas Medical Center
- 3 Hays County Government Offices
- 4 Wonder World Park
- 5 Texas State University
- 6 City of San Marcos Government Offices
- 7 Bobcat Stadium
- 8 Aquarena Center
- 9 San Marcos Downtown Square
- 10 San Marcos Regional Airport
- 11 San Marcos High School
- 12 Bowie Elementary School
- 13 Mendez Elementary School
- 14 Hernandez Elementary School
- 15 Bonham Prekindergarten School
- 16 Owen Goodnight Middle School
- 17 DeZavala Elementary School
- 18 Doris Miller Middle School
- 19 Travis Elementary
- 20 Crockett Elementary





Wonder World Dr

LEFT TURN  
YIELD  
ON GREEN

CTMC  
CENTRAL TEXAS  
MEDICAL CENTER  
Adventist HEALTH SYSTEM

CTMC  
CENTRAL TEXAS  
MEDICAL CENTER  
Emergency  
Admission /  
Main Entry  
Central Texas Academic  
Inpatient Center





## CRASH DATA

Crash history for the City of San Marcos was obtained from TxDOT. All crashes that occurred on I-35 were excluded.

Aquarena Springs and Loop 82 have seen the most crashes with approximately 1,390 crashes between 2011 and 2016. This accounts for over 30% of the total crashes reported during this time frame.

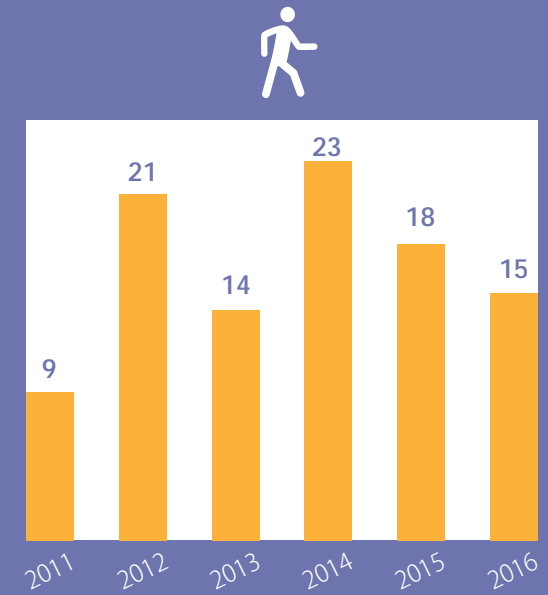
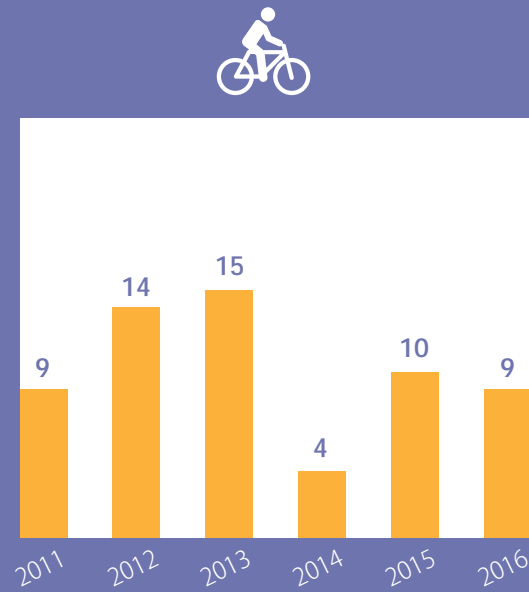
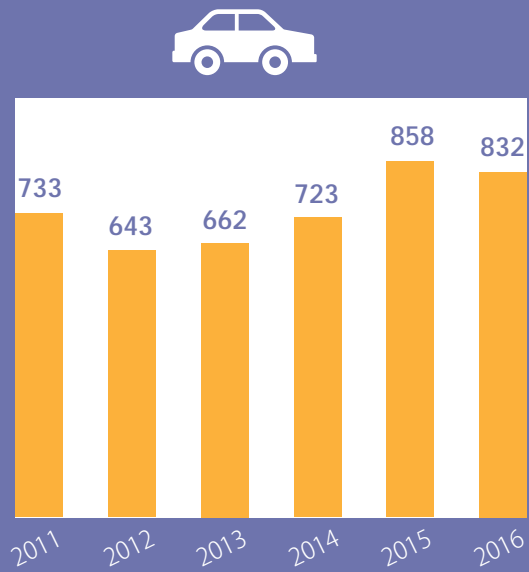
Crash data is included in the Appendix.

Since 2011, between 640 and 860 automobile crashes have been reported each year in San Marcos.

In that same timeframe, 61 bicycle crashes and 100 pedestrian-involved crashes have been reported.



## REPORTED CRASHES PER YEAR



Source: TxDOT Crash Record Information System (CRIS)





## MULTIMODAL TRANSPORTATION

Multimodal transportation is the movement of people and goods through multiple modes including passenger vehicles, bus, rail, pedestrians, and bicycles. While passenger vehicles dominate transportation in the City of San Marcos, there are increasing opportunities for multimodal travel.

### TRANSIT

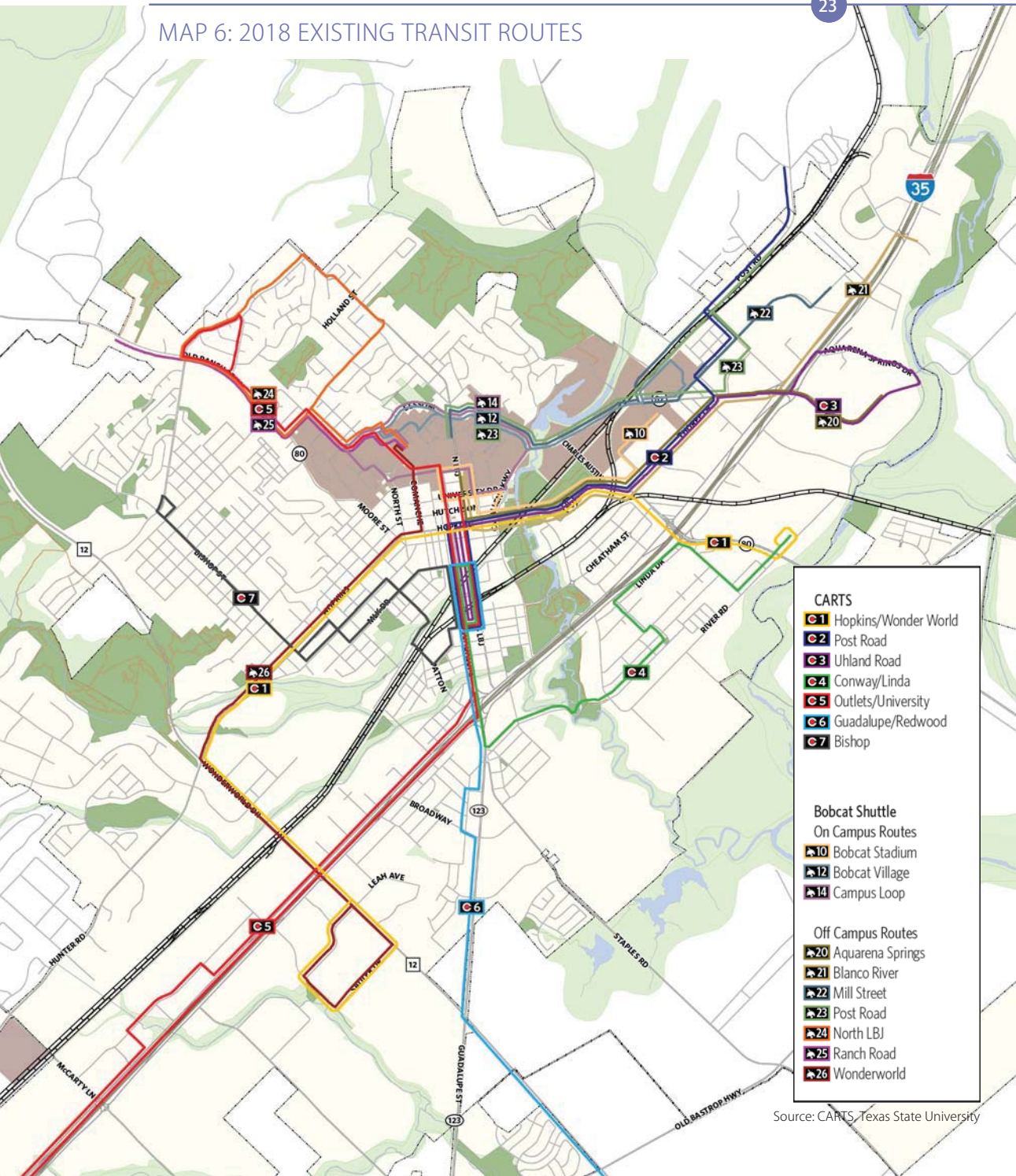
Existing local transit service in San Marcos includes Capital Area Rural Transportation System (CARTS) and Bobcat Shuttle service offered by Texas State University. The City of San Marcos Intermodal Station, south of downtown, acts as a hub for transit services ranging from the local and regional CARTS routes to national intercity transit services offered by Amtrak and Greyhound.

CARTS operates seven municipal bus service routes throughout San Marcos. Two are Interurban Coach routes between San Marcos and Austin operating on weekdays. A county bus provides complementary transit services for disabled users living in or visiting the City of San Marcos.

Bobcat Shuttle operates eleven routes. Three of these routes operate on campus, while the remaining eight operate off campus.



## MAP 6: 2018 EXISTING TRANSIT ROUTES



Source: CARS, Texas State University







According to the Comprehensive Plan, from 2008 to 2010, 5.3 percent of San Marcos' workforce walked or used a bicycle to get to work or school.

MAP 7: 2018 EXISTING BICYCLE ROUTES

## BICYCLE FACILITIES

The City of San Marcos is committed to encouraging bicycle use by building safe, convenient and connected bicycle lanes and trails for riders of all ages and abilities.

The City is working to increase connectivity of the existing bicycle and trail system between its parks, recreational amenities, downtown, Texas State University, businesses and residential areas.

In November 2017, the Texas Transportation Commission approved \$2.8 million in grant funding for bicycle and pedestrian facilities. Projects will include a two-mile shared-use path from Hopkins Street Bridge to IH 35.

San Marcos currently establishes bicycle routes by considering:

Traffic density

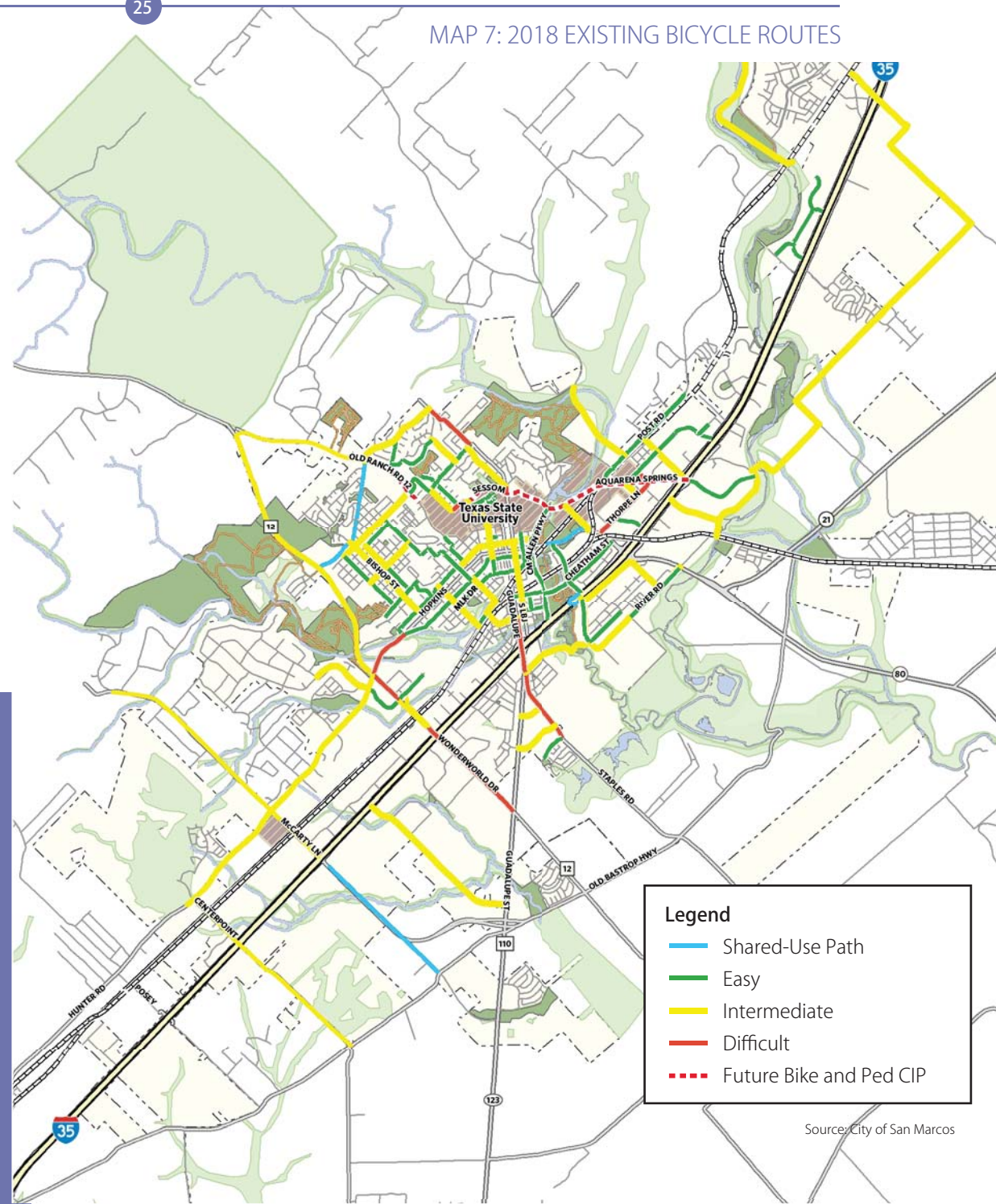
On-road bicycle facilities

Change in elevation

Roadway conditions

Connectivity

Citizen feedback

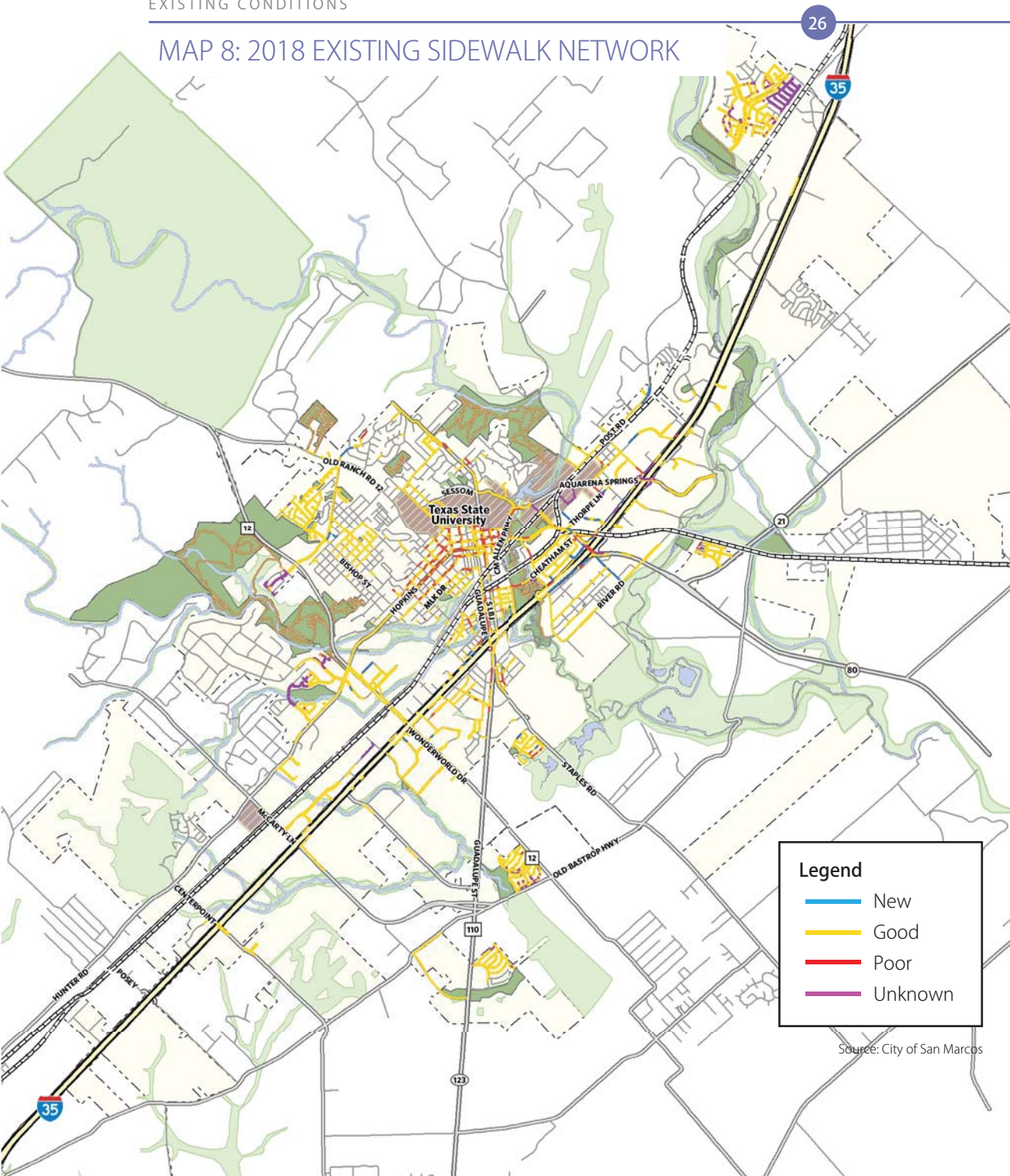


### Legend

- Shared-Use Path
- Easy
- Intermediate
- Difficult
- - - Future Bike and Ped CIP



MAP 8: 2018 EXISTING SIDEWALK NETWORK



## PEDESTRIAN FACILITIES

Sidewalks are essential to the transportation network. They provide pedestrians with safe, dedicated walkways and encourage pedestrian mobility.

Wide intersections and high speed traffic make walking unpleasant and sometimes unsafe, discouraging non-motorized traffic.

The current sidewalk network in the City of San Marcos has missing links in critical areas. Many sections are poorly maintained. Broken segments in the adjacent sidewalk map represent gaps in the network.

The City pro-actively implemented a sidewalk maintenance program in 2016 to improve sidewalks throughout the City.

**The Federal Highway Administration estimates that pedestrian-related crashes are twice as likely to occur when there are no sidewalks.**









The existing trails in San Marcos are commonly used for hiking and recreational biking. They are not as suitable for commuter cycling.



## GREENWAYS AND TRAILS FACILITIES

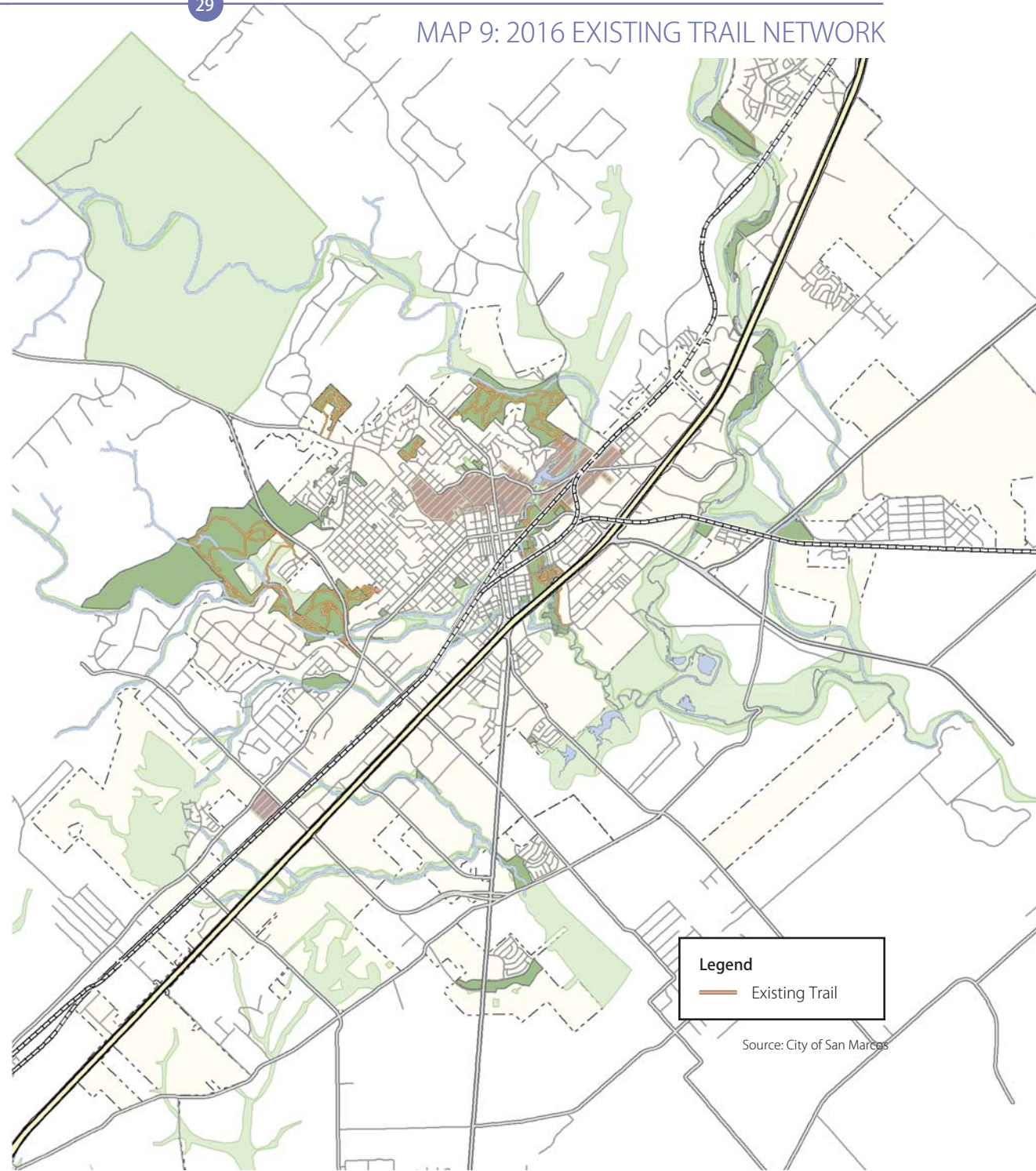
Community priorities identified in the Comprehensive Plan included providing more trails and natural areas.

The 2010 Parks, Recreation & Open Space Master Plan lays out a vision for the City's recreational assets: "Create a unified parks and recreation system that serves the entire San Marcos community, supports tourism efforts and remains a good steward to the river and surrounding environment." The Plan is currently undergoing an update.

The 2012 Hays County Parks, Open Space, and Natural Areas Master Plan recommends an increase in both the number and length of its trails, as well as enabling access for hiking and biking.

The San Marcos Greenbelt Alliance has developed a vision for a future system of trails that connect natural areas and neighborhoods within the City with a "Loop and Check" map.

MAP 9: 2016 EXISTING TRAIL NETWORK





## MAP 10: 2018 RAILROAD AT-GRADE CROSSINGS



## RAIL FACILITIES

Union Pacific Railroad operates two segments of railroad freight lines within the City of San Marcos.

These include a north-south line that parallels IH 35 and an east-west line that diverges near the City's center.

Union Pacific Railroad  
operates two freight lines  
through the City.

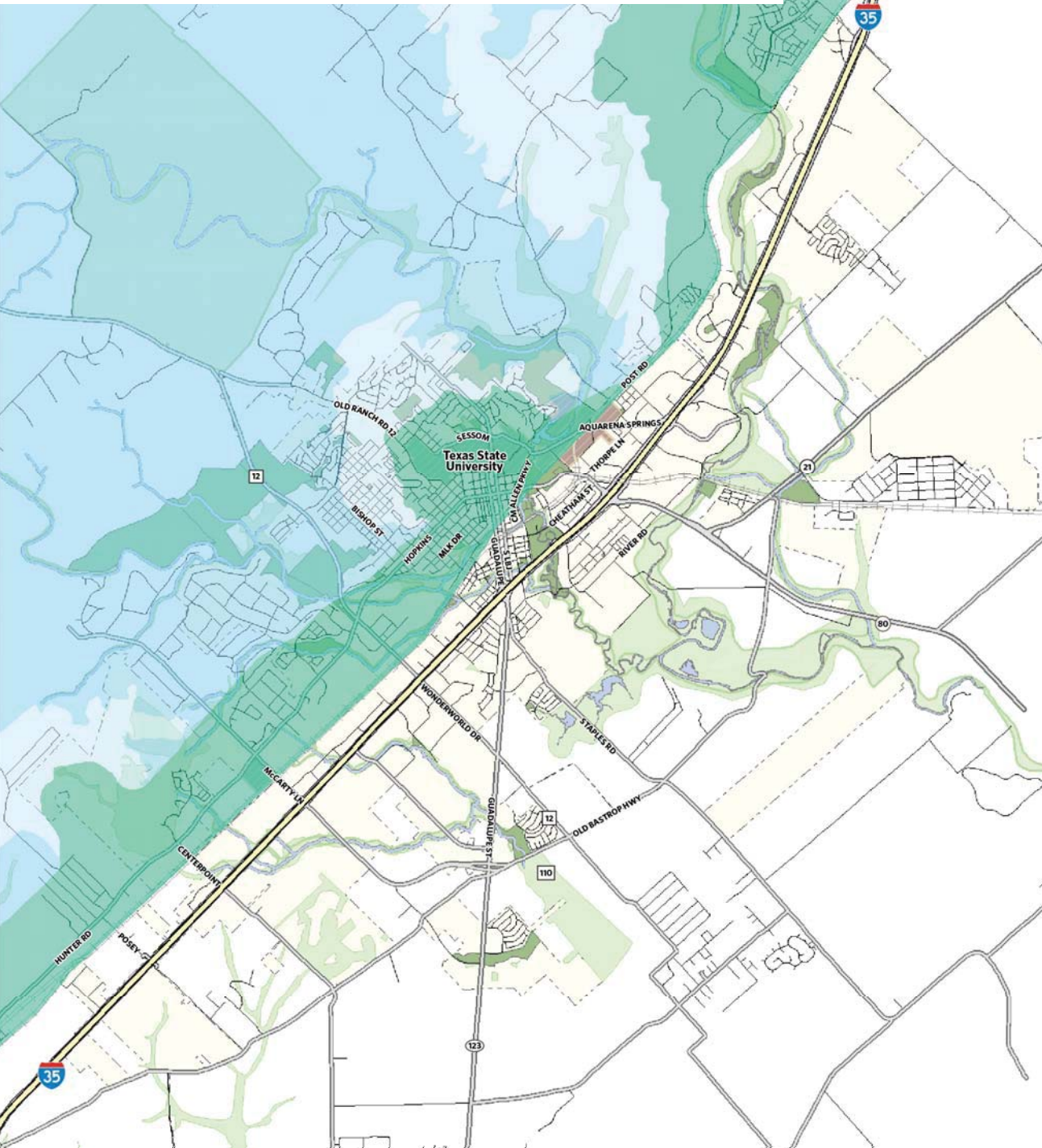






# MAP 11: 2018 ENVIRONMENTAL FEATURES

32



## Legend

### City Features

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

### Environmental Features

- Edwards Aquifer Contributing Zone
- Edwards Aquifer Contributing Zone within the Transition Zone
- Edwards Aquifer Recharge Zone
- Edwards Aquifer Transition Zone

Source: City of San Marcos





## ENVIRONMENTAL

The City of San Marcos is home to many key natural resources. The San Marcos and Blanco Rivers, their tributary creeks, and the Edwards Aquifer run throughout much of the City. Abundant natural resources create a diverse wildlife habitat. Native birds, salamanders, aquatic life and other species also live in these areas.

Several parks and historical features offer additional character and depth to the City.

Caution and careful planning are needed when evaluating infrastructure improvements so that impacts to environmental features can be avoided or minimized.

Flooding and low water crossings must also be taken into account when considering environmental constraints and impacts. The unique water features, combined with steep topography, contribute to San Marcos being particularly susceptible to flooding. Major floods have occurred several times in the past 100 years, with the most recent in 2017.



# COMMUNITY ENGAGEMENT

BE PART OF  
THE  
DIALOGUE

HOURS  
MON - SAT 10:00AM - 6:00PM  
SUNDAY CLOSED  
WE APPRECIATE YOUR BUSINESS

City of San Mar  
Building Permi  
2013-12569  
Add  
Con  
Stokes Constr  
on the job site to be visible  
THE UNIT CERTIFICATE  
HAS BEEN ISSUED.

SMTXTALKS  
TRANSPORTATION



Throughout the planning process for the Transportation Master Plan, City staff worked to keep the public informed and involved.

Engaging the public and community stakeholders helped to clarify the project vision and provided opportunities for meaningful input and involvement by the community.

Comments received at community events were compiled and considered for incorporation into this Plan.





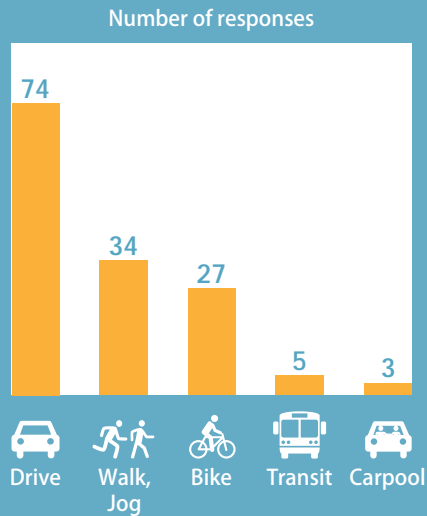
## RHYTHM OF THE STREET

On July 26th, 2014, the City of San Marcos held a kick-off event for both the Code SMTX and Transportation Master Plan Processes. 'Rhythm of the Street' was a CNU award winning tactical urbanism event that temporarily transformed LBJ Drive to a two-way "Complete Street" with bicycle lanes, parklets, and sidewalk cafes.

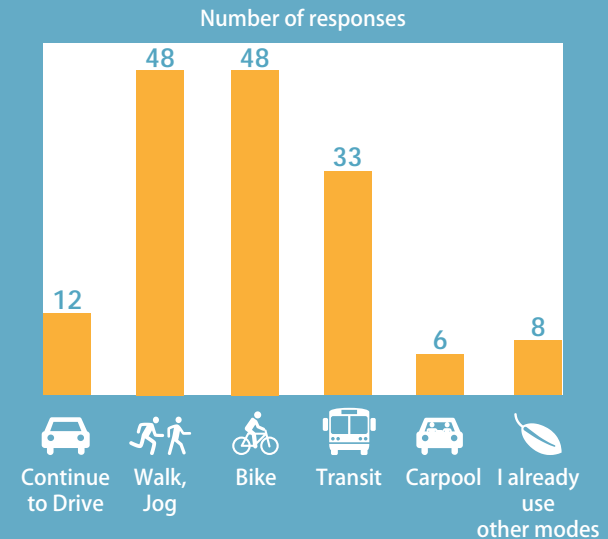
The goal of the event was to solicit community input for the Transportation Master Plan and to demonstrate how a city block could be better utilized to serve community needs. Participants were surveyed to determine their wants and needs for transportation options in San Marcos. Participants surveyed as part of the Rhythm of the Street event currently utilized a variety of transportation modes to travel around town. Complete survey results are included in the Appendix.

### RHYTHM OF THE STREET SURVEY:

#### HOW DO YOU PRIMARILY GET AROUND TOWN?



#### IF YOU PRIMARILY DRIVE, WHICH OTHER MODES WOULD YOU CONSIDER IF IT WERE SAFE?



More than half of the participants indicated they would consider walking and cycling as an alternative to driving single occupancy vehicles.



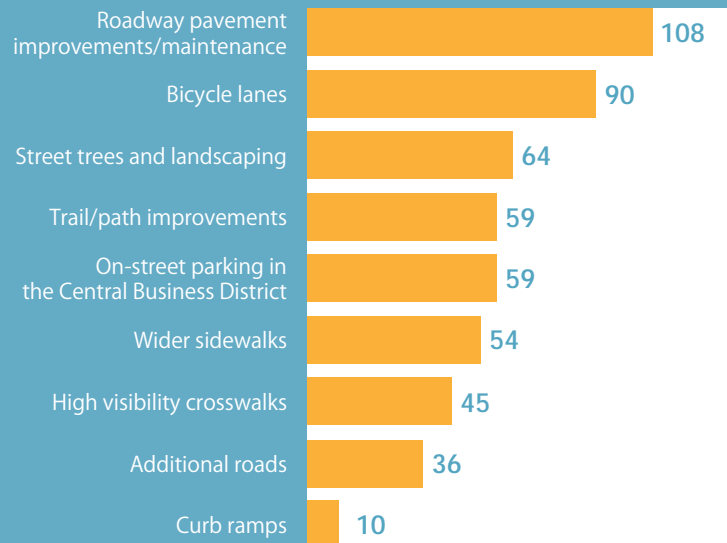


## CODE SMTX ZONING FOR CHARACTER WORKSHOPS

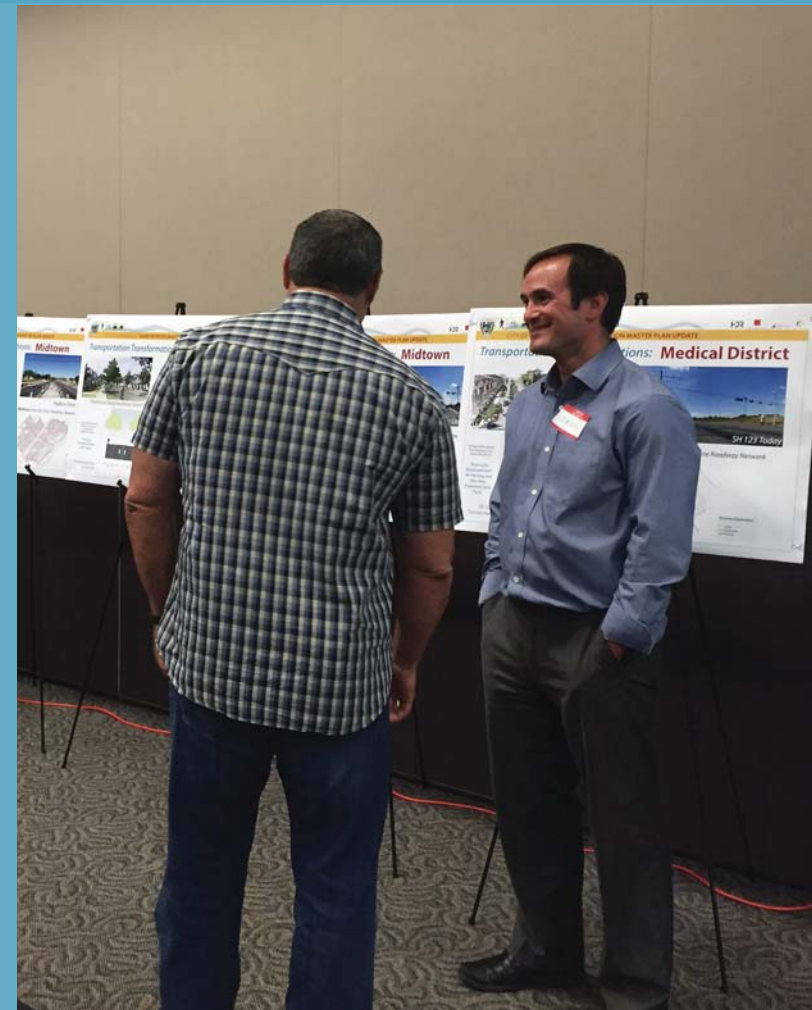
The Transportation Master Plan team participated in the Code SMTX Zoning for Character Workshops in August of 2015. During these workshops, the City of San Marcos worked with property owners and residents to explore the regulatory framework proposed for the six San Marcos Intensity Zones established in the Comprehensive Plan. Roadway transformations within the Intensity Zones were highlighted to show the impacts of a well-planned, multimodal network.

### 2015 TRANSPORTATION MASTER PLAN SURVEY:

PLEASE SELECT UP TO THREE STREET INFRASTRUCTURE IMPROVEMENTS THAT YOU FEEL ARE THE MOST IMPORTANT FOR THE CITY'S FUTURE.



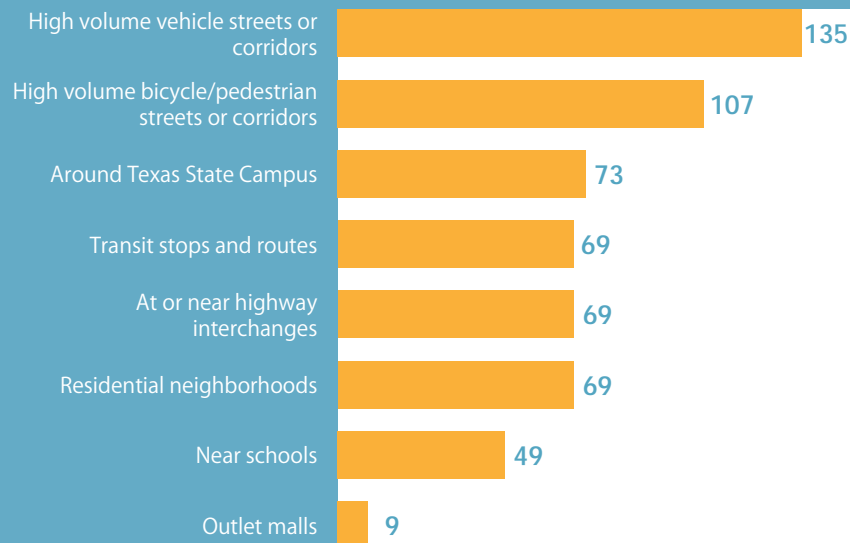
Number of responses





### 2015 TRANSPORTATION MASTER PLAN SURVEY:

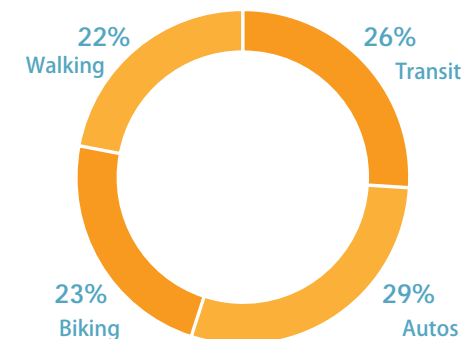
IN WHAT LOCATION(S) SHOULD THE CITY PRIORITIZE ITS EFFORTS TO IMPROVE STREET INFRASTRUCTURE? SELECT UP TO FOUR.



Number of responses

### 2015 TRANSPORTATION MASTER PLAN SURVEY:

HOW WOULD YOU DIVIDE THE YEARLY TRANSPORTATION BUDGET FOR THE CITY OF SAN MARCOS?





## GREENWAYS OUTREACH

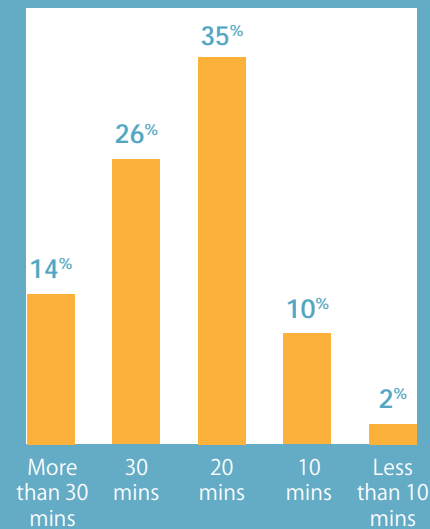
In the summer of 2016, a Greenways and Trails survey was made available online to San Marcos residents at the onset of the Greenways planning process. This survey asked a variety of questions about current and anticipated trails and greenways usage.

Respondents indicated that connectivity to parks, open space, and the San Marcos River are key to a successful greenways system. Survey results for the greenways system are included in the Appendix.

The largest impediments to usage of existing trails were identified as a lack of nearby connections and the lack of available facilities.

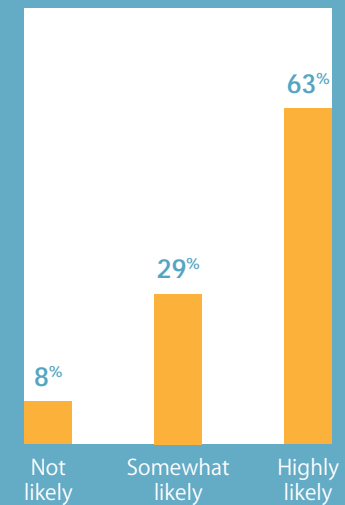
### GREENWAYS WORKSHOP SURVEY:

**IF YOU USED GREENWAYS  
TO GET TO A DESTINATION IN  
SAN MARCOS, HOW LONG WOULD  
YOU BE WILLING TO WALK OR  
BICYCLE TO GET THERE?**



### GREENWAYS WORKSHOP SURVEY:

**HOW LIKELY ARE YOU  
TO USE GREENWAYS TO  
GET FROM PLACE TO PLACE  
IN SAN MARCOS?**





With the results of the Greenways Survey, a Greenways Workshop was conducted. Attendees included local stakeholders such as City of San Marcos staff, Texas State University staff, and San Marcos Greenbelt Alliance members.

The outcome of the meeting was a Greenways Plan built upon recent successes that incorporated stakeholder desires.

Attendees reviewed maps of existing and potential trails and greenways alignments to identify needed connections and desired trail routes.





Comments received during the Open House were compiled and incorporated into the planning process.

## TRANSPORTATION MASTER PLAN PUBLIC OPEN HOUSE

On November 9, 2016 the City of San Marcos hosted an Open House for the community to learn about the updates to their Transportation Master Plan. The open house featured exhibits of the Transportation Master Plan goals and vision, policy recommendations, the 2035 Thoroughfare Plan, the 2035 Bicycle Network, the 2035 Greenways Plan and other components of the master plan. Attendees were also able to view proposed cross-sections for City streets, different types of bicycle facilities, and options for trails and greenways.

A handout was prepared with the goal of gathering specific feedback regarding bicycle facilities and trails, proposed roadway cross-sections, the proposed 2035 Thoroughfare Plan, and the prioritization of new roadways and greenways. A comment card and survey was also provided for citizens to provide open-ended feedback. Complete survey results for the Open House are included in the Appendix.

2016 TRANSPORTATION  
MASTER PLAN SURVEY:

**WHAT ENHANCEMENTS TO  
EXISTING ROADWAYS WOULD  
YOU LIKE TO SEE COMPLETED  
IN THE NEXT TEN YEARS?**

Build bicycle lanes.

Build sidewalks.

Increase existing street capacity.

Remove train delays.

Traffic signal timing and synchronization.

Connect Intensity Zones.



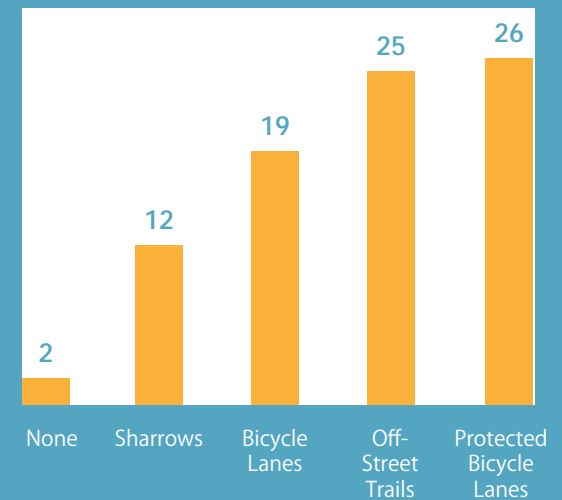
A goal of the Comprehensive Plan and the Transportation Master Plan is to obtain a “Bicycle Friendly Community” designation.

2016 TRANSPORTATION  
MASTER PLAN SURVEY:

**WHAT TYPE OF BICYCLE FACILITY  
WOULD YOU PREFER?**



Number of responses







## ADDITIONAL OUTREACH

City Council was briefed multiple times throughout the development process of the Transportation Master Plan.

A workshop was held on March 1, 2016 to involve Council members and obtain direct feedback regarding cross-sections, policies and recommendations for the mid-, short- and long term improvements throughout the transportation network.

Stakeholder outreach was also an important part of the planning process. City officials met with local businesses, conducted a survey and held “Think Tank” sessions to help inform the development of the Thoroughfare Plan and other recommendations for the City.



An Open House for the Transportation Master Plan was also held October 18, 2017. The objective was to provide information on council direction, and discuss proposed plans and the list of critical intersections that required improvements.

The short-term (10 year) Capital Improvement Plan list and associated cost estimates, mid- and long-term improvements identified under the Transportation Master Plan were also discussed.

Participants were able to provide feedback on proposed projects, identify any missing projects and leave comments. Summaries and feedback from the Open House are included in the Appendix.

- I SUPPORT the Trails Plan and the associated costs.
- Franklin was recently resurfaced. As a cyclist, I feel that the road is now WORSE than it was before resurfacing. I am very unhappy with the quality of this work and hope whoever did this job receives greater oversight in the future if they are even allowed to proceed with future projects.

I like the trails & fruit trees that will be planted. I like the plans for bike paths. The Caddock extension will not be good for the river. It will contaminate the aquifer. We need to put the northern loop somewhere else. The Caddock extension will be a disaster!

The Caddock extension and all plans for "so called" loops on the west side of town need to be removed from the transportation plan.

(1) I support trail extensions, maintenance, and concepts for our city, especially on the recharge zone side of the city. These are important for preserving the few natural areas that we have. We need to discourage development on that side of town (west) to decrease non point runoff pollution from inappropriate development.

Please eliminate the Caddock extension from the Transportation Plan. I support the Trail Plan.



FUTURE SCENARIO

FUTURE SCENARIO



To help determine future traffic needs of San Marcos, the Transportation Master Plan analyzed base year conditions and future transportation scenarios for short-, mid-, and long-term improvements.

The 2035 Future Scenario considers connectivity between key intensity zones. Developed for the City's Comprehensive Plan, the zones are envisioned as well-planned areas and encourage mode-shift.

A conceptual transit network that provides trips between key intensity zones has been developed as part of the future transportation scenario.

This chapter describes the assumptions that have been built in to the 2035 Future Scenario for this Transportation Master Plan.

#### 2015

Current traffic conditions for the existing year were documented and analyzed from the 2010 base-year travel demand model to identify gaps in the existing transportation network.

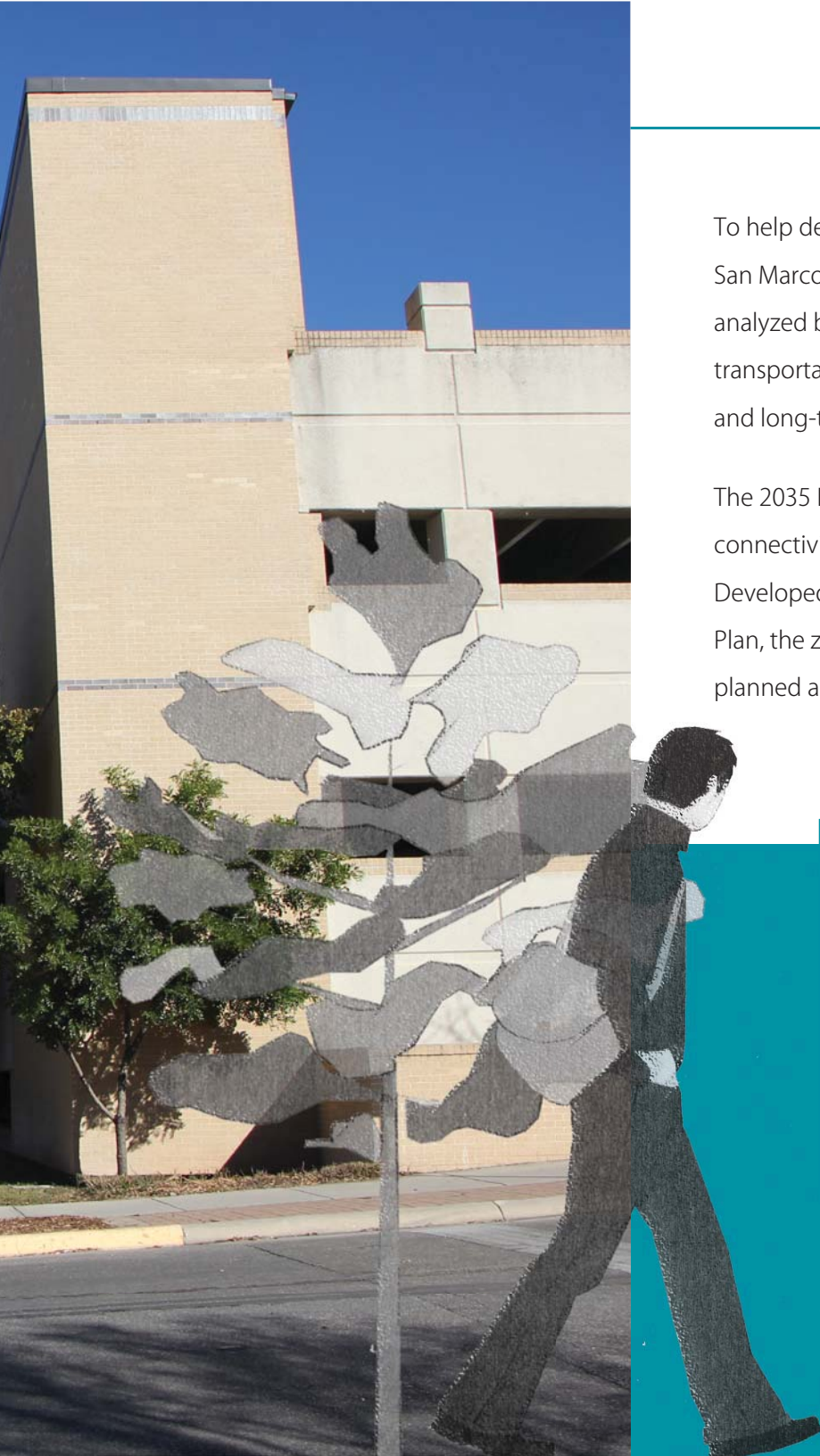
#### 2025

Short-term improvements were developed from the 2025 travel demand model for implementation in zero to ten years.

#### 2035

Mid-term and long-term improvements were developed and prioritized from the results of the 2035 travel demand model.

**Short-, mid-, and long term improvements were developed to be implemented through 2035.**





## TRANSPORTATION MODELING

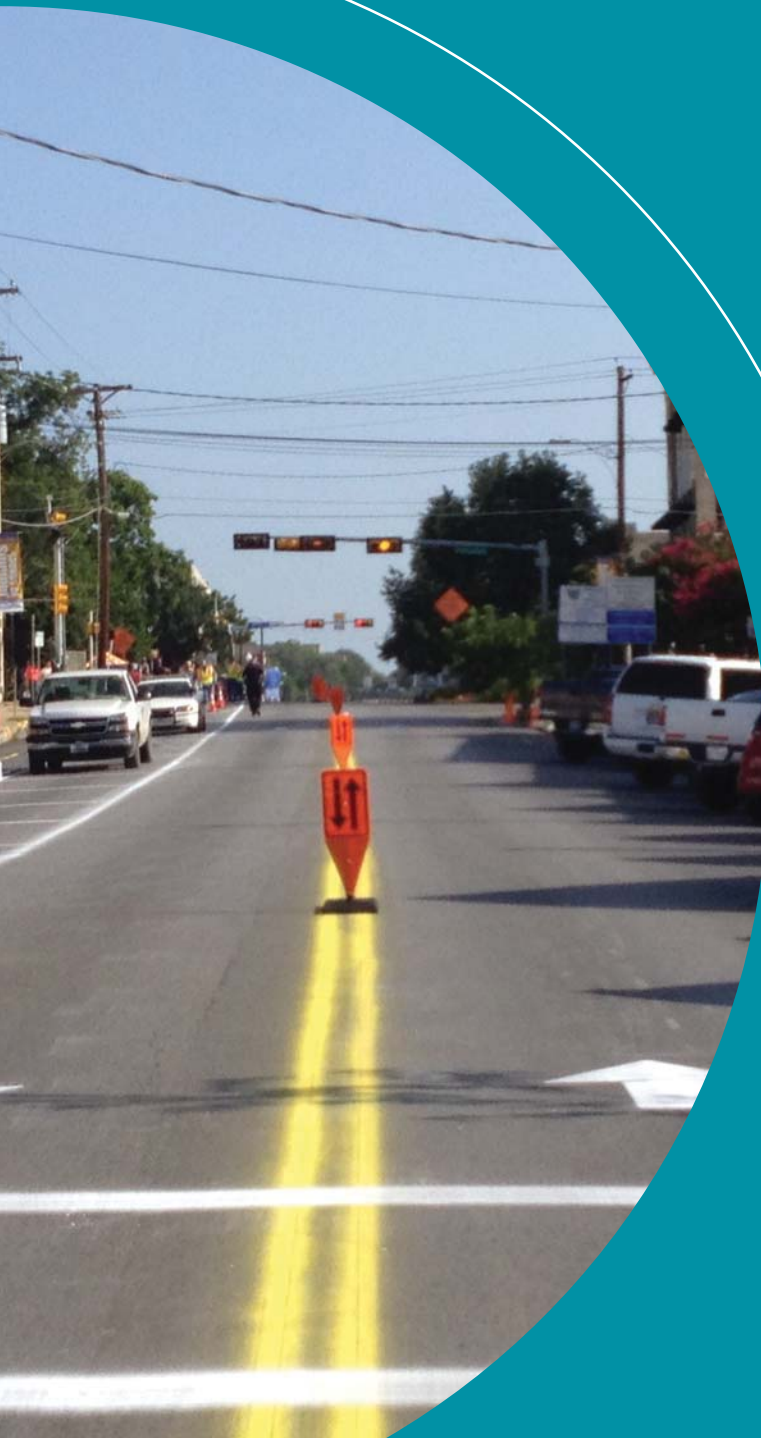
The Capital Area Metropolitan Planning Organization (CAMPO) oversees the transportation planning process for Central Texas, including Hays County. CAMPO maintains a travel demand model used for transportation planning throughout the region. The model analyzes the operations of the existing transportation system and predicts operations of a future transportation system with and without improvements. This methodology was also used to develop the Transportation Master Plan.

### EXISTING CONDITIONS MODEL

An update to a subset of CAMPO's travel demand model was developed for the City of San Marcos. The model update reflected observed 2015 travel and infrastructure conditions. Growth rates such as population and development were then applied to the updated 2015 model to analyze changing travel conditions for the 2025 and 2035 Future Scenarios. The model simulates travel on nearly every roadway within the City limits. Outputs of the model provide detailed information about the operations of the transportation system in San Marcos.

#### MODEL OUTPUTS

The model outputs data for traffic volumes, travel speeds, volume-to-capacity ratios, vehicle miles traveled, and vehicle hours traveled on the roadway links.



The 2015 travel demand model demonstrates enough short trips in the network that a shift to alternate modes, such as walking and cycling, is obtainable. With appropriate infrastructure investments to make these types of trips safer and more convenient, trip conversions from single occupant vehicles could be achieved.

The importance of transit in the City's future transportation plan becomes more evident when analyzing the travel demand model results. As growth and development continue, the number of trips between the intensity zones is expected to increase. The zones can easily be connected with key transit routes, while enhanced pedestrian and bicycle facilities within each intensity zone could encourage mode shift.

When alternate transportation choices are safer and more convenient for users, more short trips can be captured through mode shift and removed from roadway demand.

The 2035 Future Scenario supports a connected, multimodal network that supports more short trips by walking or cycling.



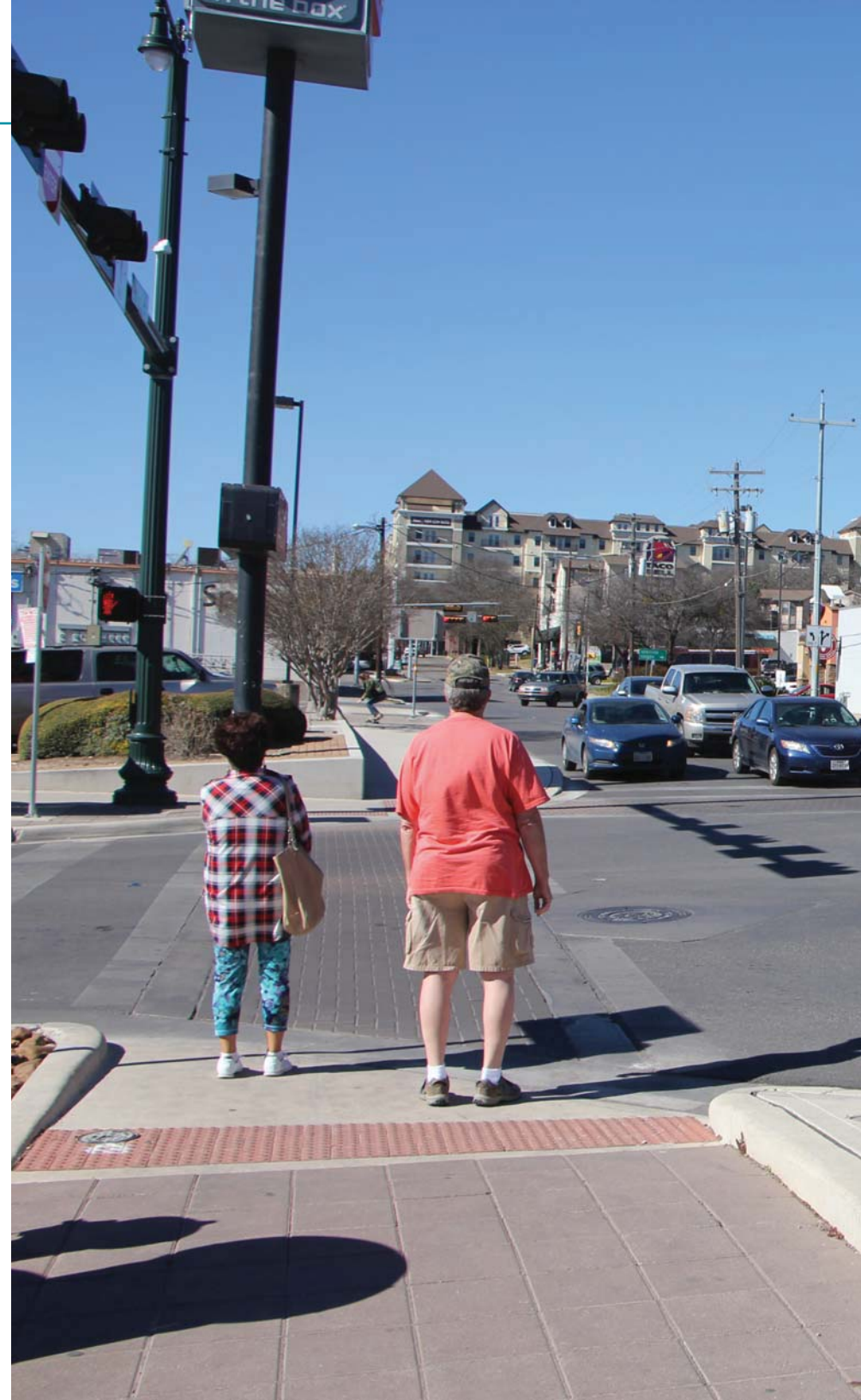
14%

Trips made are less than one mile



80%

Trips made are less than five miles





## MAP 12: 2035 BUILD LEVEL-OF-SERVICE

## FUTURE SCENARIO MODELS

Demographic and land use inputs and future year network assumptions provided by the City of San Marcos were used in the travel demand model for two forecast years (2025 and 2035) and the 2015 base year.

Major assumptions of the future year network model include:

- A 15% multimodal reduction for shifts from automobile to active transportation modes (bicycle and pedestrian)
- A conceptual transit framework to serve trips between intensity zones identified in the Comprehensive Plan

Future scenario models helped determine the impacts of future growth on transportation operations in the roadway network and to identify short-term and long-term improvements to meet future demands.







WE BUY  
GOLD  
&  
SILVER

SAM MARCOS

- Museums
- Historic Downtown
- Veterans Memorial

B

LEFT LANE  
MUST  
TURN LEFT

CAR



## CRITICAL INTERSECTION OPERATIONS

To project future levels-of-service for intersection operations in 2035, growth and development assumptions were used to predict the traffic operating conditions in San Marcos.

A No Build scenario was analyzed for the Future Year 2035. The No Build scenario demonstrates reduced level of service throughout the network if no improvements are made.

Traffic analysis results are included in the Appendix

### Legend

#### Signalized (Seconds of Delay per Vehicle)

- Less than 35 seconds
- Between 35 and 55 seconds
- 55 seconds or more

#### Unsignalized (Seconds of Delay per Vehicle)

- Less than 25 seconds
- Between 25 and 35 seconds
- 35 seconds or more

### 2035 NO BUILD LEVEL OF SERVICE

SIGNALIZED		AM Peak	PM Peak
Aquarena Springs Drive @	Thorpe Lane	E ●	F ●
	Charles Austin Drive	F ●	F ●
	Sessom Drive	F ●	F ●
SH 123 @	Staples Street (FM 621)	F ●	F ●
	Broadway Street	F ●	D ●
	Old Bastrop Highway	F ●	E ●
Hopkins Street @	FM 110	F ●	F ●
	Bishop Street	C ●	F ●
	Moore Street	D ●	F ●
	LBJ Street	B ●	E ●
Wonder World Drive @	Guadalupe Street	F ●	F ●
	Leah Avenue	D ●	D ●
	Sadler Drive	C ●	C ●
McCarty Lane @	IH 35	F ●	F ●
	IH 35 SB Frontage	F ●	F ●
University Drive @ CM Allen Parkway		D ●	D ●
Loop 80 @ Clarewood Drive		A ●	F ●
SH 21 @ SH 80		E ●	D ●
Old RR 12 @ Holland Street		E ●	F ●
N LBJ @ Sessom Street		D ●	F ●
UNSIGNALIZED			
Hopkins @ North Street		A ●	A ●

The 2035 Build scenario depicts the level of service for intersection operations with recommended improvements.

Recommended improvements were developed to ease the impact of the transportation growth on the roadway network. Improvements to these intersections were identified as short-term enhancements that could have an immediate impact on mobility within the City of San Marcos.

These improvements are shown on the Capital Improvements Projects list.

#### Legend

##### Signalized (Seconds of Delay per Vehicle)

- Less than 35 seconds
- Between 35 and 55 seconds
- 55 seconds or more

##### Unsignalized (Seconds of Delay per Vehicle)

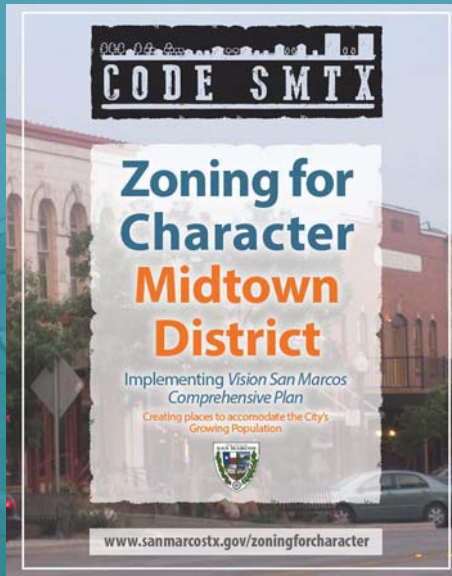
- Less than 25 seconds
- Between 25 and 35 seconds
- 35 seconds or more

The Build model improves operations over No Build models by providing network and intersection improvements. Projected levels of service are within a desired range for a 20 year horizon.

### 2035 BUILD LEVEL OF SERVICE

SIGNALIZED		AM Peak	PM Peak
Aquarena Springs Drive @	Thorpe Lane	C ●	F ●
	Charles Austin Drive	C ●	D ●
	Sessom Drive	E ●	E ●
SH 123 @	Staples Street (FM 621)	E ●	D ●
	Broadway Street	D ●	C ●
	Old Bastrop Highway	F ●	F ●
	FM 110	F ●	F ●
Hopkins Street @	Bishop Street	C ●	D ●
	Moore Street	B ●	D ●
	LBJ Street	B ●	E ●
	Guadalupe Street	C ●	F ●
Wonder World Drive @	Leah Avenue	D ●	D ●
	Sadler Drive	C ●	C ●
	IH 35	F ●	F ●
McCarty Lane @	IH 35 SB Frontage	F ●	F ●
	Hunter Road	D ●	D ●
University Drive @ CM Allen Parkway		B ●	D ●
Loop 80 @ Clarewood Drive		A ●	C ●
SH 21 @ SH 80		E ●	D ●
Old RR 12 @ Holland Street		A ●	D ●
N LBJ @ Sessom Street		C ●	D ●
UNSIGNALIZED			
Hopkins @ North Street		A ●	A ●





Character zoning considers land use and development when planning the design of city streets.

## TRANSPORTATION AND LAND USE CONSTRAINTS

### COMPREHENSIVE PLAN INTENSITY ZONES

The Comprehensive Plan Preferred Scenario Map created Intensity Zones to accommodate the City's future growth. Intensity Zones are defined as areas of change where the intent is to develop or redevelop. They are envisioned as well-planned areas where short trips meet daily needs, reducing the need to drive.

The zones are built on a walkable, complete community concept and include open spaces and trails. A key goal of this Transportation Master Plan is to develop a connected transportation system that provides route options throughout the City. The City of San Marcos envisions a high capacity transit service that could provide enhanced connectivity between the intensity zones, connecting users to a robust system of bicycle and pedestrian facilities throughout each zone.

### ZONING FOR CHARACTER

Character based zoning proposed in Code SMTX coordinates street design with adjacent development, by paying careful attention to the configuration, number and dimension of travel lanes, on-street parking, street landscaping, sidewalk widths, and bicycle infrastructure.

The Transportation Master Plan provides updated cross-sections designed around these character zones. These cross-sections will be used to guide street design as growth and development occur, helping to ensure that the character of neighborhoods and communities are protected and evolve in a thoughtful and planned manner.







Filling the gaps in the sidewalk and bicycle infrastructure will make a safer, more connected network for walking and biking and could encourage a modal shift from auto to active modes.

## BICYCLE AND PEDESTRIAN INFRASTRUCTURE GAPS

Providing for walking and bicycling has the potential to reduce auto dependency, mitigate traffic congestion and contribute to improved air quality and community health.

The 2035 Future Scenario model indicates that approximately 14 percent of trips are less than one mile long. These trips are ideal opportunities for walking. Likewise, 80 percent of the trips are less than five miles long and have potential to become bicycle trips.

A well-designed multimodal network that is safe, efficient and provides direct access to key land uses could potentially convert short trips to an active mode such as walking or bicycling.

The current pedestrian and bicycle networks in the City of San Marcos have missing links in critical areas. Where they exist, many sections of sidewalks are poorly maintained. The City of San Marcos maintains an inventory of sidewalks including missing sidewalk segments and planned sidewalks segments.

Beginning in 2016 the City implemented a sidewalk maintenance program to replace and construct gaps in infrastructure. This program replaces over 10,500 linear feet of sidewalk each year.

Progress should continue towards construction of these sidewalks outside the Transportation Master Plan projects.





# RECOMMENDATIONS



## COMPLETE STREETS & CONTEXT SENSITIVE DESIGN

Smart Growth America defines Complete Streets as ‘streets for everyone’. They are designed to enable safe access for people of all ages and abilities, for all modes of travel, and to respond to the communities they serve. A complete street in an urban community, such as San Marcos, will look different from a complete street in a suburban community.

Active travel (i.e., bicycle and pedestrian mobility) has been growing in popularity, although many communities lack the infrastructure to make active travel enjoyable. San Marcos envisions a connected network of efficient, safe and convenient multimodal transportation options that will create a more comfortable pedestrian and bicycle environment.

### GOAL

Implement roadway cross-sections that preserve the character of neighborhoods while encouraging appropriately located economic development.

### OBJECTIVE

- Design roadways in consideration of land use context, creating environments that are supportive of adjacent land uses.

## RECOMMENDATIONS

- Roadway pavement greater than 40 feet wide be avoided when possible, as they create difficult pedestrian crossing conditions.
- Where roadways have a speed limit of 35 mph or greater, landscaped medians are encouraged to provide separation between lanes of opposing direction.
- On local residential streets where traffic volumes are minimal, allow for “queuing” streets with roadway widths of 30 feet and parking on both sides.
- Street trees should be planted within the required seven-foot landscape strip to provide shade and a clear and safe separation between the pedestrian and vehicular realms.
- Curbside parking is encouraged along residential streets, commercial streets, boulevards and avenues where land uses front the street.
- Use of rain gardens, bio-filtration swales and other low-impact drainage facilities are encouraged within medians and landscape areas and along the curb edge to intercept and naturally treat urban run-off.



## GREEN STREETS

Green streets look to preserve environmental stability. Drainage and stormwater runoff can have negative impacts to the environment. Polluted runoff, erosion and sedimentation are unwanted impacts on surrounding areas. Optimal stormwater management introduces strategies to retain, treat or eliminate runoff at the source.

Cost-effective green infrastructure and improving water quality complement Complete Streets policies. To maintain a healthy policy of Green Streets, the City of San Marcos should implement Green Streets best practices when possible.

The City of San Marcos is also in the process of creating a stormwater management plan to help keep garbage, debris and pollution out of the San Marcos River.

### GOAL

Identify green solutions and policy recommendations that can be considered for public and private development projects including Low Impact Development strategies.

### OBJECTIVES

- Reduce urban run-off from impervious surfaces such as roads and parking lots.
- Implement landscape standards that contribute to street beautification in a cost-effective and environmentally efficient manner.

### RECOMMENDATIONS

- Minimize impervious pavement use and opt for pervious asphalt and concrete, or permeable pavers.
- Consider a road diet where conditions are suitable to help reduce roadway widths and impermeable cover.
- Instead of impermeable concrete sidewalks, consider reinforced gravel paving where surfaces will not compromise bicycle and pedestrian mobility and safety.
- Implement landscaping elements that help reduce stormwater runoff, such as street trees, bioswales, planters and rain gardens. Traffic calming elements provide potential sites for these types of landscaping elements.
- Introduce xeriscaping with native plants to reduce water consumption and the need to irrigate.
- Encourage alternate modes where trips are less than one mile. Walking and bicycling for short trips can help to reduce CO2 emissions, adding to the environmental benefits of Complete Streets.





S.M.A.C.  
SAN MARCOS  
ATHLETIC CLUB  
SINCE 1976

LANDIS SHOE CO.

HINLEY



## 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 policies. 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, efficient and provides direct access to key land uses.

## OBJECTIVES

- 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 one mile to walk 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.

## SEVEN THOROUGHFARE TYPES ARE PROPOSED FOR THE TRANSPORTATION MASTER PLAN.



**45  
MPH**

### Highways

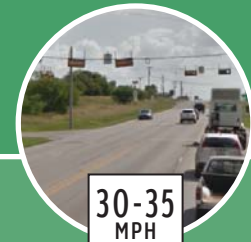
are freeways and parkways with limited access including frontage roads along IH 35, as well as parkways at the periphery of the City.



**30-35  
MPH**

### Boulevards

include 4 and 6-lane roads with left-turn lanes at intersections. They have raised and landscaped medians, sidewalks, and protected bicycle facilities.



**30-35  
MPH**

### Avenues

are 3 to 4-lane roadways. They do not have raised medians, but do have protected bicycle and pedestrian facilities and roadside trees spaced at regular intervals.



**25-30  
MPH**

### Commercial Streets

are 2-lane roadways fronting commercial uses. They are characterized by wide sidewalks and on-street parking.



**25-30  
MPH**

### Residential Streets

are 2-lane roads serving residential neighborhoods outside of a commercial district.



**25  
MPH**

### Roads

are built in the least intensive and rural parts of the community. They lack curbs and sidewalks.



**15  
MPH**

### Alleys

are narrow roadways providing access or service at rear of residential or commercial properties.







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









## MAP 14: PROPOSED 2035 THOROUGHFARE PLAN

**Legend****City Features**

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






**Development Zones**

-  High Intensity Zone
-  Medium Intensity Zone
-  Low Intensity Zone
-  Employment Area

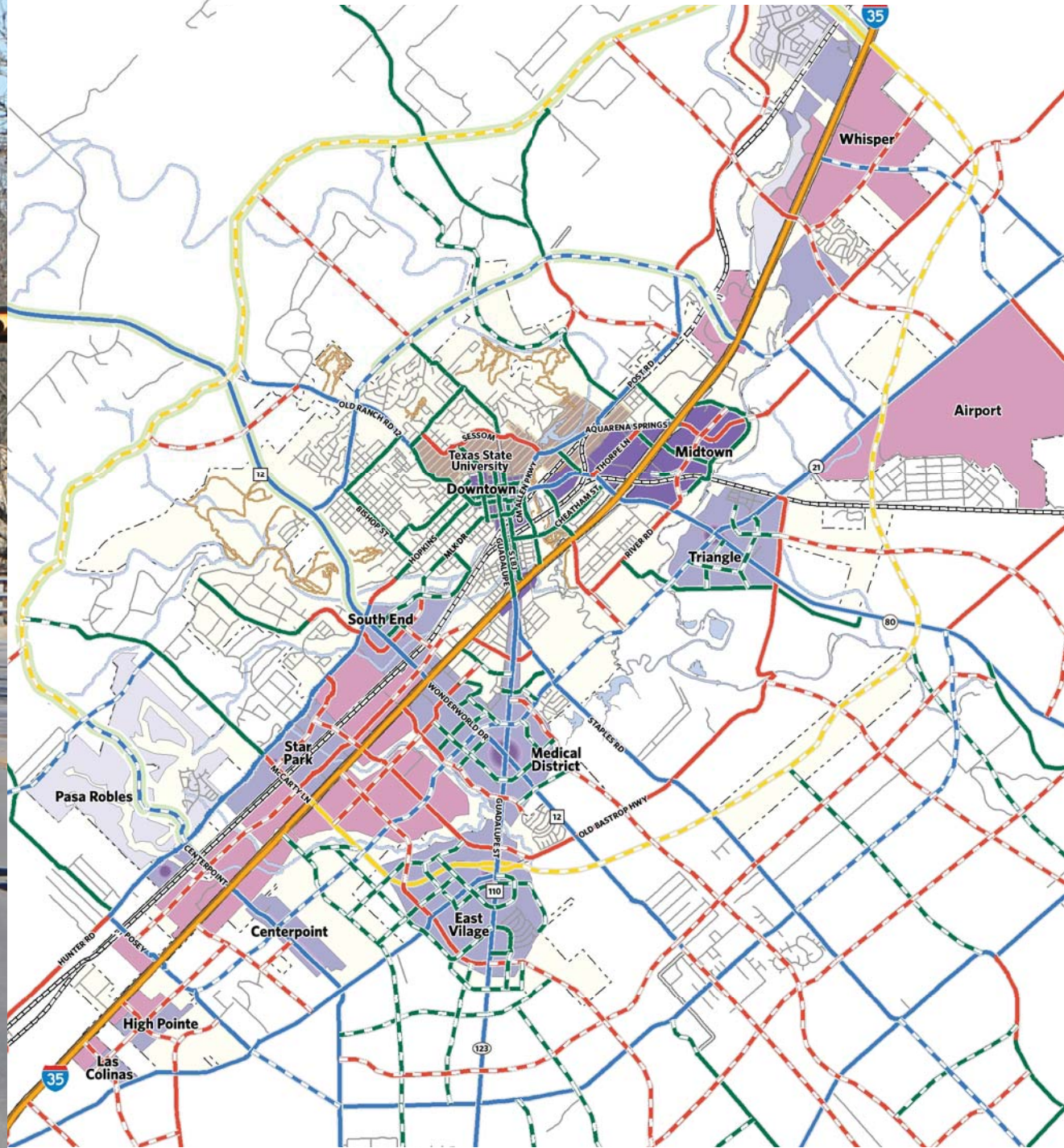
**Thoroughfare Plan****Enhanced Facility**

-  Boulevard
-  Avenue
-  Parkway
-  Street

**Proposed Facility**

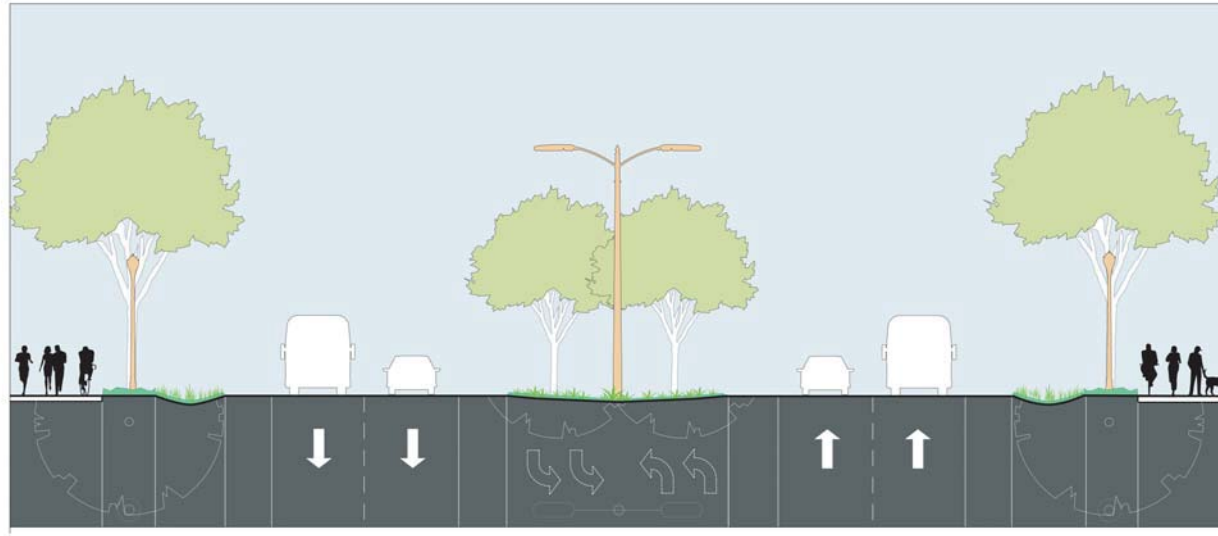
-  Boulevard
-  Avenue
-  Parkway
-  Street
-  Conservation Corridor

Source: City of San Marcos

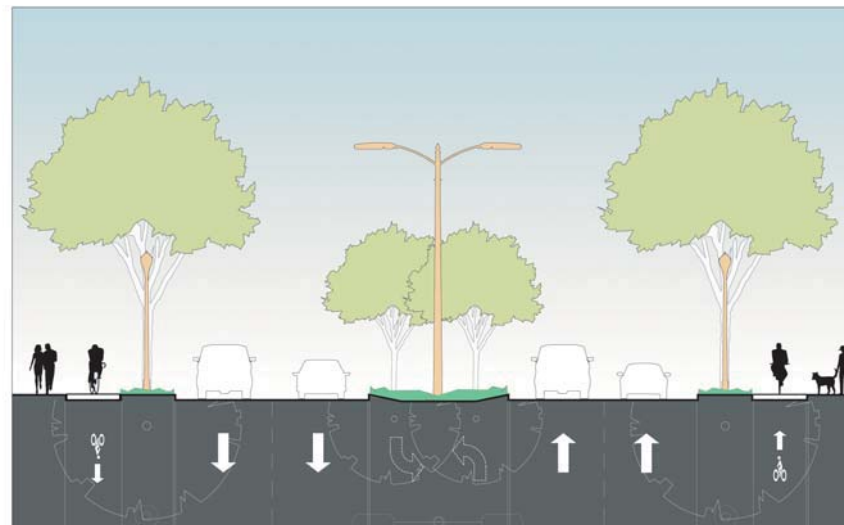




### Concept for Parkway Cross-Section

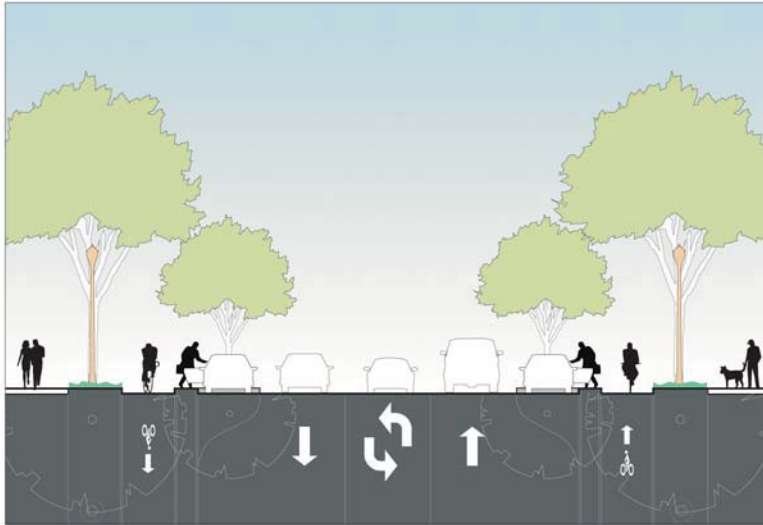


### Concept for Boulevard Cross-Section

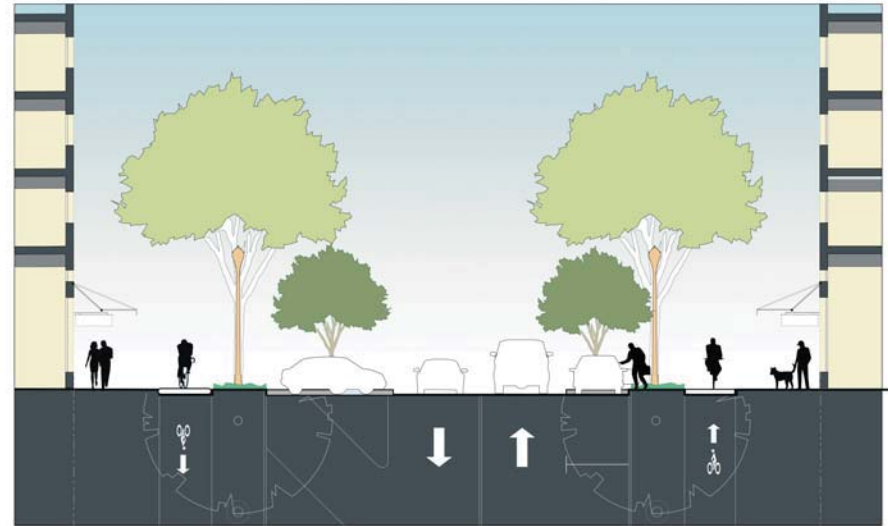




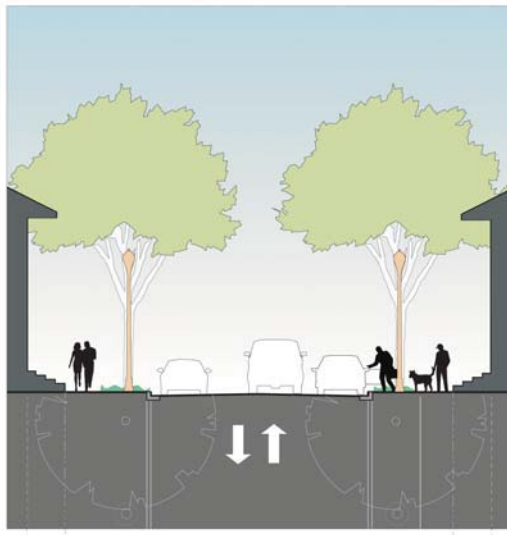
Concept for Avenue Cross-Section



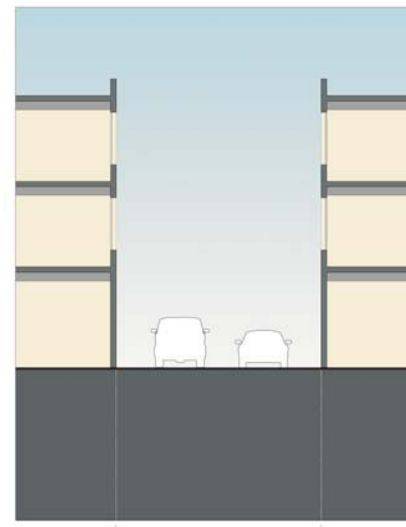
Concept for Commercial Street Cross-Section



Concept for Residential Street Cross-Section



Concept for Alley Cross-Section



Cross-Sections for the  
Transportation Master Plan  
were designed to support  
Complete Streets.





## 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. Desirable bicycle facilities are defined below.

### Types of Bicycle Facilities

Protected Bicycle Lane	Buffered Bicycle Lane	Shared-Use Path	Sharrow
A protected bicycle lane can be one or two-way within the roadway, and is separated from automobile traffic by a physical barrier.	Buffered bicycle lanes are on-street lanes with a wider, painted striped buffer to separate it from automobile traffic.	A shared-use path is an off-street pedestrian trail that is shared with bicycles.	Sharrows are designated lanes within the roadway that are shared with both automobile traffic and bicycles.

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.

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.

## GOAL

Increase bicycle use by expanding safe, convenient bicycle lanes and trails throughout the City.

## OBJECTIVE

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

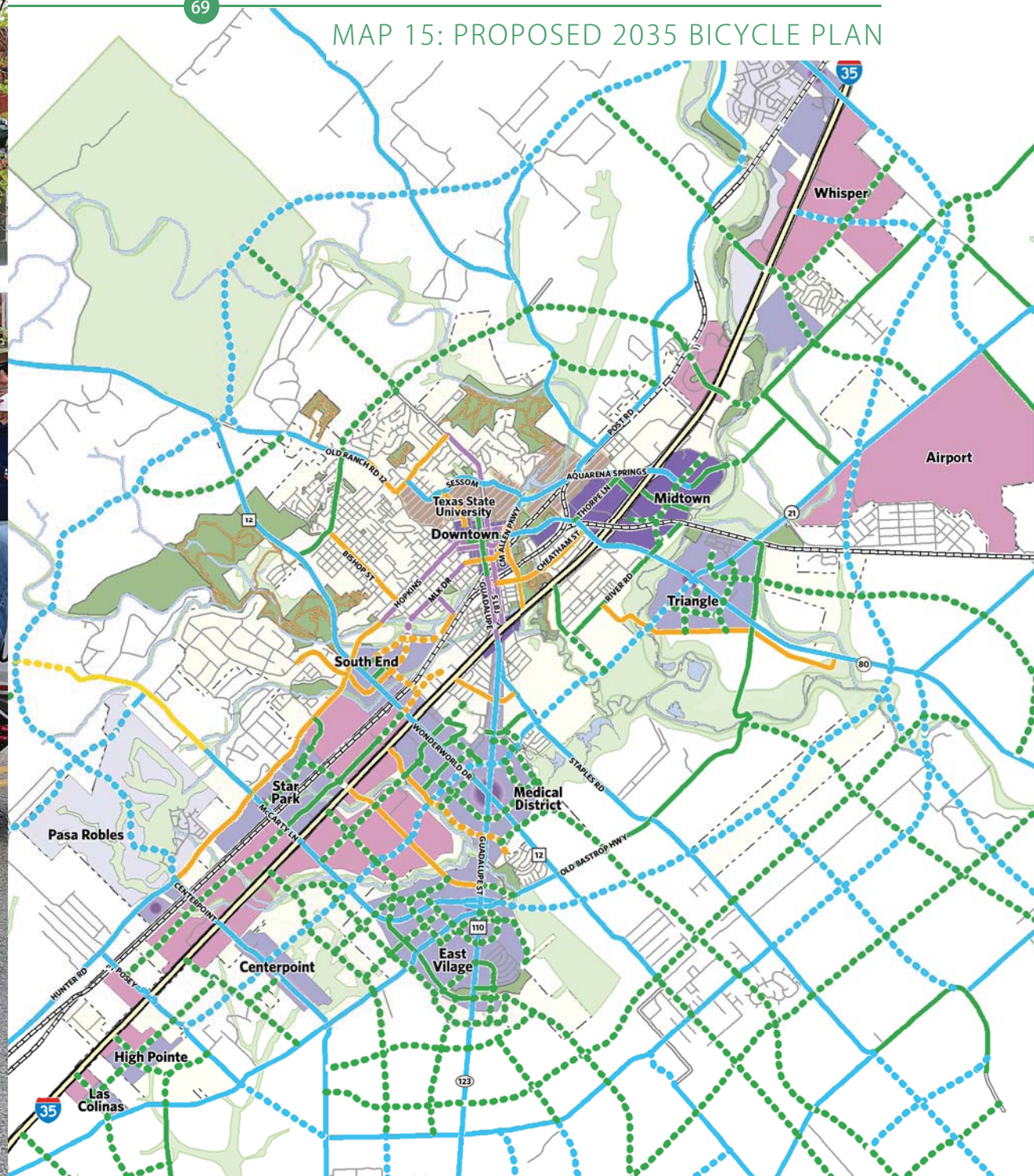
## RECOMMENDATIONS

- 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.





## MAP 15: PROPOSED 2035 BICYCLE PLAN



### Legend

#### City Features

- City Limits/Areas of Stability
- River/Creek
- Open Space
- Existing Parkland
- Existing Trails
- Texas State University
- Railroad
- High Intensity Zone
- Medium Intensity Zone
- Low Intensity Zone
- Employment Center

#### 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



## PROPOSED PEDESTRIAN NETWORK

A safe and connected pedestrian network promotes healthier communities and an enhanced quality of life. A well-connected pedestrian network also encourages more walking as a means for shorter trips. The City of San Marcos is dedicated to providing a pedestrian network that is safe and accessible to everyone.

### TYPES OF PEDESTRIAN FACILITIES



#### **Shared-Use Paths**

are off-street pedestrian trails that are shared with bicycles.



#### **A Pedestrian Trail**

is an off-street trail for the exclusive use of pedestrians.



#### **Sidewalks**

are off-street walkways typically fronted with buildings or front yards.

### GOAL

Build a well-connected, safe, accessible and continuous pedestrian network throughout the City of San Marcos.

### OBJECTIVE

Convert 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 sidewalk 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.







## GOAL

Build on recommendations in the Five-Year Transit Plan and plan a transit network that serves downtown and key intensity zones.

## 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.

## 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.

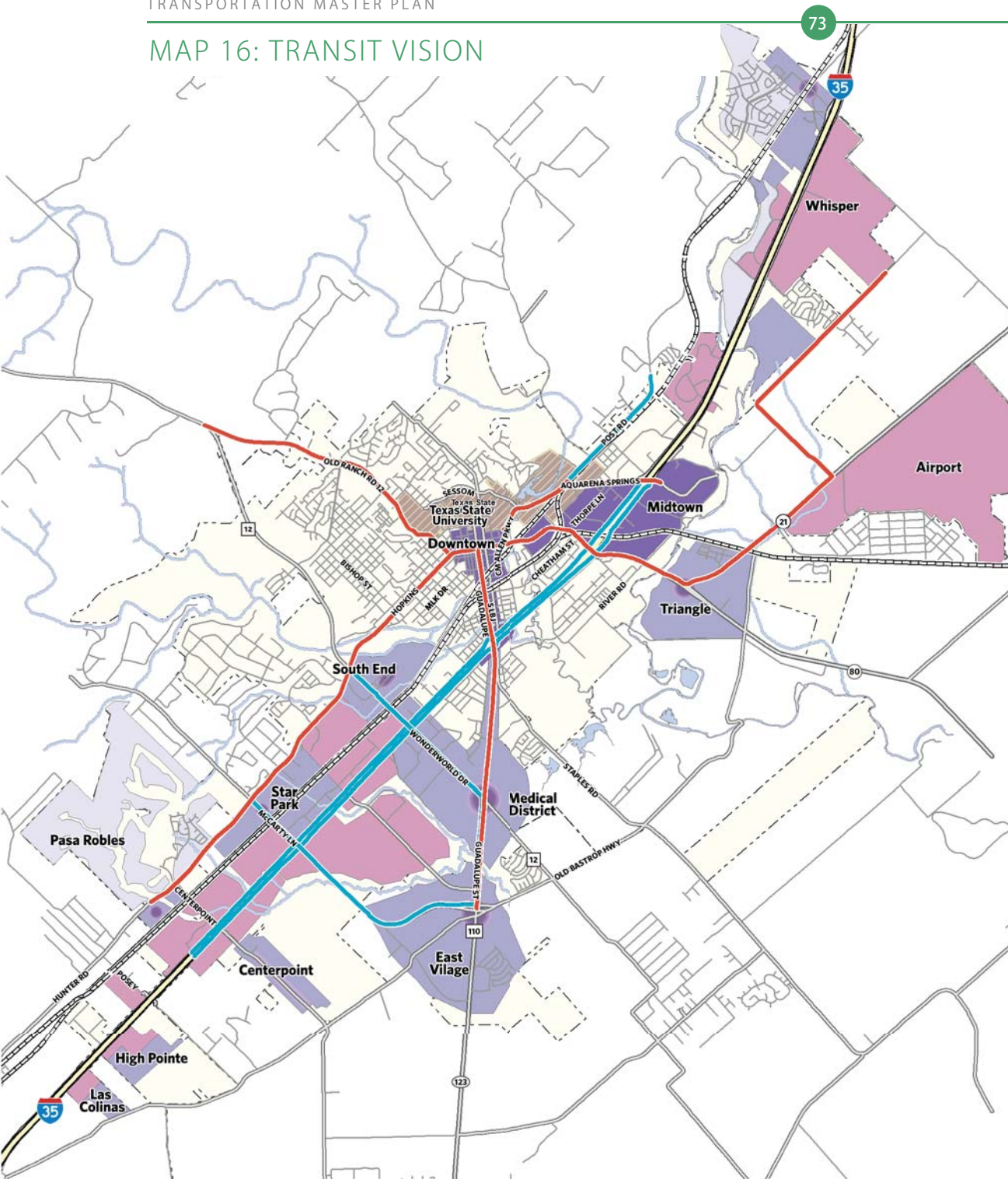
Building on this expansion, the Transportation Master Plan analyzed a conceptual transit framework for the 2035 Future Scenario designed to serve trips between intensity zones identified in the Comprehensive Plan.

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 16: TRANSIT VISION



### Legend

#### City Features

- City Limits/Areas of Stability
- River/Creek
- Texas State University
- Railroad
- High Intensity Zone
- Medium Intensity Zone
- Low Intensity Zone
- Employment Area

#### Transit Framework

- Route
- Circulator

Source: City of San Marcos

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



## 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 existing trails and bicycle routes into a robust greenways network.

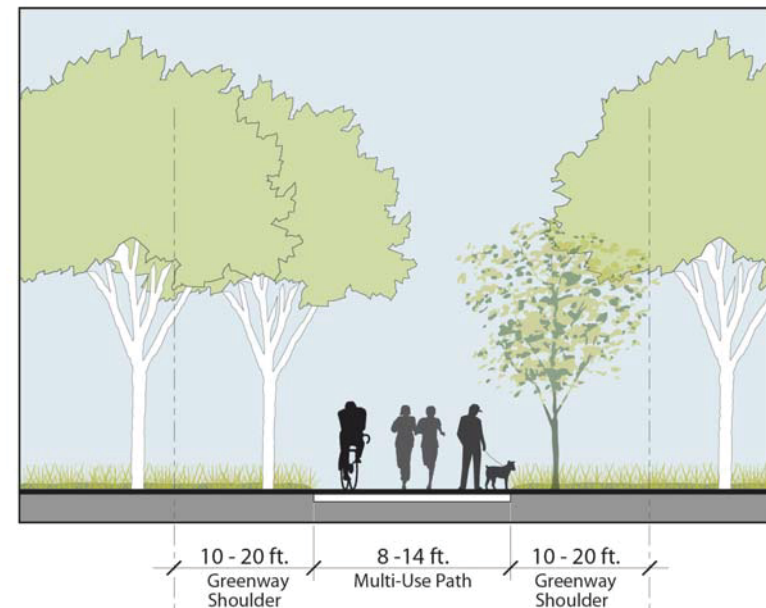
### OBJECTIVES

- 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



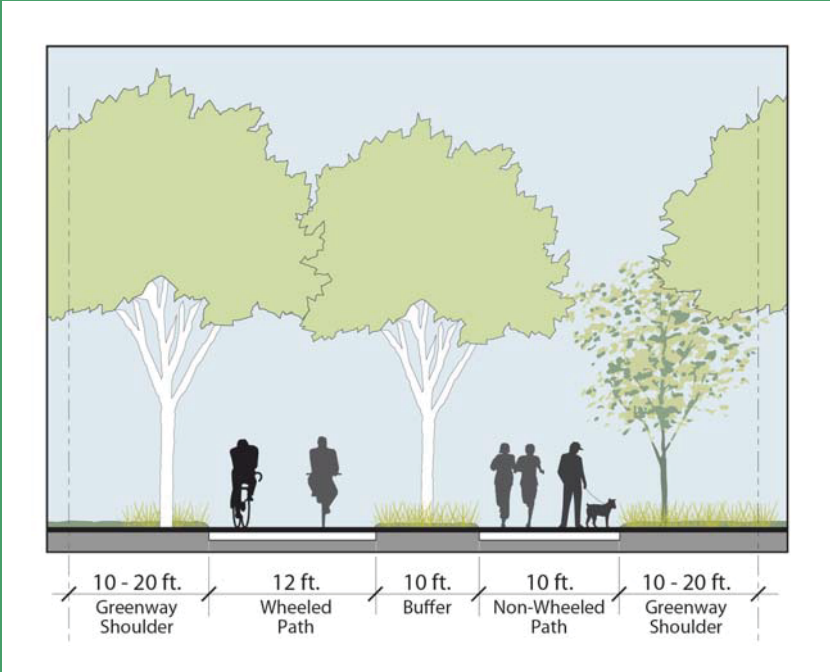
Types of Greenways Facilities

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

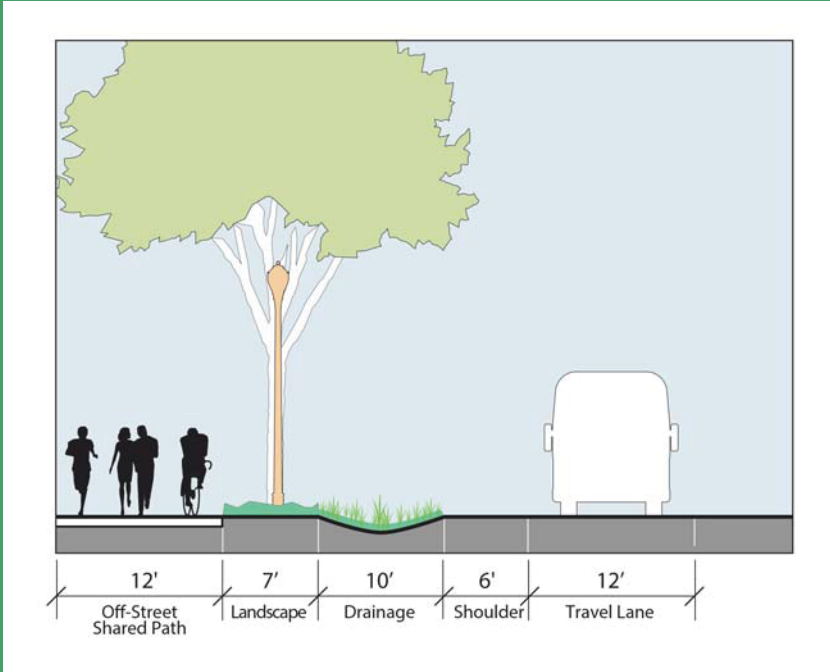
Several types of greenways are proposed for use within the City.

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





## SEVERAL MATERIALS ARE APPROPRIATE FOR THE CONSTRUCTION OF GREENWAYS.



Decomposed Granite can be used in environmentally sensitive areas where permeability is important and a natural look is desired.

Decomposed granite requires ongoing re-leveling due to compaction, erosion, and wash-outs from rain and flooding.

Stabilizers should be considered where erosion is most likely to occur.



Crushed Limestone is a locally-sourced, cost effective alternative to decomposed granite.

Crushed limestone also requires ongoing re-leveling due to compaction, erosion, and wash-outs from rain and flooding.



Asphalt provides a smooth surface with lower installation costs than concrete, but is prone to uneven settlement.



Concrete is a long-lasting surface appropriate in flood-prone areas or on steep slopes.









It is best suited for bicycle and wheelchair traffic.

Concrete requires minimal maintenance.







## 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




**Development Zones**

-  High Intensity Zone
-  Medium Intensity Zone
-  Low Intensity Zone
-  Employment Area




**Greenways****Connectivity Priorities**

-  School
-  Proposed Grade Separated Crossings
-  Enhanced Sidewalks

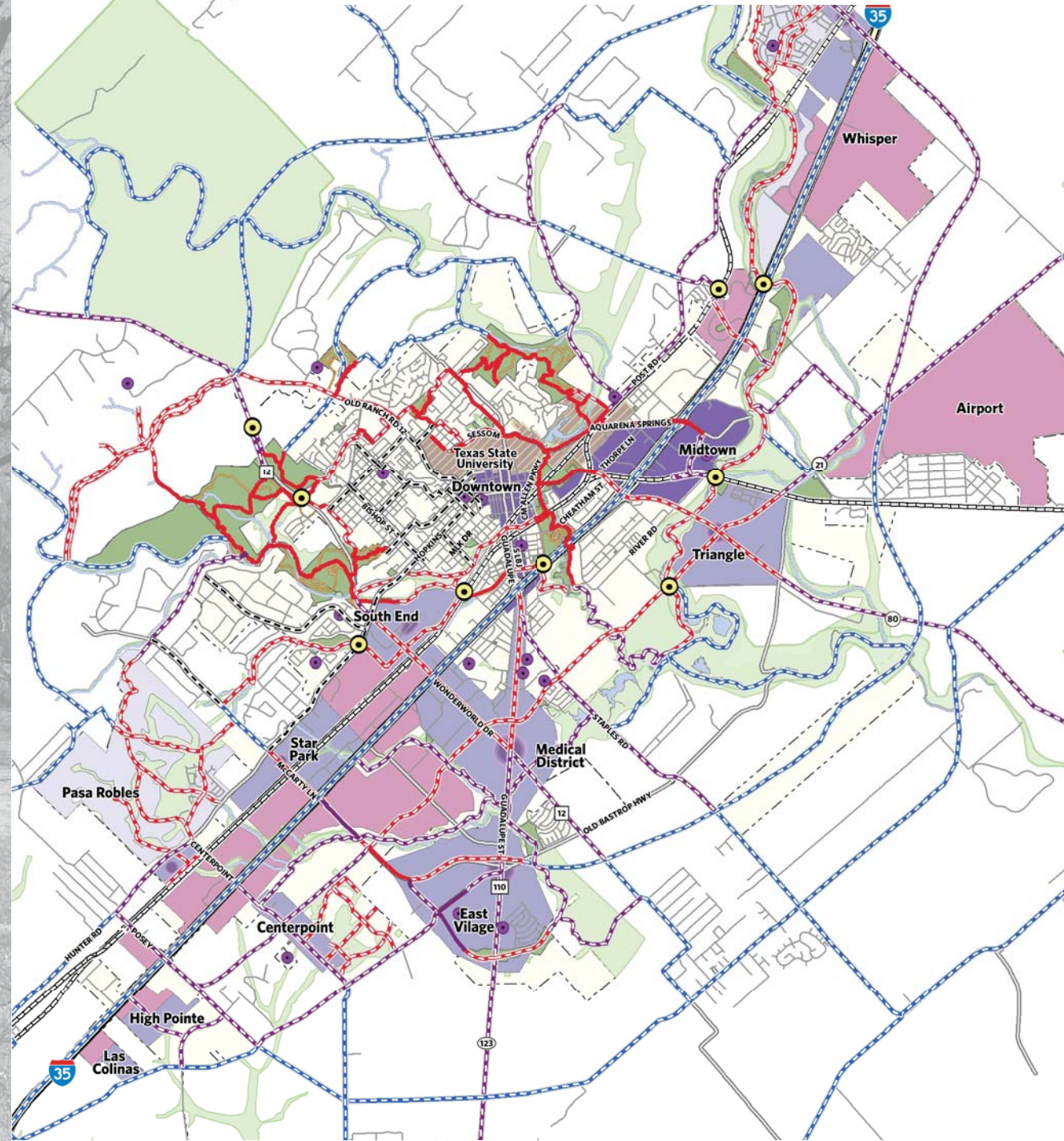
**Enhanced Facility**

-  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







## BEST PRACTICES

Implementing best practices that are shown to help improve safety and enhance connectivity for all modes, reduce congestion and manage travel demand can help to create a well planned, effective transportation network.

The following section discusses Best Practices the City of San Marcos can incorporate in their planning and design process for the transportation network.

### GOAL

Incorporate national best practices in the planning and design process.

### OBJECTIVE

Maximize transportation efficiency throughout the network and to key land uses.

### RECOMMENDATIONS

- Utilize travel demand management to improve the overall efficiency of the travel network.
- Expand way-finding systems implement dynamic message signs to reduce congestion by providing routing information to major destinations.
- Utilize access management techniques to develop safer streets and a more attractive transportation network.
- Implement intelligent transportation system technologies to manage traffic demands.
- Promote ridesharing to reduce vehicular trips on the transportation network.

## TRAVEL DEMAND MANAGEMENT

Travel Demand Management (TDM) refers to a set of strategies or policies designed to improve the overall efficiency of a travel network. TDM looks at moving people and goods, rather than focusing on the number of motor vehicles in the network. For example, reducing the number of single-occupant vehicles, or increasing ridership on transit both reduce the number of vehicles in the travel network, and therefore also reduces demand.

### GOAL

Develop a set of Travel Demand Management policies to improve the efficiency of the transportation network.

### OBJECTIVE

Improve the transportation network at a lower cost than high dollar infrastructure improvements.

### RECOMMENDATIONS

- Encourage carpools or vanpools through City sponsored programs.
- Promote Employer Commuter Choice Programs that expand options for employees on how to reach and accomplish their work, such as public or active transportation, telecommuting, or alternate work hours.
- Provide real-time traveler information through a smart phone app or City website to provide an informed choice for users on how and when to travel.







## WAY-FINDING / POINTS OF INTEREST

Way-finding refers to a system of visual information that helps people navigate through their surroundings. Way-finding systems can include signage, maps, symbols, color-coding, and typographic elements.

Way-finding systems should include information for pedestrians, cyclists and motorists. Each of these travel modes experience separate challenges navigating through the transportation network, and an inclusive, effective system can help to simplify their routes.

A strategic theme and careful planning will provide insight into understanding the built environment and help to define where way-finding information is most needed.

### GOAL

Invest in way-finding systems that can provide useful information to visitors and residents.

### OBJECTIVE

Minimize navigation challenges for all modes and reduce congestion.

### RECOMMENDATIONS

- Inventory the current wayfinding system and evaluate opportunities for expansion.
- Utilize dynamic message sign technologies to supplement the wayfinding system.
- Strategically place signs to provide valuable route information and help to reduce circulation congestion by communicating the most direct routes to parking facilities.

## ACCESS MANAGEMENT

Cities implement access management programs to limit and consolidate access along roadways. Too many access points, such as driveways in close proximity to each other, can cause congestion and a higher potential for conflicts and crashes.

Successful access management programs balance access to businesses, institutions and residences with roadway safety and mobility. This results in safer streets and a more attractive transportation network.



### GOAL

Establish an access management policy that controls access along roadways and manages placement of driveways and other access points.

### OBJECTIVE

Improve safety, reduce vehicular conflicts and congestion.

### RECOMMENDATIONS

- Limit direct access to major roadways. Frequent property access is more congruous with local streets.
- Encourage joint access driveways to reduce access points on boulevards and parkways.
- Provide medians to control access and avoid center left-turn lanes that create multiple conflict points.
- Plan for spacing of signalized intersections to help provide efficient movement of traffic at the desired speeds.
- Preserve the functional areas of intersections. The functional area extends beyond the physical intersection area. On the approach to intersections, drivers will be maneuvering, braking, lane changing or turning. To support the safe operation of the intersection, driveways and entrances to roadways should not be located within the functional area.
- Limit the number of conflict points and separate areas of conflict, for example, separate left-turn movements from through traffic when possible.



## INTELLIGENT TRANSPORTATION SYSTEMS

Intelligent transportation systems are advanced applications that provide modern-day services to travelers and transportation. ITS systems allow users to be more informed of existing traffic conditions, and to make more selective use of transport networks. Cities can utilize ITS to help manage traffic demand during peak hours, special events and during emergencies.

### GOAL

Utilize ITS to build a responsive, adaptive and informative transportation network.

### OBJECTIVE

Provide travelers with information to make informed choices along travel routes.

### RECOMMENDATIONS

- Develop a smart phone application for the City of San Marcos to provide real-time information for transit agencies such as CARTS and the Bobcat Shuttle system to improve communications to riders regarding bus arrival times. Crash locations and construction updates through the app could also help users make informed travel decisions.
- Upgrade the Traffic Management Center with fiber connection to traffic signals and consider vehicle detection technologies, Bluetooth readers and adaptive traffic control systems to improve the network's response to real-time traffic conditions.
- Implement full-color matrix variable message signs as a resource to communicate real-time traffic conditions to travelers.
- Consider variable speed limits that adjust in response to road congestion or travel conditions.



## RIDESHARE PROGRAMS

Rideshare programs are a common and cost effective travel mode. Ridesharing can be a viable option for commuters traveling to a common destination or for non-drivers. Carpooling or vanpooling can also be an effective alternative to manage congestion during peak hours or special events.

Ridesharing helps to reduce congestion, crash risk and pollution emissions. It can also help to reduce costs involved with roadway and parking facilities. These types of programs can be implemented by individual employers as part of a trip reduction incentive program, by a campus trip management program, a transit agency, or by a regional transportation agency.

### GOAL

Expand rideshare programs as a transportation alternative, especially for non-drivers or where commuters may be traveling to a common destination.

### OBJECTIVE

Increase cost effective travel choices for commuters, reduce congestion and parking demands.

### RECOMMENDATIONS

- Implement ridesharing as part of a comprehensive Travel Demand Management Program.
- Involve transportation agencies, businesses and employees in planning Rideshare Programs.
- Provide incentives to attract and retain rideshare users.





# CAPITAL IMPROVEMENTS PLAN





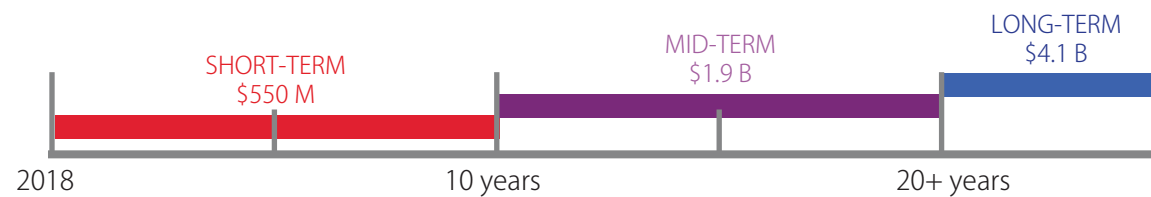
## PROJECT PRIORITIZATION

Funding isn't immediately available to implement all the projects recommended in this Plan.

Prioritization criteria were developed to identify projects that are most critical to the needs of San Marcos.

Project sheets for Capital Improvement Plan projects are included in the Appendix.

Implementation of projects in the Thoroughfare Plan, Bicycle Plan and Greenways Plan will occur over the next 20+ years.



To categorize projects into a prioritization list, the 2035 Thoroughfare Plan, 2035 Bicycle Plan and 2035 Greenways Plan were evaluated for several factors and weighted using the evaluation criteria.

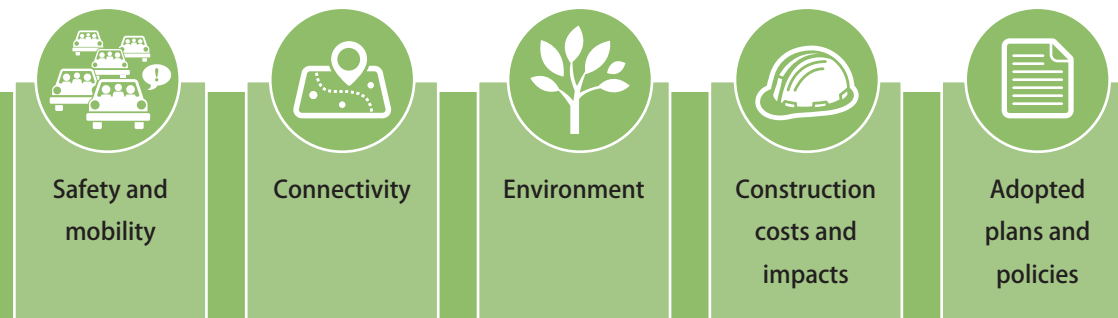






IMAGE CREDIT: CITY OF SAN MARCOS FACEBOOK

## FUNDING PLAN, SOURCES AND STRATEGIES

The implementation of the Thoroughfare, Bicycle and Greenways Plans should consider the funding sources to be used and the agencies responsible for their construction, maintenance, and operations.

A prioritization process was developed to implement projects based on most critical needs of San Marcos.

Short-, mid-, and long-term projects are presented in the Appendix.

## RECOMMENDATIONS

- Evaluate multiple funding sources for implementation of the Thoroughfare Plan, Bicycle Plan and Greenways Plan.
- The City of San Marcos should assume the maintenance and operation of key TxDOT roadways to implement the Master Plan vision.

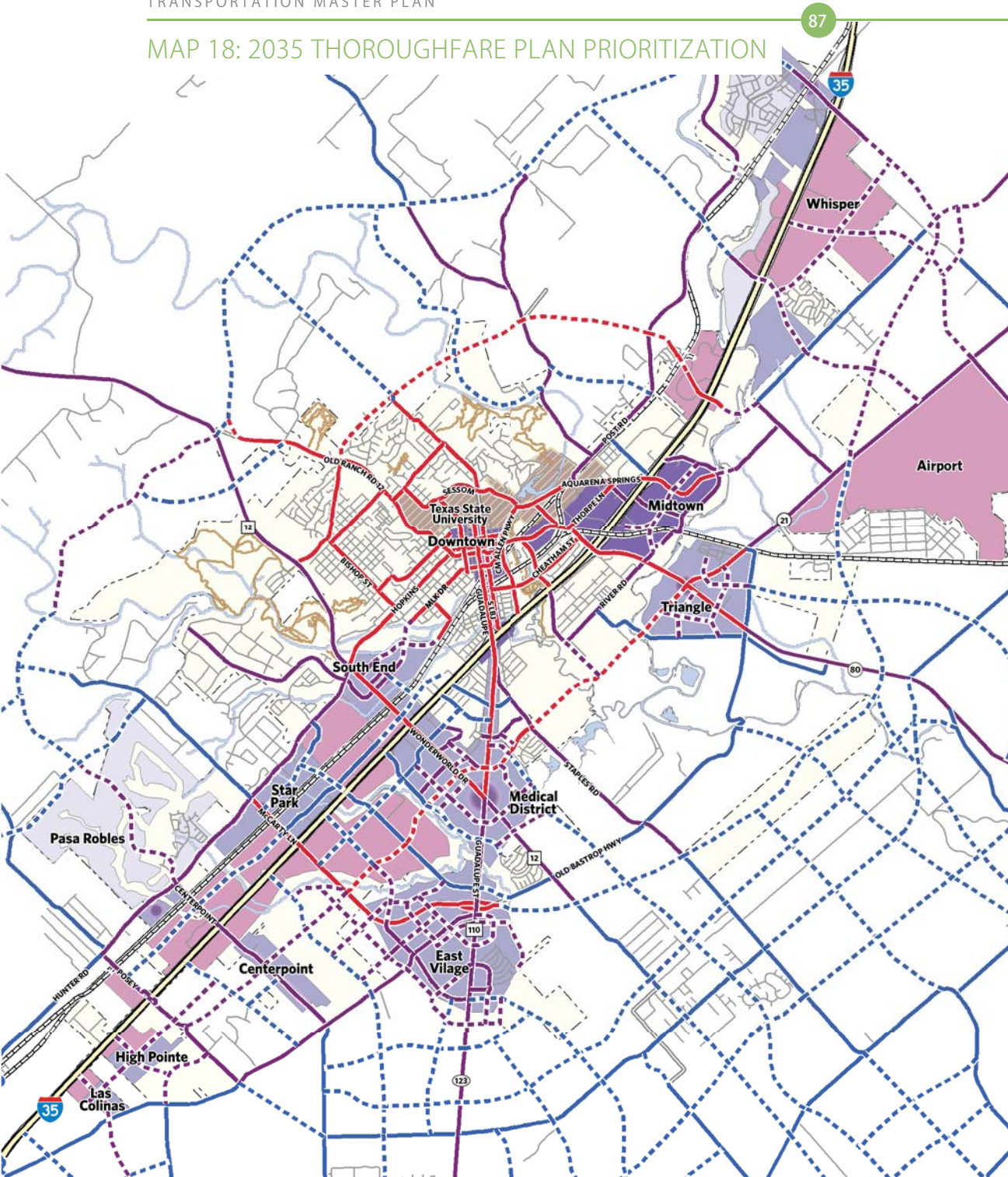
## GOAL

Proactive coordination with partner agencies to develop an integrated transportation network.

## OBJECTIVES

- Consider new opportunities for funding of the transportation system.
- Make the most of interagency partnerships to achieve the transportation plan vision.

MAP 18: 2035 THOROUGHFARE PLAN PRIORITIZATION

**Legend****City Features**

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

**Development Zones**

- High Intensity Zone
- Medium Intensity Zone
- Low Intensity Zone
- Employment Area

**Thoroughfare Plan Priority Features****Enhanced Facility**

- Long (20+ years)
- Medium (10-20 years)
- Short (0-10 years)

**Proposed Facility**

- Long (20+ years)
- Medium (10-20 years)
- Short (0-10 years)

Source: City of San Marcos

Enhanced Facilities are existing roadways that have been identified for improvement through the Transportation Master Plan.



## CAPITAL IMPROVEMENTS PROJECT LIST

A Capital Improvements Project (CIP) list was developed from the short-term projects recommended through the project prioritization. The intersection analysis was reviewed to include projects that will have an immediate, notable impact on transportation operations within the City of San Marcos.

### TYPES OF FUNDING SOURCES

#### CURRENTLY AVAILABLE TO THE CITY

Property tax (general obligation bonds and certificates of obligation)

Cost-participation with local and state partners (e.g., Hays County, Developers, TxDOT)

4A and 4B Economic/Community Development Corporations

Chapter 380/Chapter 381 Economic Development Agreements

Tax Increment Reinvestment Zones (TIRZs) and Tax Increment Finance Districts (TIFs)

Public-Private Partnerships

Development Impact Fees

Transportation Reinvestment Zone (TRZs)

#### ADDITIONAL POTENTIAL SOURCES

TxDOT funding programs

State Infrastructure Bank (SIB) loans

CAMPO funding programs

Grant funding opportunities (e.g., TIGER, FASTLANE)

TIFIA loan/credit program

IMAGE CREDIT: CITY OF SAN MARCOS FACEBOOK

## THOROUGHFARE PLAN

Funding and financing of the short-term, mid-term and long-term improvements identified in the Thoroughfare Plan will require the combination of existing sustainable sources and the identification of new sustainable sources.

Sustainable sources of funding are expected to be available at a certain or predictable level.

The City should position improvements for competitive funding opportunities throughout the planning and implementation timeframe.

## BICYCLE AND GREENWAYS PLANS

Funding and financing for bicycles, greenways and trail projects could be accomplished through similar sources, either solely or in combination or partnership with other agencies.

## PROJECT OWNERSHIP

TxDOT has actively been working with local governments to remove roadways from the State Highway System. Recent legislation and changes in the Transportation Code have made it easier for TxDOT to transfer state assets (right-of-way and roadways) to local governments.

Removing a roadway from the System accrues benefits to TxDOT by reducing long-term maintenance obligations. Local governments, while accepting the maintenance of the roadway, accrue benefits by having local control over the roadway operations, driveway locations, signage, landscaping, etc.









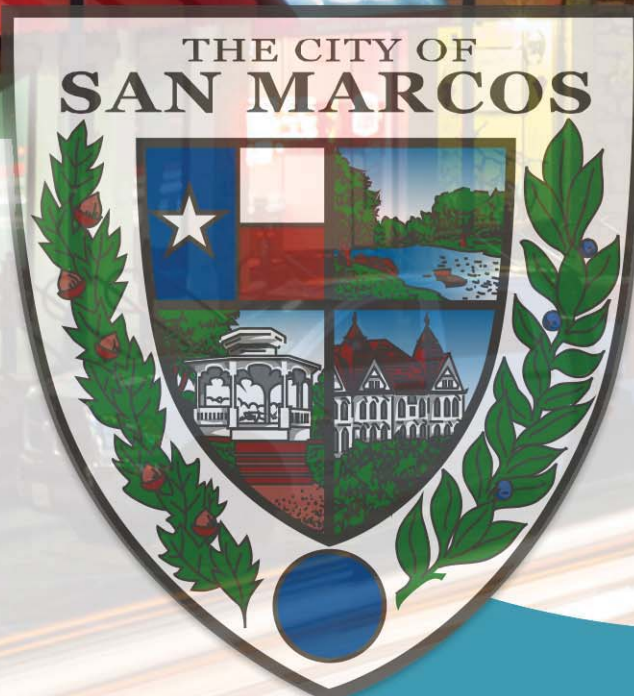


SAN MARCOS

# TRANSPORTATION MASTER PLAN 2018







SAN MARCOS

# TRANSPORTATION MASTER PLAN 2018