MASTER STREET PLAN

TYLER AREA MPO

MARCH 2021

This page intentionally left blank.

Table of Contents

List of Figures/Tables

Acknowledgments

Master Street Plan Stakeholder Team:

- Bill Hicks, Halff Associates
- Bob Matush, Bob Matush Surveying, Inc.
- Cameron Williams, City of Tyler
- Colleen Colby, NETRMA
- Frank Davis, Smith County
- Karl Seydler, City of Tyler
- Kevin Braughton, BBE Civil
- Kevin Kilgore, K.L. Kilgore & Company Inc.
- Kyle Kingma, City of Tyler
- Rea Boudreaux, Brannon Corp
- Mark Priestner, Planning Concepts
- Mark Whatley, Burns Commercial Properties
- Matthew Volkmann, TxDOT
- Sam Mezayak, Mezayak Building, Ltd.

MPO Staff:

- Heather Nick, Executive Director
- Michael Howell, MPO Manager

Consultant Team:

- Walter P Moore
- Asakura Robinson

Executive Summary

Purpose

The Tyler Area Metropolitan Planning Organization (MPO) retained Walter P Moore (WPM) to complete the 2021 Master Street Plan, a long-range master plan for the orderly development of an efficient roadway transportation system. The Plan defines an interconnected hierarchical system of current and proposed roadways that are required to meet the anticipated long-term growth within the study area.

Plan Goals:

- Reduce Congestion
- Improve Safety
- Increase Connectivity and Accessibility

Plan Objectives:

- Reevaluate the performance of the transportation network
- Make appropriate edits to the street designations
- Provide clear recommendations to the staff and public for implementation

The 2021 Master Street Plan serves as the City's thoroughfare plan. It is not a list of construction projects but rather serves as a tool to enable the City to preserve future corridors for transportation system development as the need arises.

Study Area

In 1974, the governor of Texas established the Tyler MPO originally covering only the City of Tyler. Since then, the MPO area has grown to include the surrounding cities in Smith County: Arp, Bullard, Hideaway, Lindale, New Chapel Hill, Noonday, Troup, Tyler, Whitehouse, and Winona. Located midway between Dallas and Shreveport, the Tyler Area MPO is a regional hub for the East Texas Area. As of 2019, according to the Texas Demographic Center, the Tyler MSA/Smith County has an estimated population of 231,516 which is a 10% increase since 2012.

Figure ES-1. Tyler Area MPO Study Area

As shown in **Figure ES-1**, the study area (outlined in red) is intended to include areas outside of the urbanized area that are most likely to experience urbanization during the 20-year planning horizon.

The previous Master Street Plan was adopted in 2012. After the adoption of the 2012 Master Street Plan, several studies have been conducted in and around the Tyler MPO area including the 2045 Metropolitan Transportation Plan, 2019 Active Tyler Plan, and the City of Tyler Comprehensive Plan: Tyler 1st Update as well as the ongoing Tyler Transit Study.

Existing Conditions

Figure ES-2 represents the existing LOS along MPO area roadways that was generated from the 2018 Base Scenario Network of the Travel Demand Model (TDM). The TDM results indicate that congestion levels are high along major arterials that extend out from the City of Tyler connecting to other surrounding cities.

Further analysis was completed using the TDM to represent LOS after completion of proposed projects as well as future conditions (2045) along area roadways. This analysis is described on page 9.

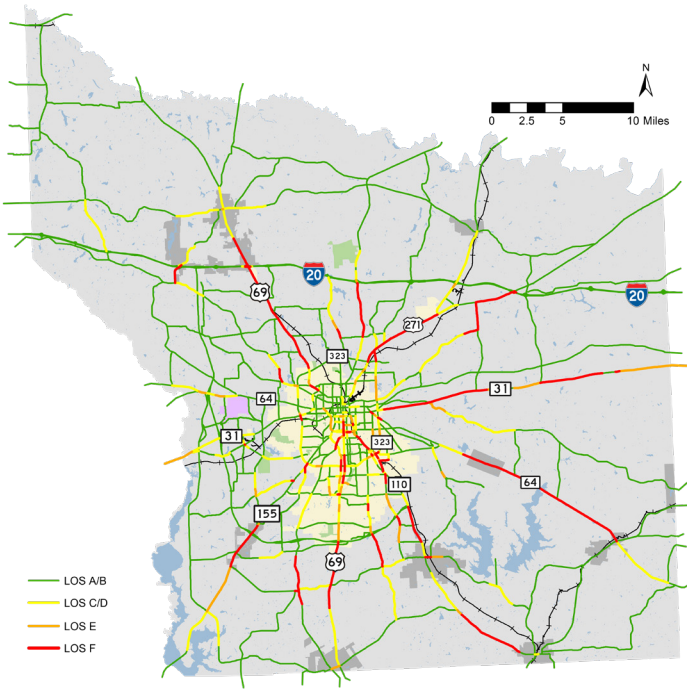
Public Involvement

Due to the COVID-19 pandemic and social distancing measures among various jurisdictions throughout the state, different public involvement and engagement techniques had to be utilized throughout this planning process. Although face-to-face meetings were not conducted, stakeholders and local residents provided valuable input collected through an ArcGIS online engagement tool and virtual public meetings. This tool allowed the public to see real time data the consultants were using to analyze the roadway network, and also comments from others in the community.

A series of virtual meetings and workshops were held throughout the project, as well as an online survey. Interactive poll questions also included preferences about specific types of infrastructure designs and facility offerings in the three different geographic contexts (urban, suburban, and rural) to gauge priorities. Details on the survey results are displayed below in **Figure ES-3.**

Stakeholder Committee Meeting #1: July 9, 2020
Stakeholder Committee Meeting #2: October 15, 2020
Public Meeting #1: July 23, 2020
Public Meeting #2: October 22, 2020
Public Meeting #3: January 14, 2021

Figure ES-2. Existing 2018 Level of Service



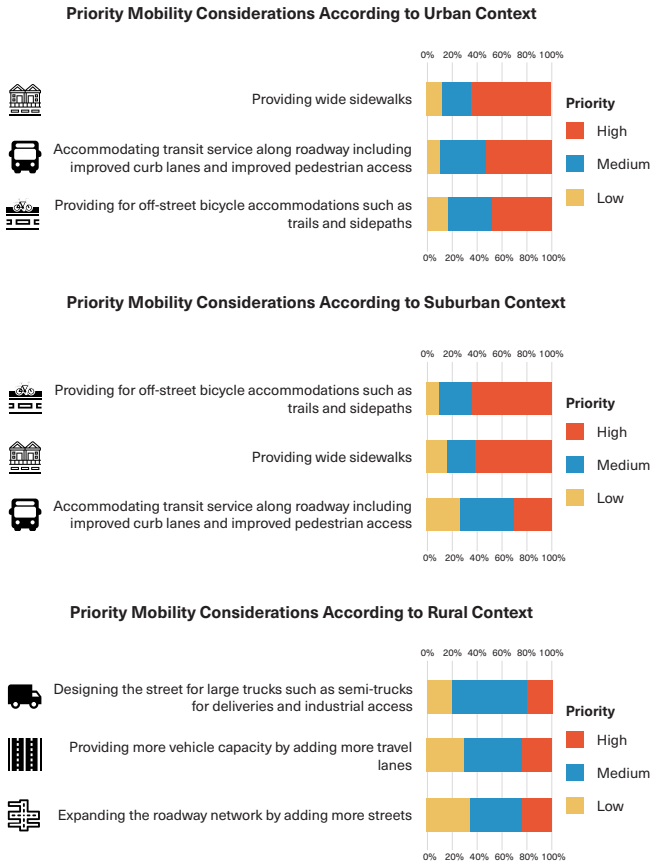


Figure ES-3. Public Engagement Survey Results

Updated Plan

Figure ES-4 represents the updated Functional Classification for the Tyler Area MPO. All other roadways within the study area not identified are classified as Local.

Roadway functional classification is the preferred starting point for new roadway construction and retrofit/reconstruction of existing roadways. However, these roadways classifications are intended to be adapted to fit the local context, whether urban core, urban, suburban, or rural. **Figure ES-5** represents the updated Street Context Type for the Tyler Area MPO.

In order to accommodate both functional classification as well as context type, cross sections were developed to show how the design elements would fit within the overall right-of-way and show how flexibility could be introduced to accommodate future elements as growth and development occurs.

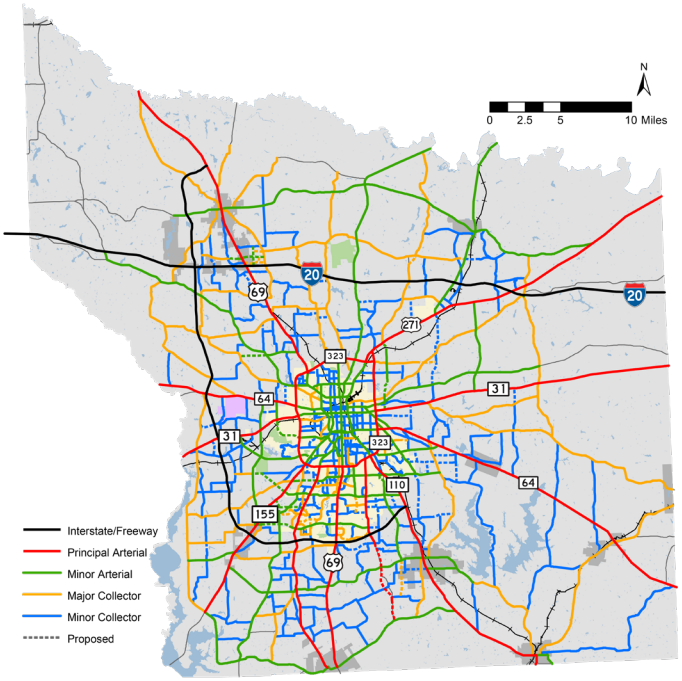


Figure ES-4. Tyler Area MPO Functional Classification

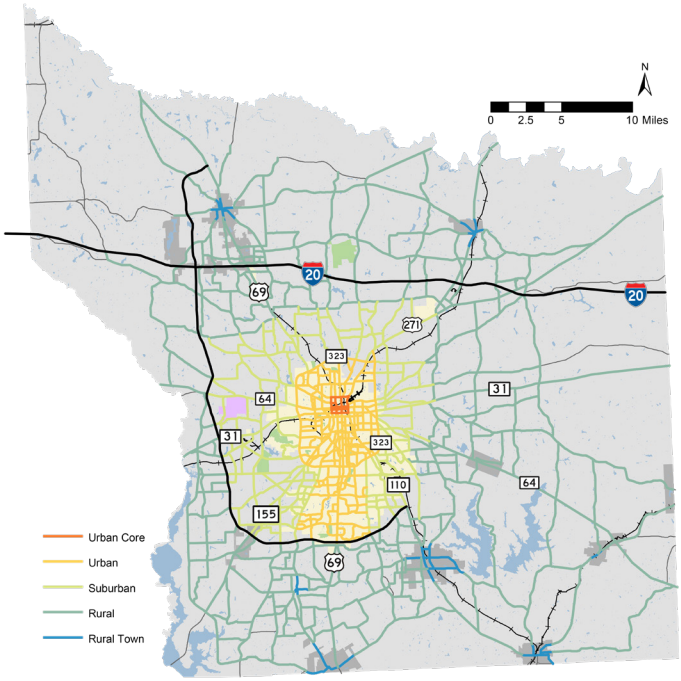


Figure ES-5. Tyler Area MPO Street Context Type

Other Policy Recommendations

In addition to functional classifications, context, and typical cross sections, the Master Street Plan also developed a series of policy recommendations to guide design and development of roadways in the Tyler MPO area. These included intersection design with turn lane and curb radii guidelines; transit design considerations for roadways, bus stop areas, sidewalks, and pedestrian realm; and connectivity and spacing considerations for the roadway network.

This page intentionally left blank.

Introduction

Purpose

The Tyler Area Metropolitan Planning Organization (MPO) retained Walter P Moore (WPM) to update the Master Street Plan. This plan is intended to build on previous recommendations from the 2012 Master Street Plan as well as expand network connectivity and update roadway design standards based on best practice guidance and right-of-way and environmental constraints.

The 2021 Master Street Plan is a long-range master plan for the orderly development of an efficient roadway transportation system. The Master Street Plan defines an interconnected hierarchical system of current and proposed roadways that are required to meet the anticipated long-term growth within the Tyler study area. The Master Street Plan is a means of assuring the basic infrastructure needs and right-of-way will be available when travel demand or development warrants new or improved roadway facilities. The objectives of the Master Street Plan are:

- Reevaluate the performance of the transportation network
- Make appropriate edits to the street designations
- Provide clear recommendations to the staff and public for implementation

In addition to the objective of the Master Street Plan, there were three goals identified by the public and stakeholders at the beginning of the planning process that helped inform recommendations and street design elements in the plan. The following goals identified include:

1. Reduce Congestion
2. Improve Safety
3. Increase Connectivity and Accessibility

The 2021 Master Street Plan serves as the City of Tyler's adopted thoroughfare plan which identifies transportation system improvements, including existing and planned facilities. Development of the 2021 Master Street Plan took into account not only past studies but also adjacent community thoroughfare plans, the recently completed Active Tyler Plan, ongoing Tyler Transit Route Study, adopted policies and public input.

The Master Street Plan is not a list of construction projects but rather serves as a tool to enable the City to preserve future corridors for transportation system development as the need arises. The Master Street Plan displays the proposed general alignments for the extensions of existing roadways and planned new roadways. It is important to note that the actual alignment of these roadways will vary somewhat from this plan and will be determined through the subdivision development process and the preliminary engineering phase of design. Slight modifications to roadway locations are warranted as long as the intent of the Master Street Plan is to provide connectivity and types of facilities is not compromised.

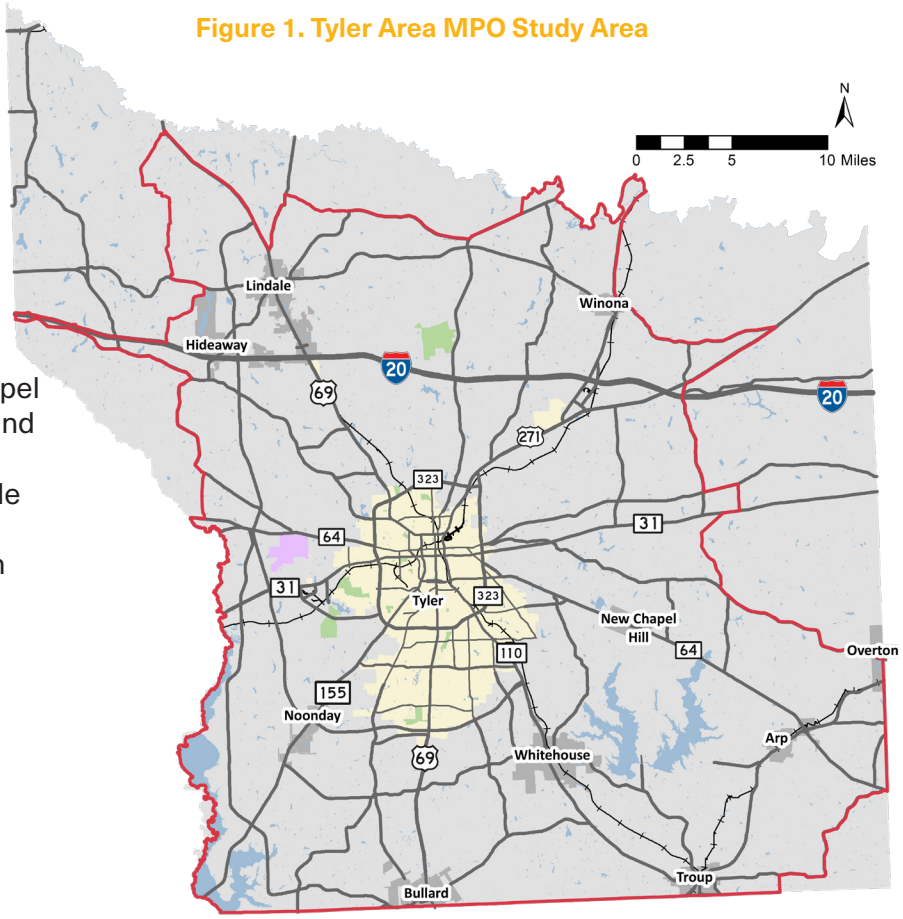
The plan not only accounts for automobile travel, but also transit, bicycle, and pedestrian travel as well. In addition, the plan takes into account the relationship between transportation and land use planning by implementing context sensitive design elements.

Study Area

Tyler Area MPO

In 1974, the governor of Texas established the Tyler MPO originally covering only the City of Tyler. Since then, the MPO area has grown to include the surrounding cities in Smith County: Arp, Bullard, Hideaway, Lindale, New Chapel Hill, Noonday, Troup, Tyler, Whitehouse, and Winona. As shown in **Figure 1**, the study area (outlined in red) is intended to include areas outside of the urbanized area that are most likely to experience urbanization during the 20-year planning horizon. The MPO is managed by the Transportation Policy Committee with input from the Technical Advisory Committee.

Figure 1. Tyler Area MPO Study Area



The mission of the MPO is to plan for the safe and efficient movement of people and goods and attainment of clean air regulations for the Tyler urban area and Smith County. The MPO is responsible for the "3-C" planning process to conduct basic planning activities: **cooperative, continuous, and comprehensive**. The "3-C" planning approach incorporates all entities throughout the MPO area to direct transportation projects and funding that will benefit all users throughout the MPO area.

Demographics

Located midway between Dallas and Shreveport, the Tyler Area MPO is a regional hub for the East Texas Area. With new residents and recent economic development continuing to surge in the region, specifically south along US 69 and adjacent to Toll 49, the City of Tyler and Tyler Area MPO will need to accommodate the increase in local and regional trips with the necessary infrastructure.

As of 2019, according to the Texas Demographic Center[1], the Tyler MSA/Smith County has an estimated population of 231,516 which is a 10% increase since 2012. As represented in **Table 1**, the City of Tyler has grown at a similar pace at 12% population increase. By 2045, the Tyler MSA/Smith County area is projected to grow in population by 23% with the City of Tyler experiencing a 31% increase. Although historical and projected growth is lower than the statewide average, the Tyler Area is positioned to attract significant amounts of new development.

Area	Percent Change 2012-2019	Projected Growth 2019-2045
City of Tyler	12%	31%
Smith County/Tyler MSA	10%	23%
Texas	16%	53%

Table 1. Historic/Projected Population Change

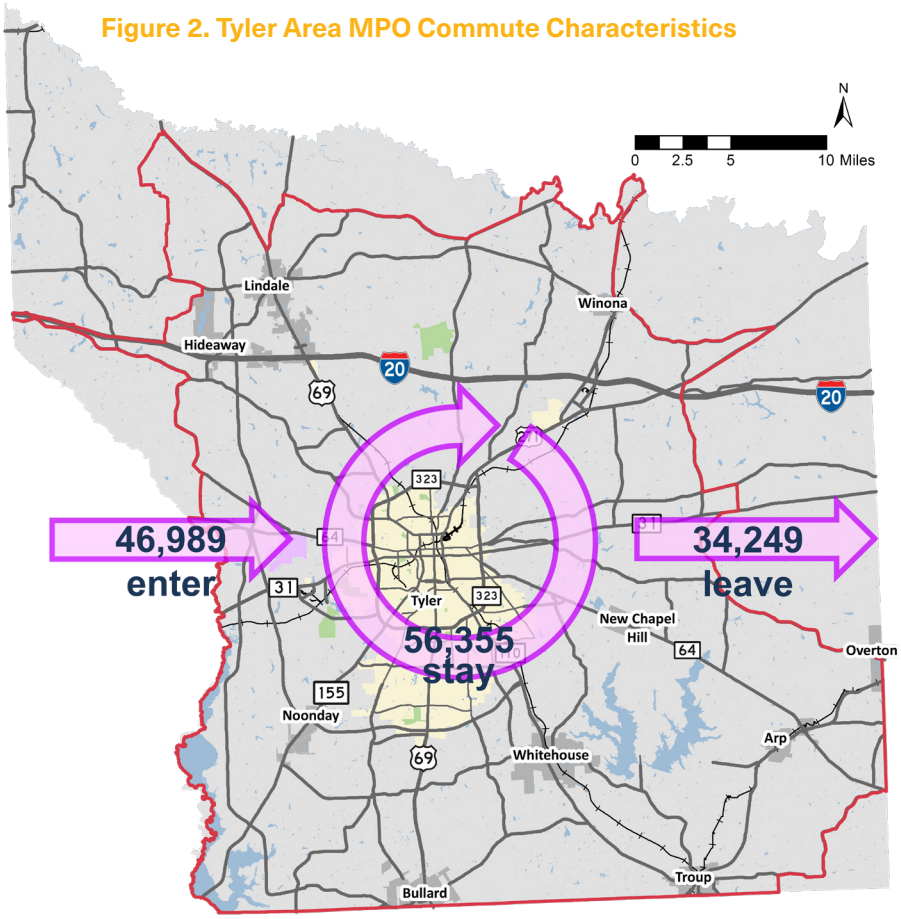
1. Source: https://demographics.texas.gov/

Commuting Characteristics

Approximately 80% of commuters within the Tyler MSA/Smith County area travel to work in the area by driving alone. This percentage is higher, at approximately 85% for the City of Tyler commuters. Commuters also utilize other means of transportation such as transit, walking and biking to access employment throughout the City of Tyler and Tyler Area MPO.

As represented in **Figure 2**, according to the U.S. Census Longitudinal Employer-Household Dynamics, 41% of residents in the Tyler Metropolitan Statistical Area (MSA)/Smith County work and live within the county. Approximately 25% live within the county but are employed outside of the county and 34% live outside of the county but commute into the region for work.

Figure 2. Tyler Area MPO Commute Characteristics



Previous Plan

The previous Master Street Plan was adopted in 2012. After the adoption of the 2012 Master Street Plan, several studies have been conducted in and around the Tyler MPO area including the 2045 Metropolitan Transportation Plan, 2019 Active Tyler Plan, and the City of Tyler Comprehensive Plan: Tyler 1st Update as well as the ongoing Tyler Transit Study. All plans were evaluated to ensure consistency with goals and objectives identified in each plan, in particular those related to transportation and mobility priorities.

Although purpose and objectives of these planning documents varies, there are several elements that focus on transportation system improvements:

- Preserve rights-of-way and locations for future transportation routes and services
- Reduce congestion and improve infrastructure for other modes of transportation (transit, bicycling, walking)
- Improve safety and network continuity throughout the MPO

For a more detailed description of each study as well as the transportation and mobility recommendations incorporated into this plan, see **Appendix A**.

Existing Conditions

The initial steps of the thoroughfare planning process included a detailed data collection effort to work with the most up-to-date information as well as understand ongoing plans and developments. The following data was used to perform the technical analysis:

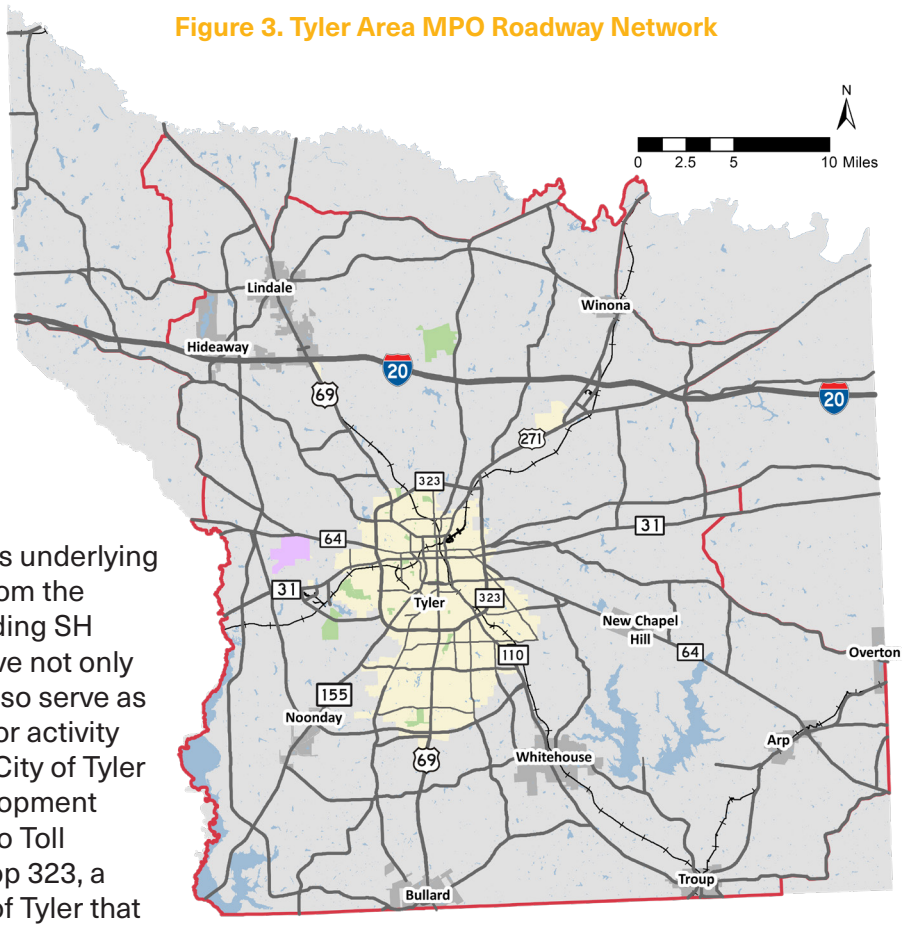
- Existing Roadway Network
- Traffic Counts
- TxDOT 5-year Crash Data
- TxDOT TexPACK Travel Demand Model Data
- 2018/2045 Networks
- 2018/2045 Demographics
- Existing and Proposed Transit Routes
- Existing and Proposed Bicycle Facilities
- Existing and Future Land Use
- Existing Constraints
- Railroad
- Floodplain
- Topography
- Lakes
- Rivers/Creeks
- City Comprehensive Plans
- City, County, and State Projects

Roadway Network

The Tyler Area MPO is served primarily with a network of United States (US) and State Highway (SH), Farm-to-Market Roads (FM) and County Roads (CR). Interstate 20 (I-20) is a heavily traveled corridor traversing the northern portion of the MPO and serves to provide accessibility to the nearby cities of Longview, Kilgore, Lindale, and Canton as well as providing access to the major cities of Shreveport and the Dallas-Fort Worth Metroplex.

Figure 3 represents how the City of Tyler's underlying roadway network is built concentrically from the Downtown area. Multiple roadways including SH 31, SH 64, SH 155, SH 110 and US 69 serve not only regional travel throughout the MPO but also serve as essential roadways for trips between major activity centers. Particularly, US 69 traverses the City of Tyler and has seen the majority of recent development activity (S Broadway Ave. from Loop 323 to Toll 49). These facilities provide access to Loop 323, a circumferential roadway around the City of Tyler that facilitates the majority of trips.

Figure 3. Tyler Area MPO Roadway Network



Since the 2012 Plan, Toll 49 has been constructed on the west and south sides of the Tyler Area MPO serving as another limited access facility. This built segment is part of the long-range commitment from the Northeast Texas Regional Mobility Authority (NETRMA) to develop the East Texas Hourglass (ETHG). The limits of the proposed Toll 49, Segment 6 are from the Toll 49 Segment 5 eastern terminus at SH 110 to US 271 in Smith County, Texas.

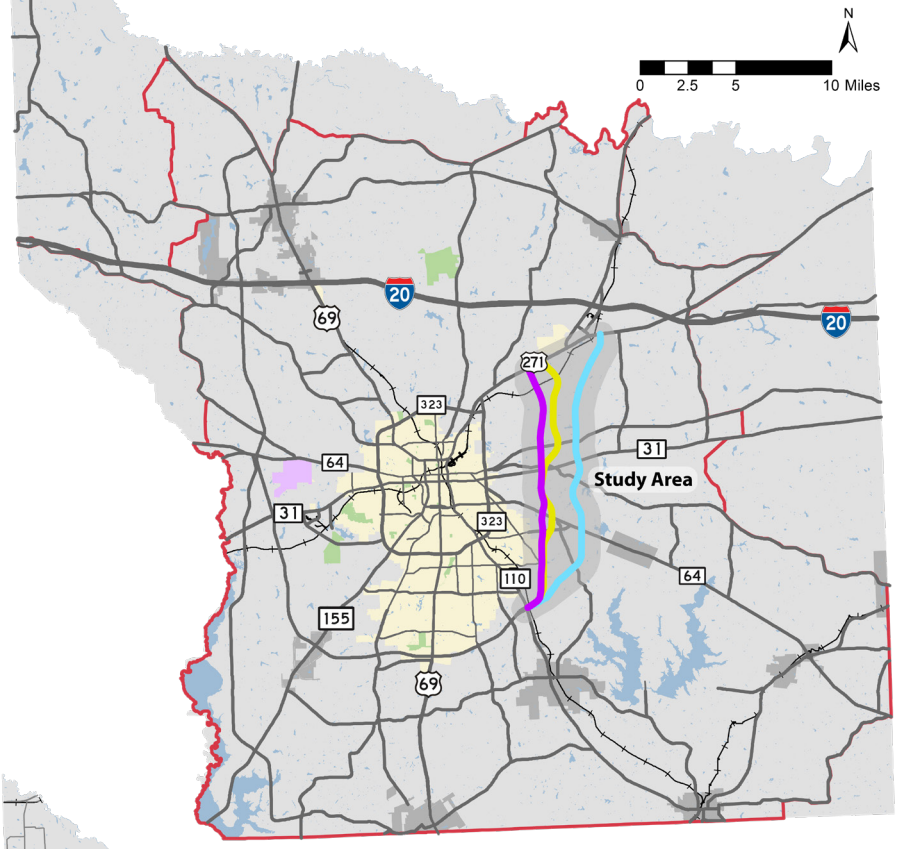
Figure 4 represents the three route options that have been identified in the feasibility study report as well as the identified study area. In March 2020, the NETRMA initiated an Environmental Impact Statement (EIS) to identify the best possible route option documenting potential impacts to the human and natural environment. Coordination should continue between the City of Tyler, Tyler MPO, Smith County and other jurisdictions to determine the appropriate alignment. Proposed roadway alignment at intersections should take into account intersection design elements mentioned later on page 17.

Volume

Historical Annual Average Daily Traffic (AADT) volumes provide information on traffic history and changing trends on the MPO's roadway network. Since 2012, MPO area roadways have experienced a 14% average increase in traffic volume. As represented in **Figure 5**, the highest traffic volumes in the MPO region are along I-20, Loop 323 south from SH 110 to SH 31, US 69 (South Broadway Ave) from SH 64 to Toll 49 and FM 2493 from Loop 323 to Toll 49. Since 2012, these roadways have experienced a significant increase in traffic volumes, with I-20 experiencing a 39% increase, US 69 experiencing a 32% increase and FM 2493 experiencing a 31% increase.

There are currently several ongoing and proposed TxDOT, County, and MPO projects that are anticipated to help accommodate future increases in traffic volume along MPO area roadways.

Figure 4. NETRMA Toll 49 Route Options (as identified in Feasibility Study)



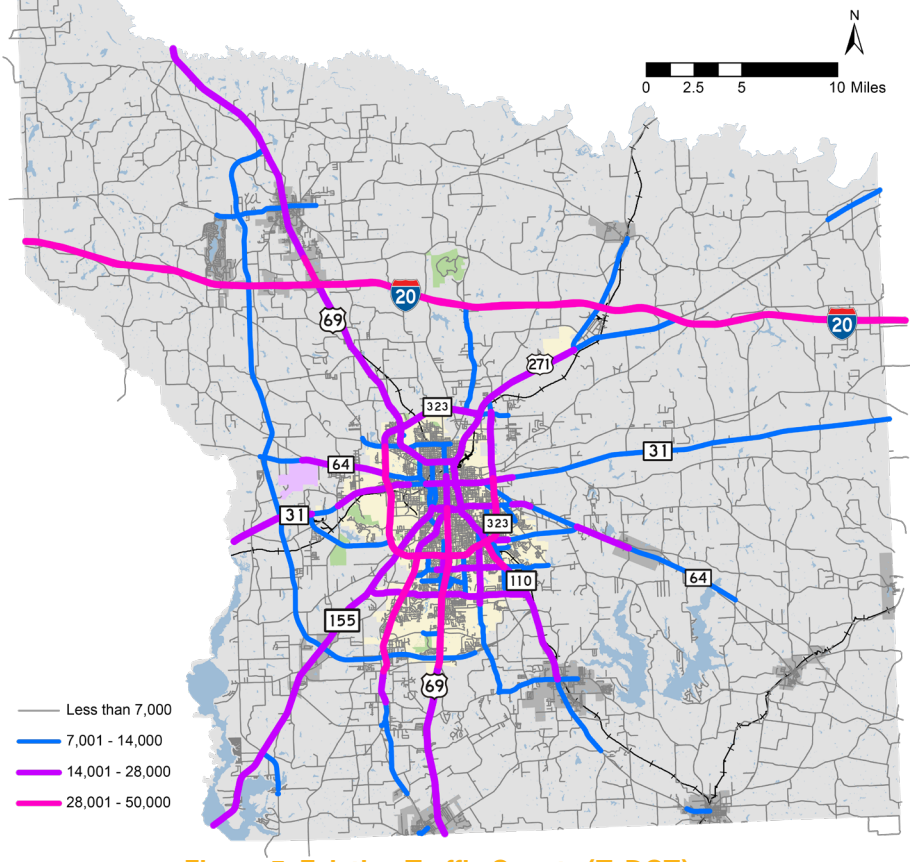


Figure 5. Existing Traffic Counts (TxDOT)

Level of Service

Level of service (LOS) is a tool that is used to quantify traffic congestion along specific roadways and within the entire transportation network. LOS is determined by dividing the peak hour traffic volume by the available capacity (V/C). Roadways are designated from LOS A (free-flowing) to LOS F (congested, forced flow condition). Generally, LOS C/D are acceptable levels of service whereas LOS E/F are considered "failing" and roadway volumes are typically higher than the actual roadway capacity.

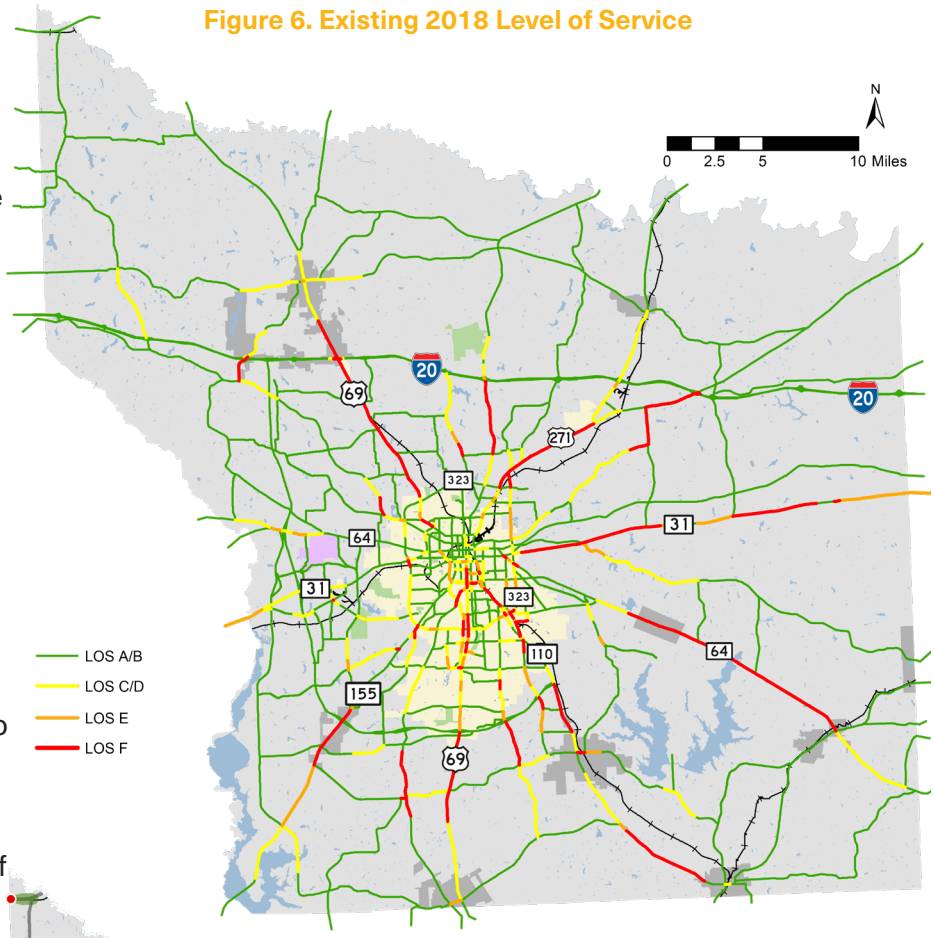
Figure 6 represents the existing LOS along MPO area roadways that was generated from the 2018 Base Scenario Network of the Travel Demand Model (TDM). The TDM results indicate that congestion levels are high along major arterials that extend out from the City of Tyler connecting to other surrounding cities. The TDM results also indicated significant levels of congestion along the east and southern portions of the MPO area.

Further analysis was completed using the TDM to represent LOS after completion of proposed projects as well as future conditions (2045) along area roadways. This analysis is described in **Chapter 5**.

Safety

In addition to roadway volumes and level of service, a safety analysis was also conducted along MPO area roadways to determine design elements that should be considered as part of this plan to increase safety for all road users. Crash data was obtained from the TxDOT Crash Records Information System (CRIS) database for the years of 2015 - 2020 (**Figure 7**).

Figure 6. Existing 2018 Level of Service



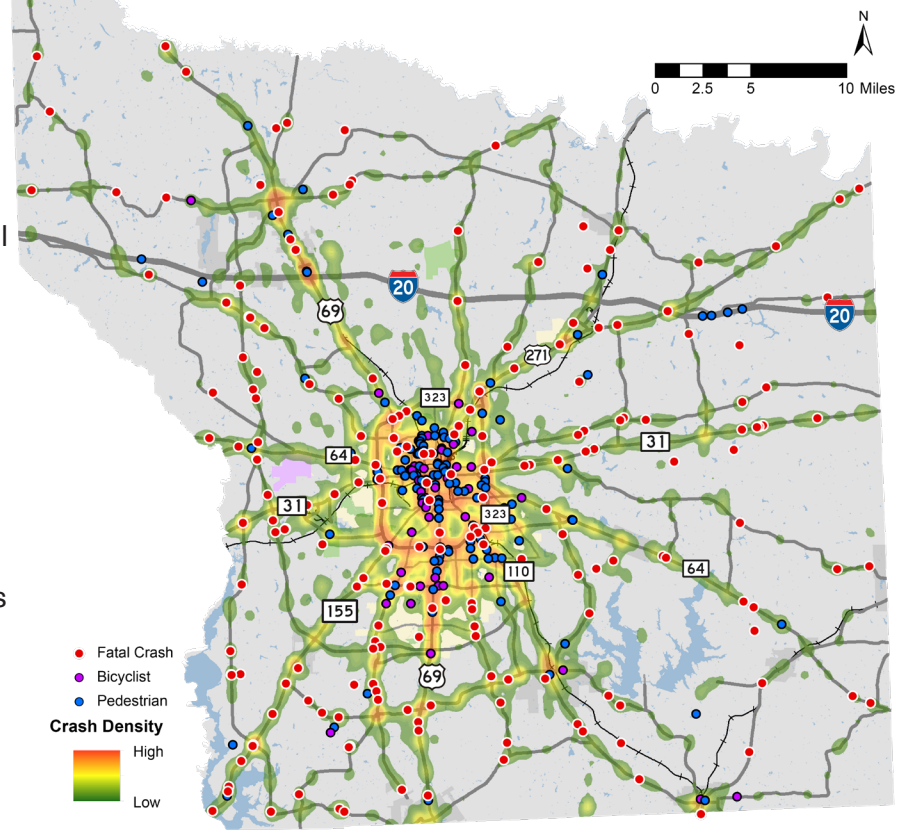


Figure 7. 2015 - 2020 Crash Density Map

In Smith County, there were over 30,000 in that period, with the majority of crashes (66%) resulting in no injury. Over that same time period, there were 241 crashes involving a bicyclist or pedestrian with 14% of those crashes resulting in fatality. The crash hot spot locations were primarily located within the City of Tyler and along heavily traveled corridors.

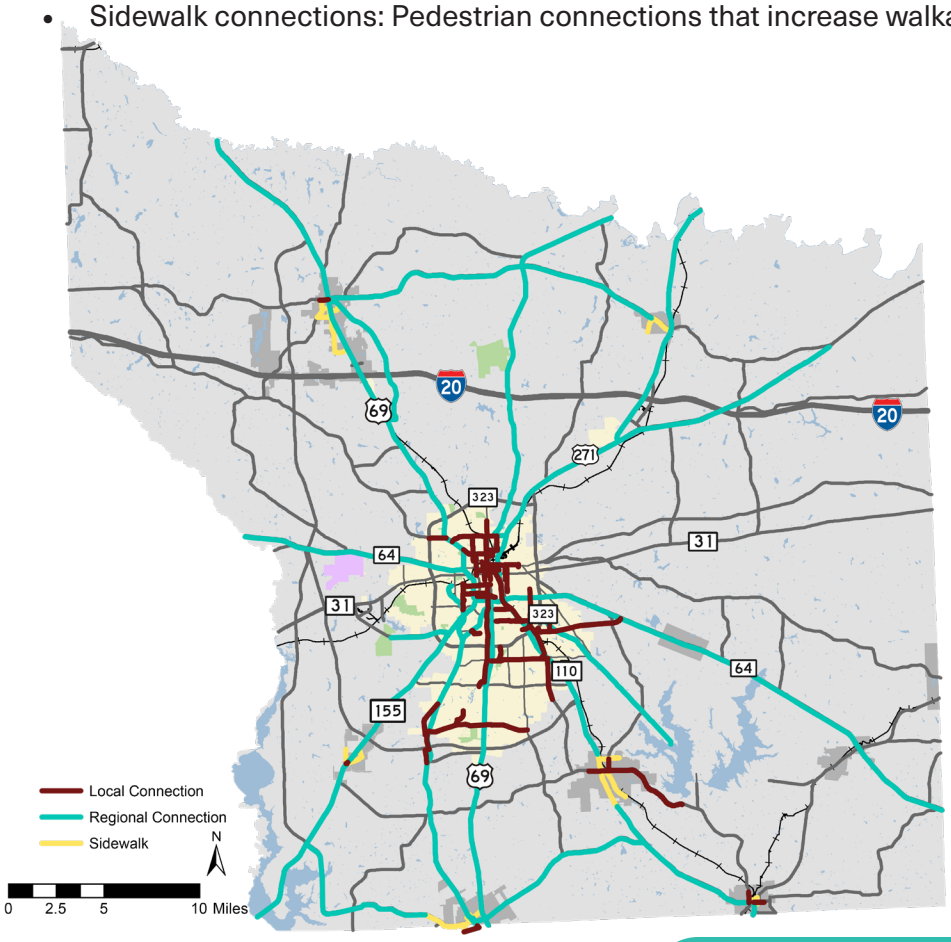
Pedestrian and Bicycle Facilities

Throughout much of the Tyler Area MPO, the primary facilities for non-motorized travel and active transportation include sidewalks, off-street paths/trails, and roadway shoulders. At the time of this plan, there were 25 miles of existing on-street bicycle infrastructure (bike lane and bike route) within the MPO area, primarily within the City of Tyler.

In 2018, the City of Tyler approved planning and design of over 100 miles of bike lanes across the City. The Tyler Bike Stripes Project identified 11 bicycle lane routes with a centralized hub near the Downtown area connecting three college campuses. The proposed work includes painting bicycle lanes and placing designated signage along existing roadways.

In addition, the Active Tyler Plan - adopted in March 2019 - identified over 300 miles of recommended bicycle facilities, categorized as:

- Regional connections: Long distance routes that may connect several communities and contexts.
- Local connections: Shorter distance connections within a municipality that should consider both bicycle and pedestrian facilities based upon the context and typology of the street.
- Sidewalk connections: Pedestrian connections that increase walkability and provide access.



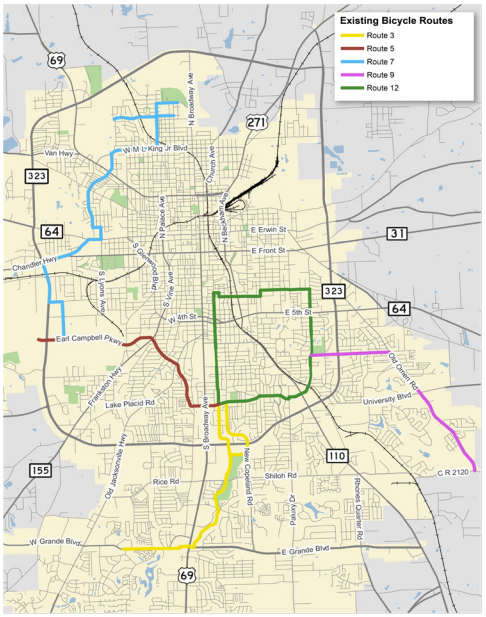


Figure 8. Bicycle Facilities

Transit

Tyler Transit is the primary service provider in the Tyler Area MPO providing both fixed route service as well as a demand response, paratransit service. As represented in **Figure 9**, the current Tyler transit fleet consists of five fixed bus routes operating between the hours of 6:00AM and 8:15PM from Monday to Friday and between 9:00AM and 6:00PM on Saturday. There is no Sunday service currently available.

Currently, the MPO is working with Tyler Transit to conduct a Transit Route Study. The purpose of the plan is to review the current bus service needs and develop a plan to best meet those needs.

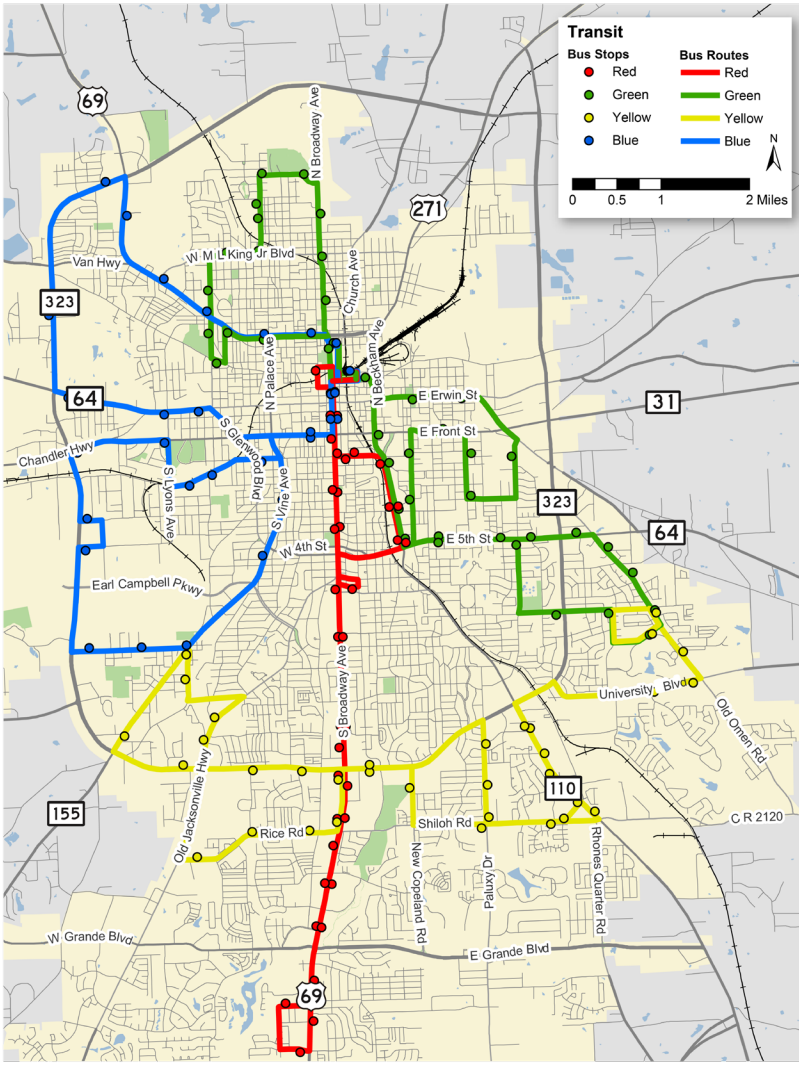


Figure 9. Tyler Transit Routes

Public Involvement

Public engagement is an important part of the planning process and is critical to understanding the key mobility issues and street design elements that should be considered as part of the Master Street Plan.

Due to the COVID-19 pandemic and social distancing measures among various jurisdictions throughout the state, different public involvement and engagement techniques had to be utilized throughout this planning process. Although face-to-face meetings were not conducted, stakeholders and Icoal residents provided valuable input through an ArcGIS online engagement tool and virtual public meetings. This online engagement tool allowed the public to see in real time not only the data consultants were using to analyze the roadway network but also comments from others in the community. This engagement tool was utilized throughout the planning process and provided valuable feedback for recommendations.

In addition to bi-weekly client meetings, a series of stakeholder committee and public meetings provided information about the project and gathered feedback to inform the overall vision and design of the thoroughfare network. The content presented and input received from each of the stakeholder and public meetings is detailed below.

Stakeholder Meetings

Stakeholder Committee Meeting #1: Thursday, July 9, 2020

The first stakeholder committee meeting occurred on Thursday, July 9, 2020 via Zoom from 3:00 p.m. to 4:30 p.m. Twenty-one members attended the first stakeholder committee meeting, including seven participants representing the client and consultant team.

The consultant team introduced the project and themselves and shared an overview of the project, project schedule, background and purpose of the project, the public involvement plan, and existing study area conditions highlights including a review of previous plans.

Stakeholder committee members shared known minimum design requirements according to different agencies as well as a desire for more clarity about transitions between different roadway classification types as corridors traverse different geographic contexts. Stakeholders also shared a strong preference for an interactive map to better understand current right-of-way and surrounding land uses for different alignments. Lastly, stakeholders requested to overlay the Active Tyler Plan recommendations onto the thoroughfare plan to examine on-street bicycle facility recommendations and feasibility.

Stakeholder Committee #2: Thursday, October 15, 2020

The second stakeholder committee meeting included a recap of the first public meeting, highlights from the online survey results, and a review of draft alignment and draft cross sections for the different roadway types in the different geographic contexts. There were 12 participants, including five representatives from the client and consultant teams.

At the time of this meeting, there were 34 responses to the online survey and 80 comments on the interactive map.

According to the survey results, the top three goals were:

1. **Reducing congestion**
2. **Improving safety**
3. **Increasing connectivity and accessibility**

The results from the online survey indicate a split about whether people feel that it is easy or difficult to reach the places they want to go, such as to school, work, or stores. Other online survey highlights show that 56% of people agreed or strongly agreed that they feel safe driving in the region, although 74% disagree or strongly disagree that they feel safe biking or walking in the region.

More than half of survey respondents believe in having transportation choices, including driving, walking, biking, or transit, and shared that they have a strong preference that every commercial street should have a sidewalk (94% of respondents) and a general consensus that every residential street should have a sidewalk (66% of respondents).

Survey respondents shared that intersections along Loop 323 feel the most unsafe for all users while Broadway, Loop 323, and Old Jacksonville were the three most unsafe corridors for all users.

Survey respondents shared that the top three priority mobility considerations according to context type.

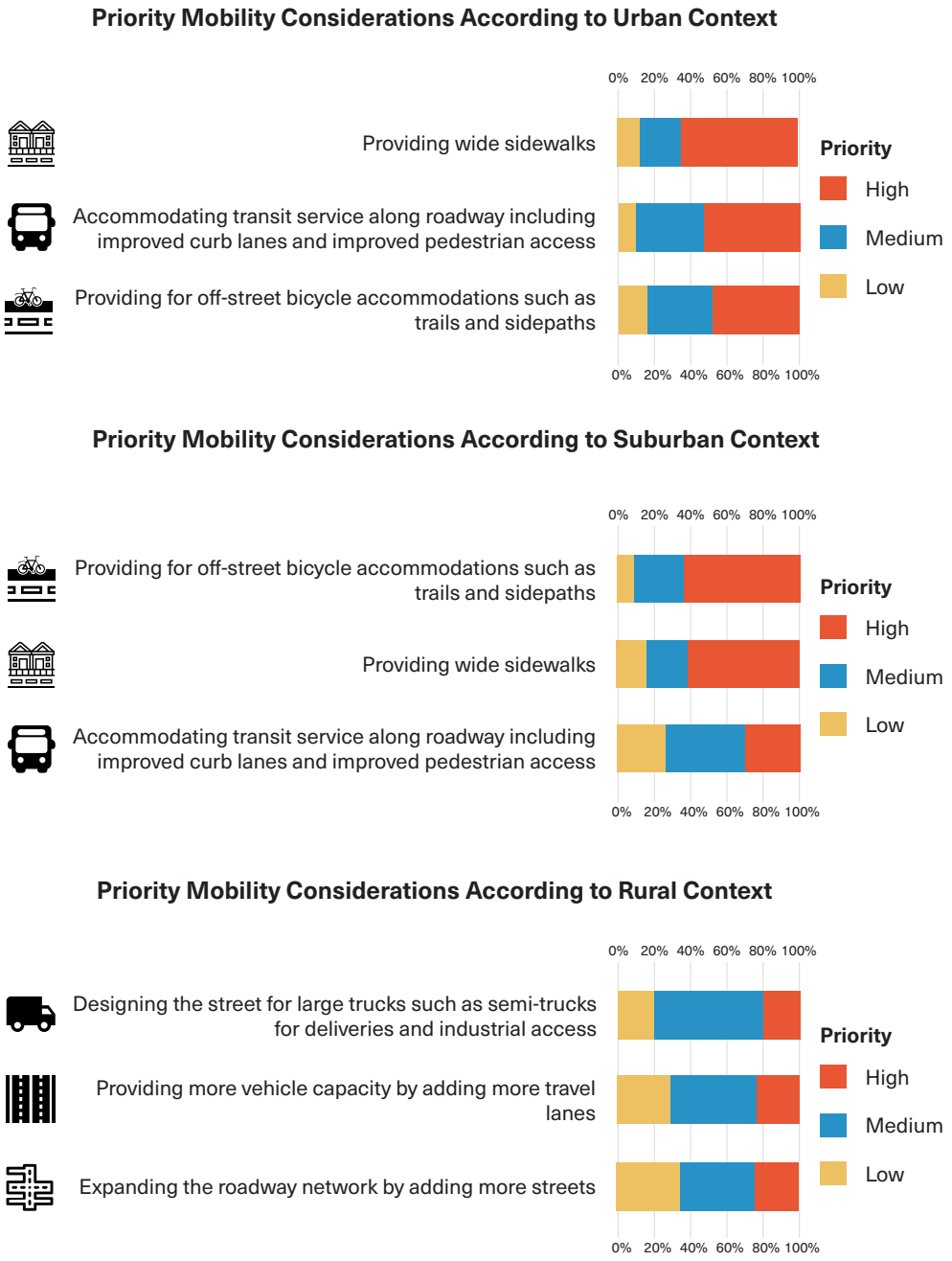


Figure 10. Public Engagement Survey Results

The methodology for street change classifications was shared, which are broadly categorized into the five follow categories: change from proposed to existing alignment, extend classification, change alignment, change classification, and new alignment. Examples of change classification, such as from a principal arterial to minor arterial, were shared to illustrate the reasoning.

Draft cross sections were also shown for new build segments according to classification and context.

Public Meetings

Public meeting advertisements were shared via social media, including the Tyler MPO's Facebook and Twitter accounts, as well as online through the MPO website.

Public Meeting #1: Thursday, July 23, 2020

The first public meeting was presented as Zoom Virtual Webinar from 6:00PM - 8:00PM. 10 people participated in this meeting. This first public meeting served to understand current mobility issues while building on previous plans and utilizing reliable data sources to weigh mobility sources.

The consultant team introduced the project and shared an overview of the project, project schedule, background and purpose of the project, existing study area conditions; led a street visioning exercise, and discussed with members of the public their needs, desires, and overall vision for the study area.

Several interactive polls throughout the webinar engaged participants to learn more about their perspectives. Participants shared their affiliation (resident, business owner, or public agency) and employment and residential zip codes.

Interactive poll questions also included preferences about specific types of infrastructure designs and facility offerings in the three different geographic contexts to gauge priorities. Participants reported a mixed preference for narrowing travel lanes in the urban context in Downtown Tyler to increase safety and reduce travel speeds. While many participants would like to see travel lanes narrows, they shared a need for better understanding the impact on congestion and traffic counts as well as understanding how to balance different mobility needs for pedestrians and cyclists. Participants reported that they would generally prefer wider sidewalks in the pedestrian realm for both pedestrians and cyclists in the suburban context outside Loop 323. All participants reported that they would like off-street bicycle facilities in the rural context outside city limits.

Participants were also asked to leave feedback on the interactive map and take the online survey after the presentation. In general, participants shared their concerns about congestion along corridors like Broadway and conflict zones at intersections with Broadway for all mode users during the discussion portion of the public meeting.

Public Meeting #2: Thursday, October 22, 2020

In order to better accommodate busy schedules and demands on working professionals with family obligations, this second public meeting occurred at two different times on the same day. The first meeting of the day occurred after the lunch hour from 1:00PM - 2:00PM, and the second meeting of the day occurred before the dinner hour from 5:00PM - 6:00PM.

This second public meeting served to review feedback from the first public meeting, identify changes and recommendations to the thoroughfare plan, and review the draft cross sections for new build segments and the guidance around reconstruction.

Participant questions from the first public meeting of the day asked about how to confirm the classification of different roadway segments for new developments; participants were directed to utilize the online interactive map. Another participant shared a strong preference for 12' travel lanes for consistency with existing build conditions, as well as minimum median widths of 20' to accommodate u-turning traffic.

Participants who attended the second meeting before the dinner hour did not ask any questions. More people attended the first meeting in the day compared to the second, indicating that members of the public may have more flexible schedules during the day to participate during changing pandemic guidelines in which more and more people are working from home balancing different work-life obligations.

Public Meeting #3: Thursday, January 14, 2021

The third and final public meeting was presented as Zoom Virtual Webinar from 4:30PM - 6:00PM. This final public meeting served to identify the changes and recommendations made between the second and third public meetings as a result of the feedback the consultant team received during the second round of public meetings and the second stakeholder meeting.

The major changes presented during this meeting included street definitions, proposed cross sections, reconstruction roadway widths, the plan update decision making process, policy recommendations, and an updated online interactive map showing functional class, context, and status of roadway segments. Two participants asked several questions about the next steps for the plan and specific cross section dimensions.

One question asked about the subsequent steps for the plan after the final meeting. Feedback from the final meeting will be incorporated into the plan before final adoption from the MPO. Another question asked about the face-to-face dimensions for the proposed cross sections, particularly related to collector streets. The consultant team reviewed face-to-face dimensions and updated proposed cross sections based on the feedback received from the final meeting.

Master Street Plan Elements

Design Elements

The most difficult element of thoroughfare design is balancing the desired design elements with the right-of-way constraints such as property lines, easements, utilities, and building setbacks. This balancing act is the reason flexibility is so important during the planning stage of thoroughfare design. In the past, the process of choosing the appropriate design standards for a roadway was simple because only one option was available for each roadway type. This simplified the process for the roadway designer but lacked the flexibility that is often needed to provide multi-modal options for a better street and land development connection. The priorities along a specific corridor are typically tied to the land use and development patterns found along the corridor.

In order to accommodate such diverse and sometimes competing functions, the roadway right-of-way is typically divided into two distinct zones: the Travelway Zone and Pedestrian Zone (see **Figure 11**). Depending on functional classification and context type, both of these zones can accommodate bicycle facilities.

Travelway Zone

The travelway zone's primary function is to accommodate vehicular movement. It includes the area of the public right-of-way within the curb-to-curb cross section of the street that is occupied by travel lanes, bike lanes, parking lanes, and any medians, traffic circles, etc. that occur between the curbs. Depending on context type and functional classification as well as available right-of-way, medians can provide enough width for center turn lanes along the corridor or be flush with the roadway. Depending on maintenance, landscaping is not always necessary along the median.

Pedestrian Zone

The pedestrian zone's primary function is to accommodate pedestrian circulation and movement. This zone generally includes the outer portions of the right-of-way that flank the street, including sidewalks and any adjoining plazas and parks. Sidewalks should be free of any obstacles and be wide enough to comfortably accommodate the context's pedestrian volumes. Depending on context, this area could also serve bicyclists and outdoor amenities such as benches, transit stops, and outdoor dining. It also provides an area for street fixtures such as street lights, trees, bicycle racks, signposts, signal boxes and other amenities. The pedestrian zone includes the curb which provides a physical barrier between the street and sidewalk.

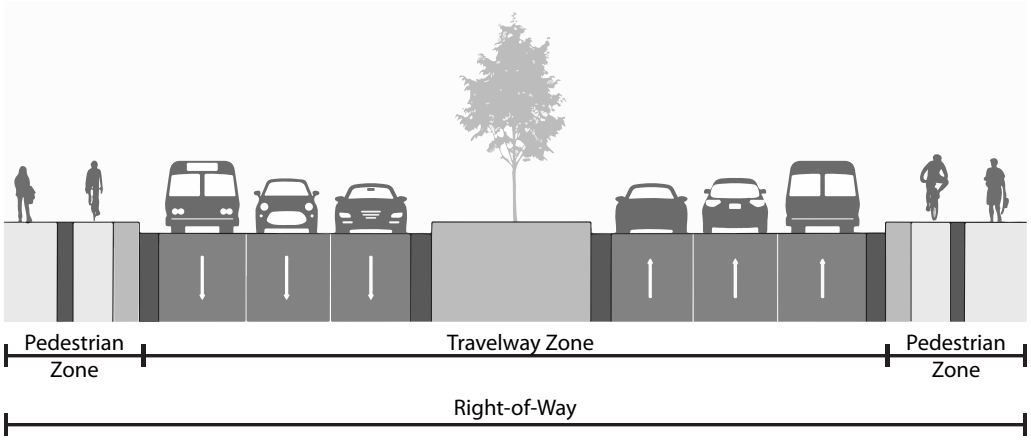


Figure 11. Street Zones

Technical Analysis

Travel Demand Modeling

Modifications to the Tyler Area MPO Travel Demand Model (TDM) were identified to provide a detailed analysis for the local area and region. The TDM was used to forecast trips that people take on a daily basis within the City of Tyler and throughout the Tyler Area MPO. This tool provided a comprehensive look at Tyler Area MPO's capacity needs and congestion levels projected in the year 2045.

The model is comprised of a series of mathematical models that simulate travel on the transportation system. The model divides the MPO into Traffic Analysis Zones (TAZs), with each zone containing specific demographic and land use data associated with that designated area, and this data is used to determine trip demand and travel patterns. The four steps used in the modeling process are identified below:

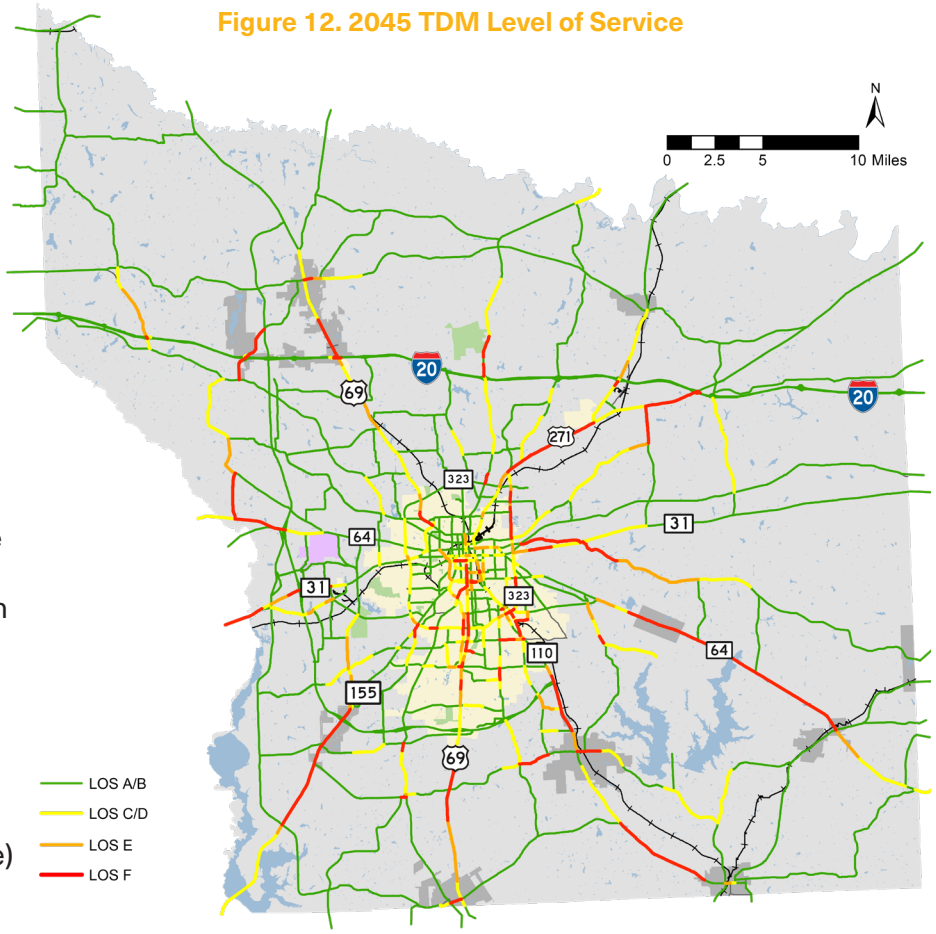
- Trip Generation – the number of trips produced and attracted to a destination or zone.
- Trip Distribution – the estimation of the number of trips between each TAZ, i.e. where the trips are going.
- Modal Split – the prediction of the number of trips made by each mode of transportation between each TAZ.
- Traffic Assignment – the amount of travel (number of trips) that is put into the transportation network through path-building and is used to determine network performance.

Future Traffic Volumes

In addition to the existing level of service analysis presented in Chapter 3, level of service and traffic volumes were also analyzed for the future year 2045 using the MPO's TDM. As part of the 2045 TDM, edits were made to the roadway network to identify current and proposed roadway projects that would impact mobility and accessibility throughout the region.

The purpose of the future TDM analysis with identified roadway projects is to determine where the mobility needs in the region are and to make adjustments. The 2045 TDM results indicate that congestion levels are high along highways/principal arterials in the Tyler area. SH 155 and SH 110 are expected to be highly congested south of Toll 49. Though traffic volumes are expected to increase along I-20 and Toll 49, TDM results do not indicate major congestion issues. US 69 (S Broadway Ave) along with local roadways in the southern portion of the City of Tyler are anticipated to experience higher levels of congestion.

Figure 12. 2045 TDM Level of Service



Conventional Functional Classification

Most cities use a traditional functional classification system to group roadways according to the type of service they are intended to provide. This organized system assists citizens and developers in understanding the types of roadways that are planned for the City's transportation system and what those roadways might look like.

Historically, street classification systems have been rigid and uncompromising, allowing little to no flexibility in their application. Street design characteristics have typically been limited to the area from curb-to-curb and focused solely on the vehicle. However, this concept of rigidity has evolved over time as the relationship between transportation and land use has become more influential in the design and operation of our streets. Thoroughfare design practice has begun to involve several different design considerations that often include the pedestrian-side area (located between the building front and the curb) and that affect not only automobile users, but also pedestrians and cyclists.

While the Tyler Area MPO has historically utilized the traditional functional classification system for its roadways, this updated plan introduces a new functional classification system that utilizes the existing terminology (Principal Arterial, Minor Arterial, Major Collector, Minor Collector) but includes additional flexibility for the design characteristics of the roadway. This allows for each roadway to be designed in a way that adapts to the surrounding built environment and that benefits all users.

Complete Streets/Context Sensitive Design

Complete Streets is a concept that supports the idea that streets should be designed for everyone, with safe access for pedestrians, bicyclists, motorists, and transit riders of all ages and abilities. There is no single design for a Complete Street. Each one is unique and should relate to the surrounding community context.

Context Sensitive Design takes the goal of Complete Streets and applies it to the process of determining the most appropriate cross sections for street construction, reconstruction, or rehabilitation projects. The Context Sensitive Solutions (CSS) Design Manual, written by the Institute of Transportation Engineers and the Congress for the New Urbanism, provides a guide on how this emerging practice can be implemented during the thoroughfare planning process.

This process takes into account not only the functional class of the road, but also the character of the surrounding development, future goals for each corridor, and the existing or future need for different modes of transportation.

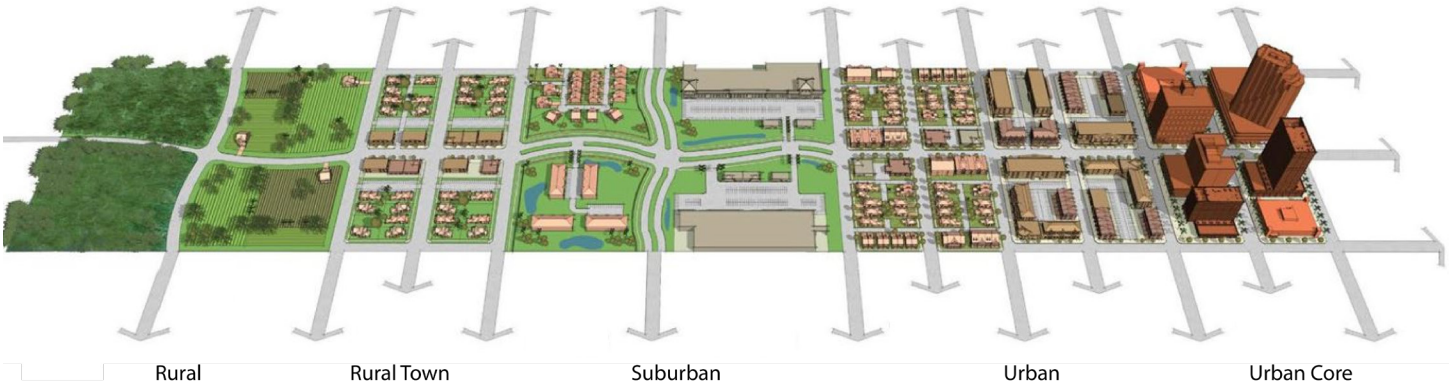


Figure 13. Context Classifications (Source: Florida DOT)

Pedestrian and Bicycle Facilities Best Practices

The 2019 Active Tyler Plan provides a facility selection process and generalized design guidelines to provide flexibility for implementation that is adaptable to each jurisdiction and local conditions. The Context-Typology-Facility Matrix, seen in **Figure 14**, identifies appropriate facility types for each combination of land use contexts and roadway classifications for different route segments within the recommended network. The Active Tyler Plan does not specify roadway sections for each of these facility types.

However, Appendix B of the 2019 Active Tyler Plan identifies appropriate design guidance for each bicycle facility type as well as traffic calming measures that can be incorporated along roadways to enhance safety for all users. Traffic calming measures include both vertical and horizontal elements including narrow lanes, speed bumps and speed humps, curb extensions, traffic circles, and chicanes. The Plan also identifies necessary intersections treatments that can facilitate the movement of through and turning vehicles and bicyclists.

The Active Tyler Plan also includes the following specific strategies and best practices for implementing recommendations:

- Coordinate upcoming roadway projects to account for bicycle facility and sidewalk implementation
- Enhance bicycle routes on local streets with wayfinding, traffic calming, and pavement markings
- Federal Transit Administration Urban Areas Formula Funds (5307) & Enhanced Mobility of Seniors and Individuals with Disabilities Grant (5310)
- Better Utilizing Investments to Leverage Development (BUILD) Transportation grants
- Acquire Right-of-Way early on
- Reconfigure streets to better utilize existing pavement
- Employ interim solutions prior to full-build implementation

	Major Arterial	Minor Arterial	Collector	Local
Urban Core	wide sidewalk with buffer	wide sidewalk with buffer	medium sidewalk	sidewalk
	separated bike lane	separated bike lane, buffered bike lane	separated bike lane, buffered bike lane	bike lane, shared lane marking
Urban	wide sidewalk with buffer	medium sidewalk, buffer optional	medium sidewalk	sidewalk, traffic calming
	separated bike lane	separated bike lane	buffered bike lane	bike lane
Suburban	wide sidewalk with buffer	wide sidewalk, buffer optional	sidewalk	sidewalk, traffic calming, paved shoulder
	separated bike lane, shared use path	separated bike lane, shared use path	buffered bike lane, shared use path	bike lane, shared lane marking
Rural	shared use path	shared use path	medium sidewalk	traffic calming, paved shoulder
			bike lane, buffered bike lane, paved shoulder	shared lane marking
Rural Town	shared use path	shared use path	medium sidewalk	traffic calming, paved shoulder
		separated bike lane	separated bike lane, bike lane, buffered bike lane	shared lane marking

Figure 14. Context-Typology-Facility Matrix

Thoroughfare Plan Update

Functional Classification System

Tyler Area MPO is comprised of a variety of street types, with the overall system designed to facilitate movement not only across the region but also for local trips. The roadway network provides a balance between mobility and accessibility to destinations. The roadway network is made up of six classifications of street, shown in **Figure 15**.

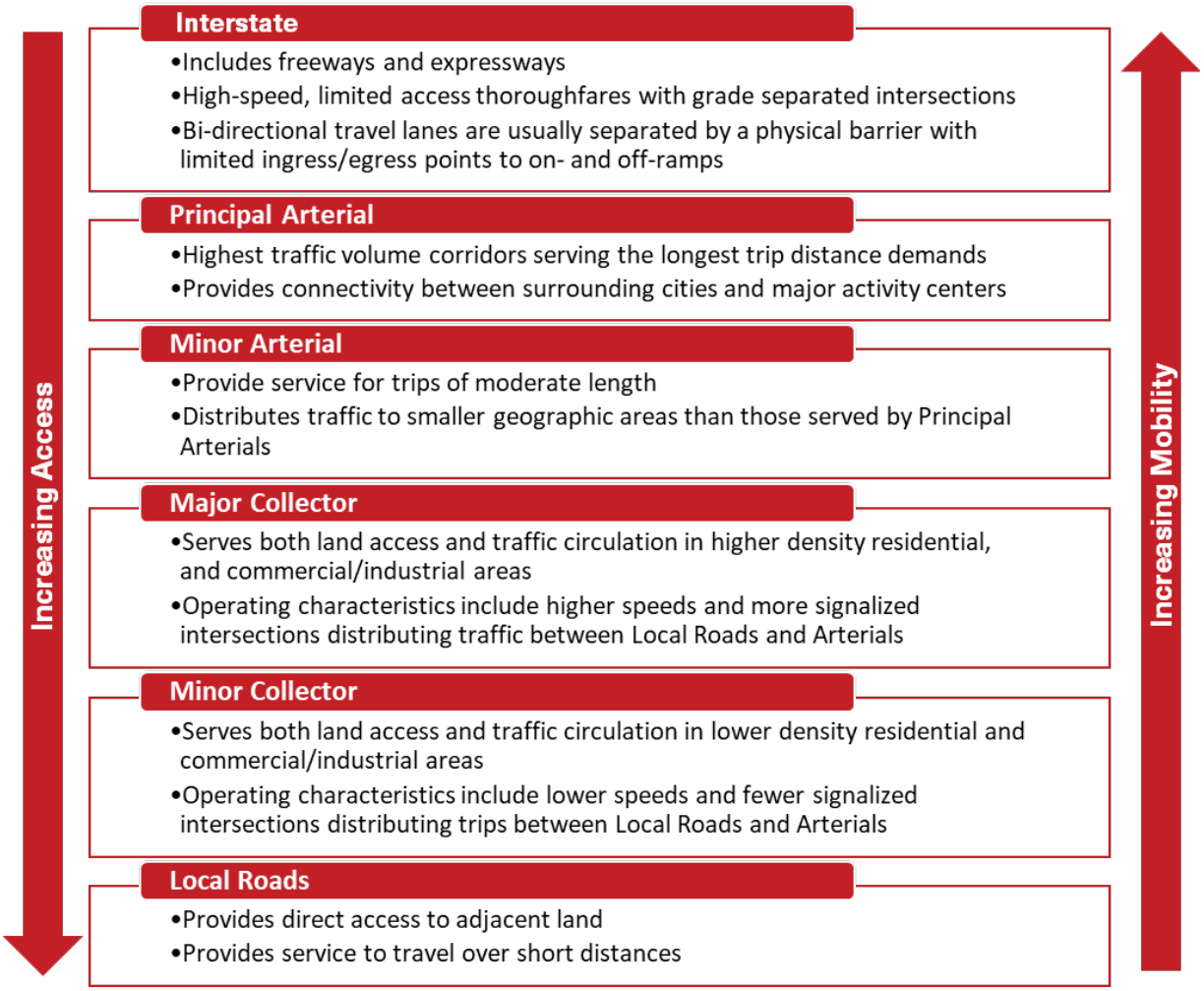
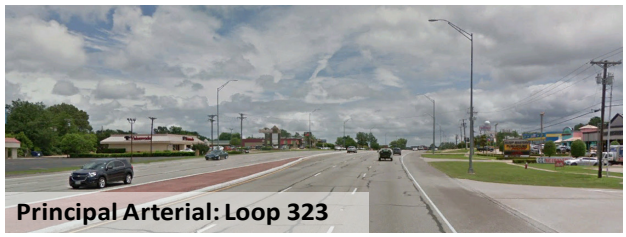


Figure 15. Functional Classification Characteristics

Freeway: Interstate 20


Principal Arterial: Loop 323


Minor Arterial: Rice Rd/Shiloh Rd


Collector: Hollytree Dr

Figure 16 represents the updated Functional Classification for the Tyler Area MPO. All other roadways within the study area not identified are classified as Local.

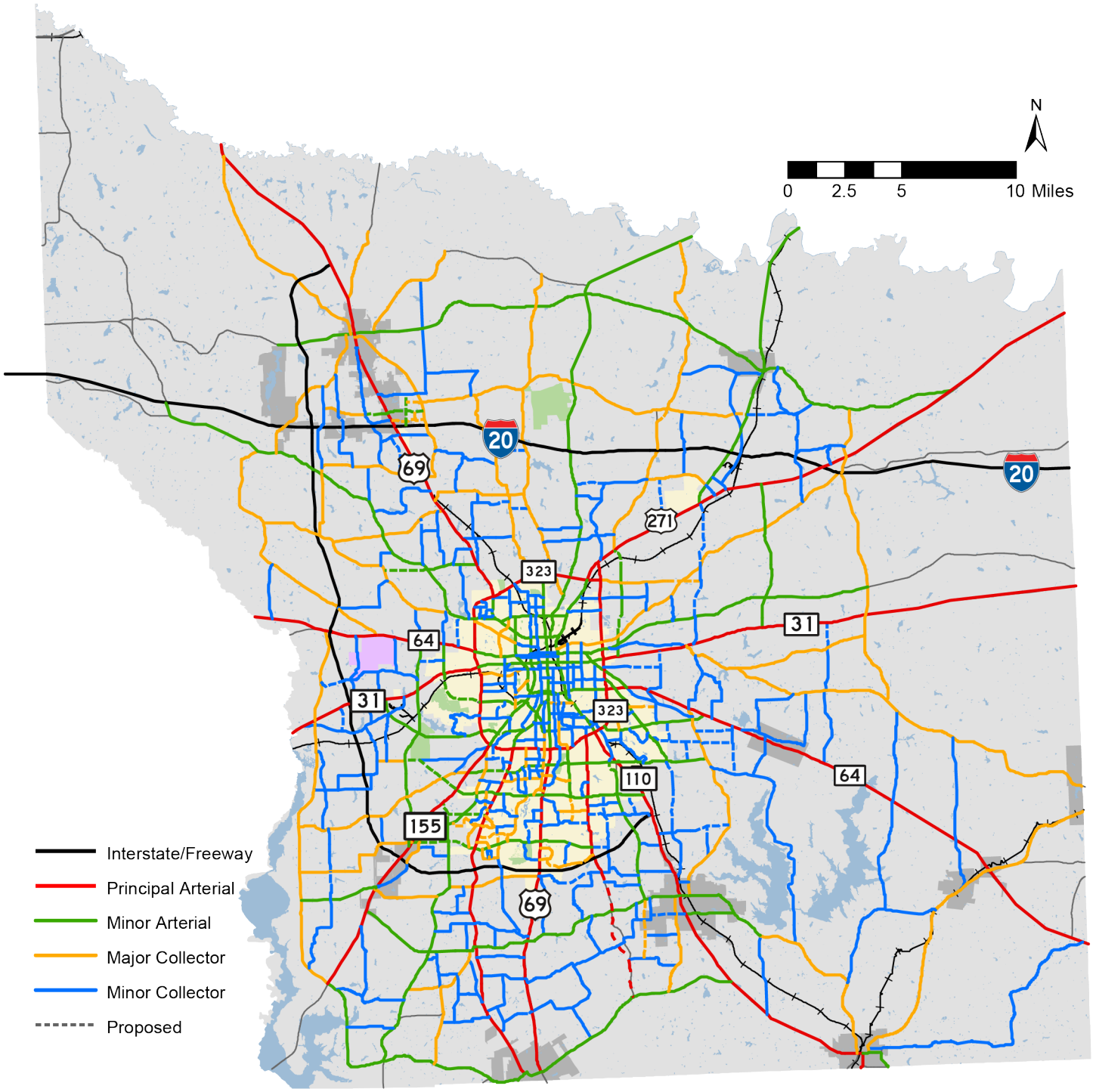


Figure 16. Tyler Area MPO Functional Classification

Street Context

Roadway functional classification is the preferred starting point for new roadway construction and retrofit/reconstruction of existing roadways. However, these roadways classifications are intended to be adapted to fit the local context. Adapting street design to the surrounding context is supported by national design guidance, including the Institute of Transportation Engineers (ITE) Designing Walkable Urban Thoroughfares.

Urban Core

The center of the City of Tyler is characterized by the original street network, high development density, and a mix of land uses. This context is highly favorable toward walking, and so often features smaller lane widths, slower vehicular speeds and on-street parking.

Urban

Surrounding the urban core, this type features a mix of housing and commercial development types at a lower density than the urban core, and with a mix of on- and off-street parking.

Suburban

This context is comprised largely of single-family residential homes and some multi-family apartments, and auto-oriented commercial development, all with off-street parking.

Rural

Featuring the least amount of urbanization, the rural context features large lots, single-family homes, agricultural uses, large recreational spaces and undeveloped land.

Rural Town

Often islands in a rural countryside, this context typically includes more dense development around a small street network. Uses include commercial, civic, and institutional.

Figure 17 represents the updated Street Context Type for the Tyler Area MPO.

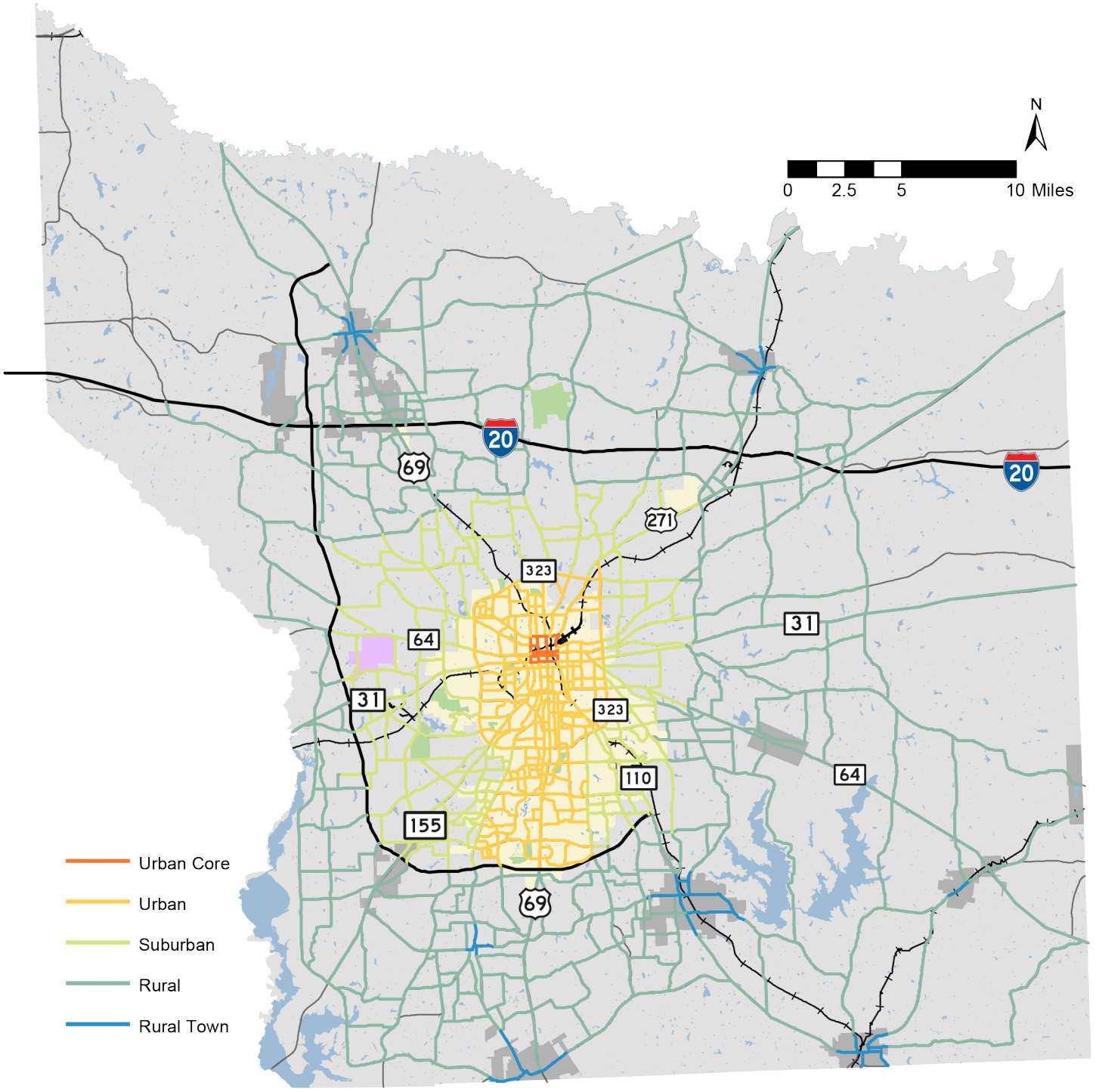


Figure 17. Tyler Area MPO Street Context Type

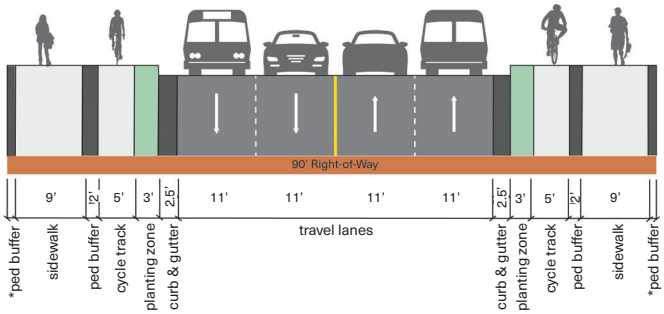
Roadway Cross Sections

In order to accommodate both functional classification as well as context type, cross sections were developed to show how the design elements would fit within the overall right-of-way and show how flexibility could be introduced to accommodate future elements as growth and development occurs.

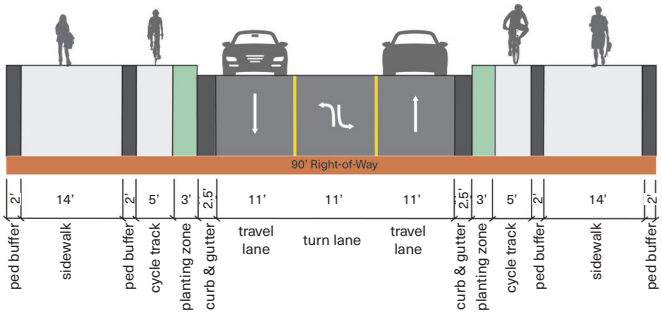
Cross sections were further divided into the following categories: new roadway construction and reconstruction of retrofit of existing roadways. New roadway reconstruction represents the ideal condition for roadway alignment without right-of-way constraints. Typically, reconstruction/retrofit roadways have land uses adjacent to roadway right-of-way requiring flexibility in design elements.

New Roadway

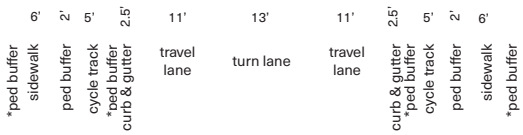
Urban Core
Principal Arterial
90' ROW*



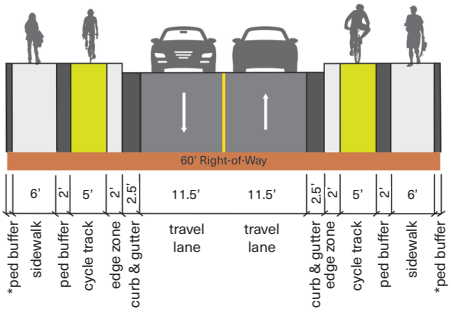
Urban Core
Center Turn Lane
Minor Arterial
90' ROW*



Urban Core
Major Collector
70'*

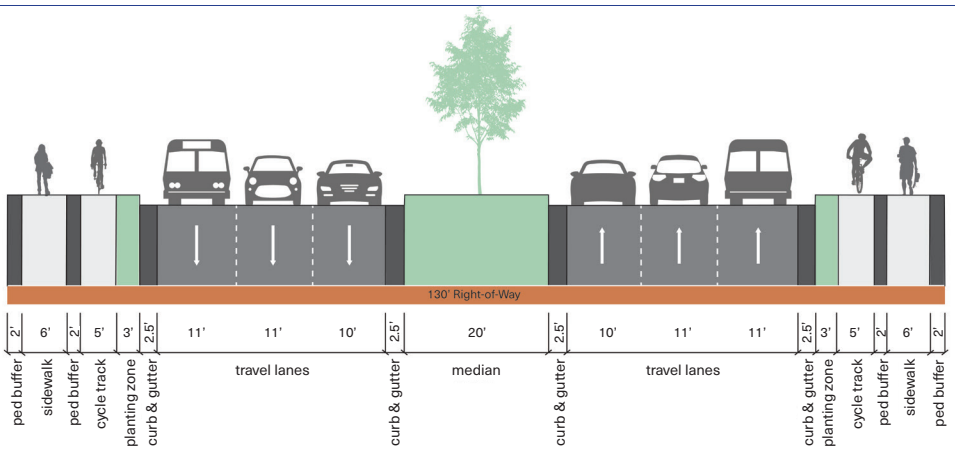


Urban Core
Minor Collector
60' ROW*

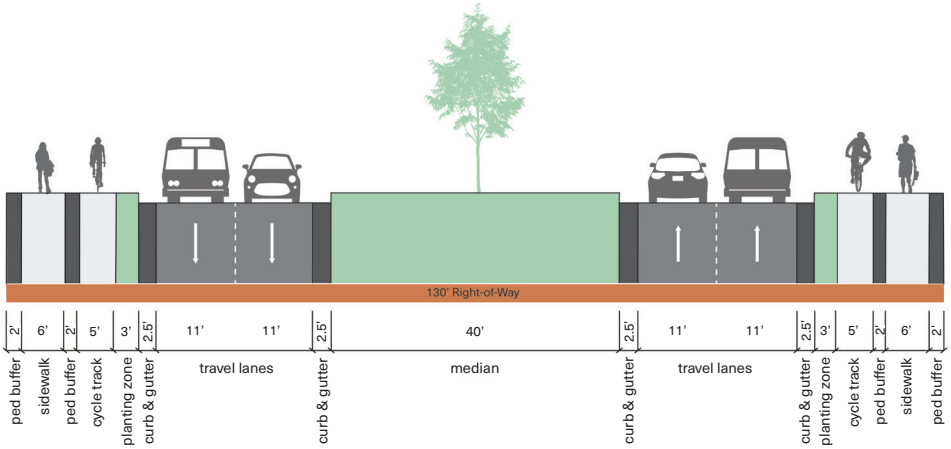


* Bicycle and pedestrian facilities are shown for conceptual purposes only. Bicycle facilities are not recommended or required for every roadway. The proposed location and recommended types of bicycle and pedestrian facilities are identified in Active Tyler.

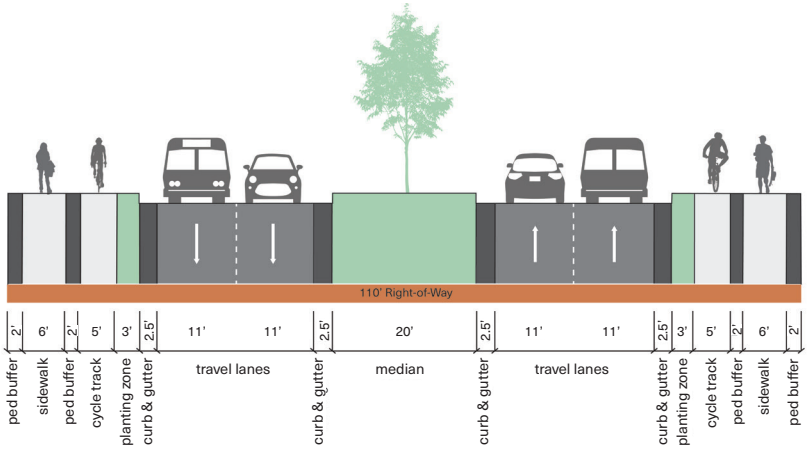
Urban Principal Arterial 6 Lanes 130' ROW*



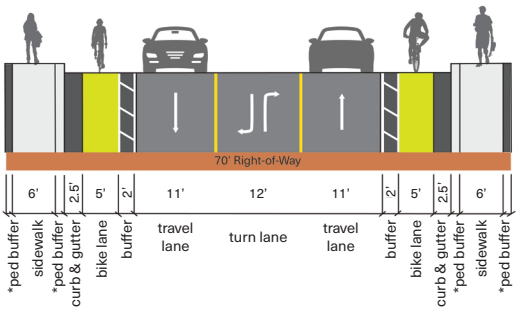
Urban Principal Arterial 4 Lanes 130' ROW*



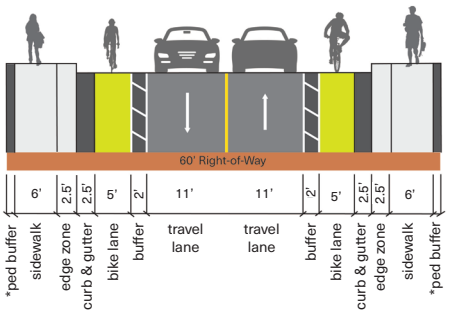
Urban Minor Arterial 4 Lanes 110' ROW*



Urban Major Collector 70' ROW*

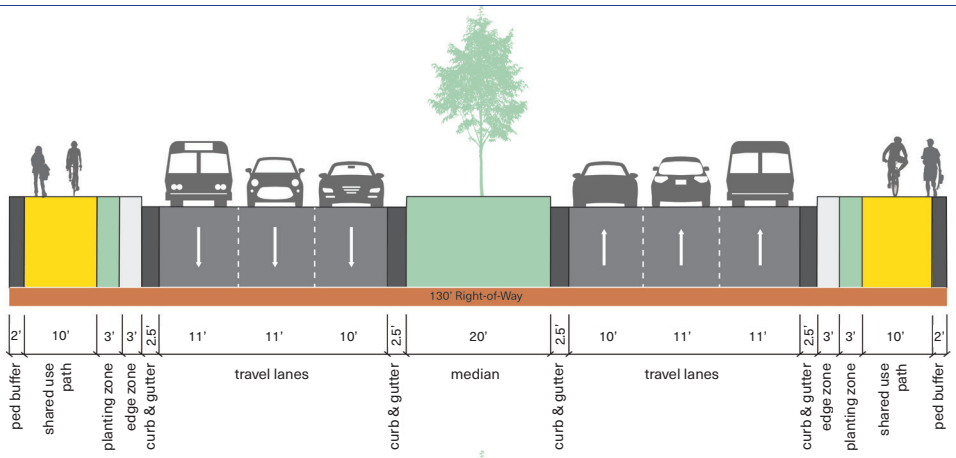


Urban Minor Collector 60' ROW*

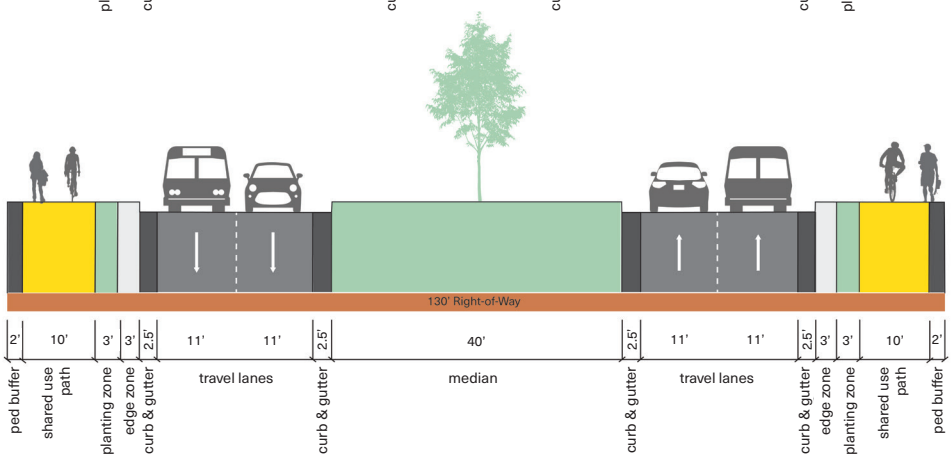


* Bicycle and pedestrian facilities are shown for conceptual purposes only. Bicycle facilities are not recommended or required for every roadway. The proposed location and recommended types of bicycle and pedestrian facilities are identified in Active Tyler.

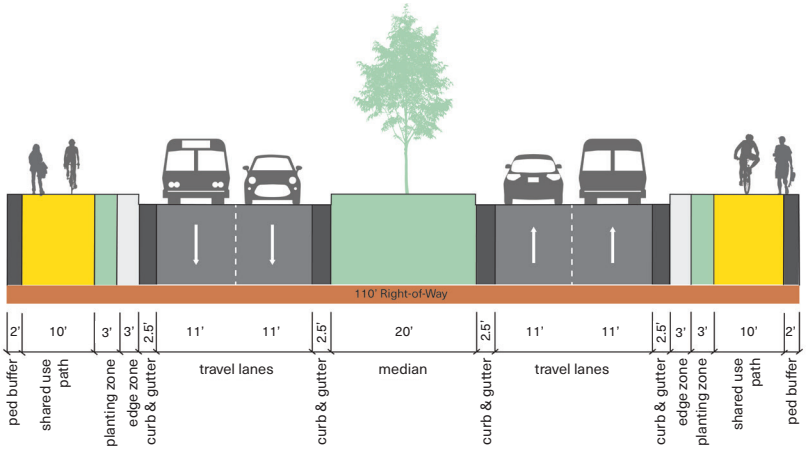
Suburban Principal Arterial 6 Lanes 130’ ROW*



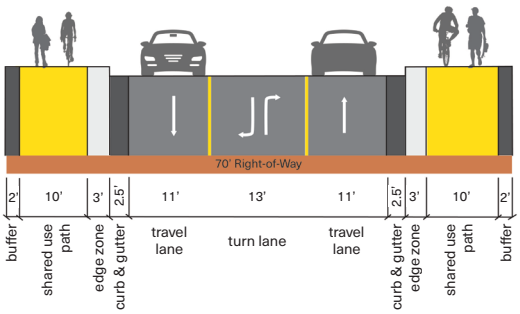
Suburban Principal Arterial 4 Lanes 130’ ROW*



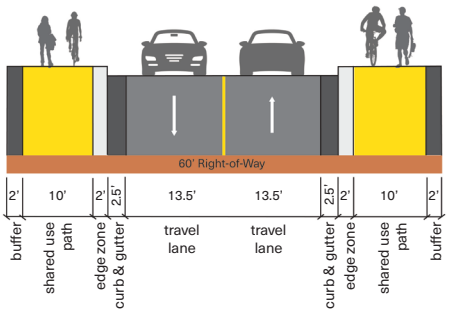
Suburban Minor Arterial 4 Lanes 110’ ROW*



Suburban Major Collector 70’ ROW*

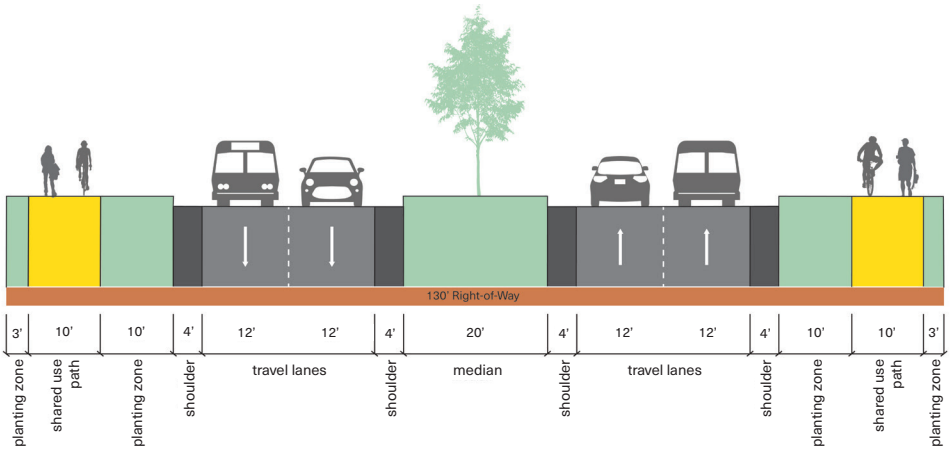


Suburban Minor Collector 70’ ROW*

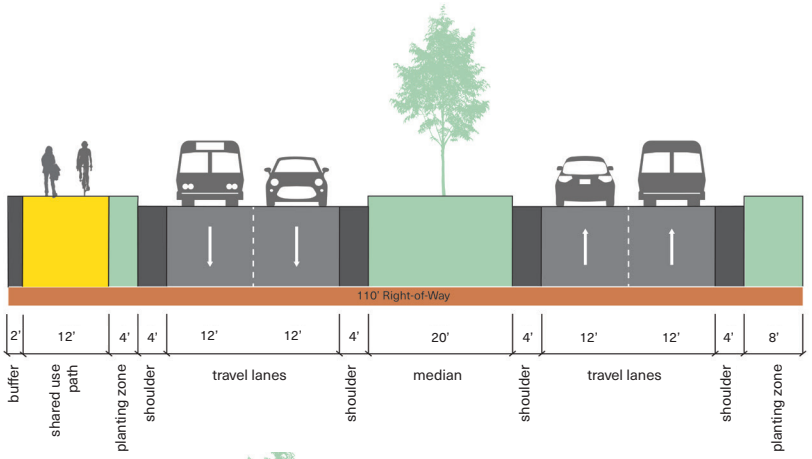


* Bicycle and pedestrian facilities are shown for conceptual purposes only. Bicycle facilities are not recommended or required for every roadway. The proposed location and recommended types of bicycle and pedestrian facilities are identified in Active Tyler.

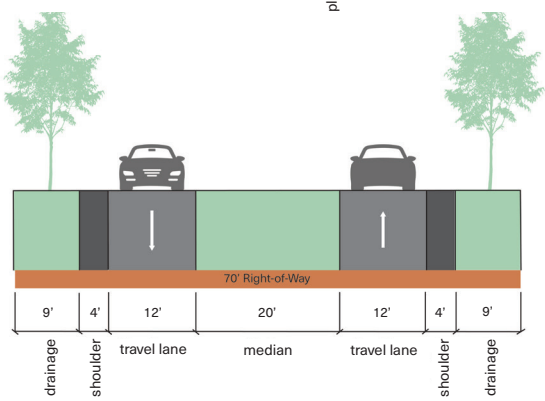
Rural Principal Arterial 4 Lanes 130' ROW*



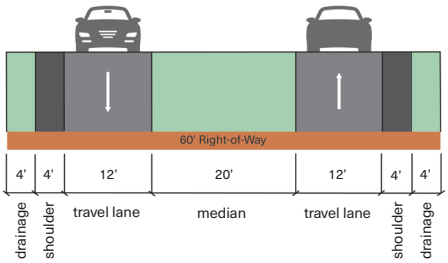
Rural Minor Arterial 4 Lanes 110' ROW*



Rural Major Collector 70' ROW*



Rural Minor Collector 60' ROW*



* Bicycle and pedestrian facilities are shown for conceptual purposes only. Bicycle facilities are not recommended or required for every roadway. The proposed location and recommended types of bicycle and pedestrian facilities are identified in Active Tyler.

Reconstruction/Retrofit

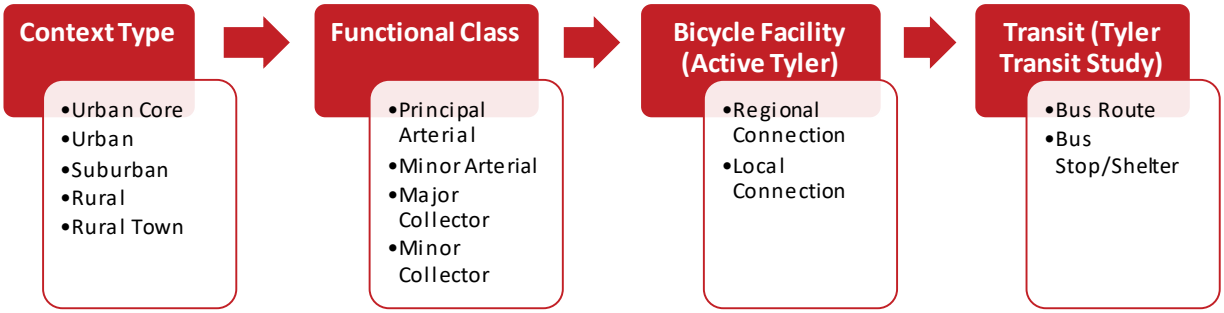
The Recommended Width Chart for street design elements presents proposed guidelines by street type in the Tyler Area MPO. The widths shown in the chart should be considered for roadway reconstruction and retrofit street design. A design exception may be required for some values on federal or state-funded projects. Engineering judgment is necessary to make final determinations regarding widths. In response to specific conditions on a given street, such as constrained right of way or specific types of uses, widths that are different from those in the chart may be required.

RECOMMENDED WIDTH CHART FOR TYLER MASTER STREETS PLAN ELEMENTS								
	Principal Arterials		Minor Arterials		Major Collector		Minor Collector	
Street Design Element	Min	Pref	Min	Pref	Min	Pref	Min	Pref
Pedestrian Zone								
Sidewalk	6'	8'-15'	5'	6'-10'	5'	5'-10'	5'	5'-7'
Buffer/Curb Width	6"	1'-2'	6"	1'-2'	6"	1'-2'	6"	1'-2'
Gutter	2'	2'	2'	2'	2'	2'	2'	2'
Street Zone								
Parallel Parking	-	-	7'	8'	7'	8'	7'	8'
Back-in Angled Parking	-	-	15'	22'	15'	22'	15'	22'
Travel Lane	11'	12'	11'	12'	11'	12'	11'	12'
Left-turn Lane	9'	10'	10'	10'	9'	10'	10'	11'
Two-way Left Turn Lane	14'	16'	10'	12'	10'	12'	10'	12'
Median	14'	16'	10'	12'	10'	12'	10'	12'
Bicycle Facilities[1]								
Shoulder	-	-	10'	10'	10'	10'	10'	10'
Bicycle lane (no parking)	5'	6'	5'	6'	5'	6'	5'	6'
Bicycle lane (parking, curb and gutter)	5'	6'	5'	6'	5'	6'	5'	6'
Buffered bicycle lane (includes 2' - 3' buffer)	7'	9'	7'	9'	7'	9'	7'	9'
Shared Use Path	8'	10'	10'	14'	10'	14'	10'	14'
Cycle track (two-way, includes 2' - 3' buffer)	12'	16'	11'	15'	11'	15'	11'	15'

Notes: 1. Refer to 2019 Active Tyler Plan

Table 2: Street Design Elements for Roadway Reconstruction/Retrofit

The following decision making process provides guidance on incorporating the appropriate design elements based on functional class and context type. This decision making process also takes into account bicycle and transit travel design elements that should be considered throughout the thoroughfare planning process.



Example Alternative Cross Section Application

W Gentry Parkway Road Diet (N Parkdale Dr to N Palace Ave)

W Gentry Parkway (US 69/State Highway Spur 147) is a 2-3 lane undivided roadway with a center turn lane in each direction through much of the City. From Loop 323 to N Parkdale Drive, there are two lanes in each direction with a center turn lane in each direction and wide outside shoulder on both sides of the roadway. From N Parkdale Drive to N Broadway Avenue, there are three lanes in each direction with a center turn lane in each direction and wide outside shoulders on both sides of the roadway. At major intersections, the dual center turn lane turns into a raised median to provide a dedicated turning movement.

One of the primary issues with W Gentry Parkway is the number of lanes in each direction and dual center turn lanes as well as lack of pedestrian connectivity along most blocks and at major intersections. To address both the safety issues and lack of sidewalks, a recommended redesign option would be to convert the dual center turn lanes into one center turn lane and reduce face-to-face curb width to provide for pedestrian and bicyclists.

W Gentry Parkway has previously been classified as a Principal Arterial, but its function as it transitions inside Loop 323 is a balance between vehicular movement and community-level commercial activity corridor. Although the right-of-way along W Gentry Parkway varies between 130' - 160' depending on location and would warrant a Principal Arterial designation, the traffic volume and recommended multi-modal facilities along W Gentry Parkway suggests a Minor Arterial classification. Existing traffic volumes indicate between 19,000 and 25,000 annual average daily traffic (AADT). Future traffic volume projections using the TDM indicate between 23,000 and 37,000 AADT along W Gentry Parkway. It is expected that a 6-lane section with a center turn lane would support this travel demand. The Active Tyler Plan also proposes improved bicycle and pedestrian connectivity along this segment of W Gentry Parkway.

Figure 18 represents what W Gentry Parkway could look like utilizing the Reconstruction/Retrofit Table on pg. 27 and reallocating existing right-of-way. This roadway retrofit would provide multi-modal connectivity and improve intersection crosswalks while still providing vehicular through movement along the corridor. The proposed image for W Gentry Parkway is a rendering and is not intended for final design and engineering.

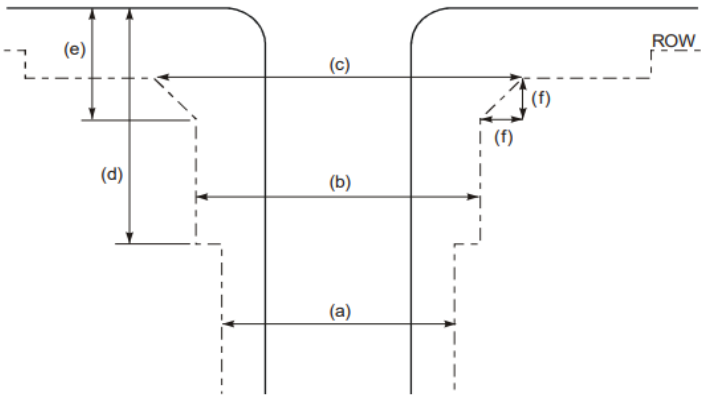
Figure 18. W Gentry Parkway

Policy Recommendations

Intersection Design Guidelines

Intersection operation is generally considered one of the biggest influences on the level of service along a corridor. The number, design, and spacing of intersections play an important role in the capacity, speed and safety on roadways. Dimensional layout and geometric design considerations are closely influenced by traffic volumes and operational characteristics and the type of traffic control measure. Arterial roadways are expected to accommodate high vehicular traffic volumes at relatively higher speeds. When arterial roadways intersect, multiple users including vehicles, pedestrians and bicyclists are likely to use the same intersecting area. These high demands often cause operational issues such as bottlenecks or congestion. Intersections must be designed to alleviate this congestion.

In order to provide for intersection design elements that may alleviate congestion, right-of-way widths must be increased at and on the approaches to intersections. **Figure 19** represents the additional right-of-way needed to accommodate the addition of turn lanes, pedestrian facilities, and transit needs.



(A) Typical cross section ROW adequate to include sidewalks & bicycle facilities
(B) Approach to intersection ROW
(C) ROW for corner clip adequate for pedestrian queuing and curb ramps at corners
(D) Length of approach to intersection to allow for turn bays
(E) Length of approach to intersection to allow for corner clips
(F) Offsets for corner clips

Figure 19. Intersection Right-of-Way Widths
(Source: Urban Intersection Design Guidelines, Texas Transportation Institute)

Recommended widths for each of the elements in **Figure 19** is based on Roadway Functional Classification and Context Type. For example, Principal Arterial would have 130' right-of-way (A), tapered approach to intersection (B) and additional 11'-12' for turning movement (C). Widths are also dependent on vehicle, transit and pedestrian/ bicyclist movement at intersections.

Right turn lane design is dependent on speed and traffic volumes at intersections and dependent on crash history, peak flow and truck volumes. **Figure 20** represents the main elements that should be considered in right turn lane design. Minimum Storage length for a single right turn lane is 30' per TXDOT Roadway Design Manual. Storage length can also be calculated using the following formula:

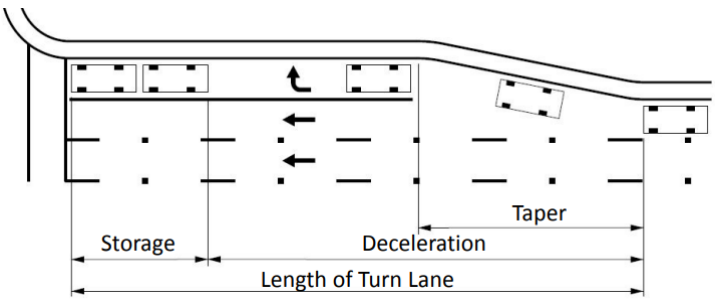


Figure 20. Right Turn Lane Design
(Source: Urban Intersection Design Guidelines, Texas Transportation Institute)

$$L=(V/N)(2)(S)$$

Where:

L=Storage length, feet
V=Turning volume per hour, vph
N=Number of cycles if signalized or 30 if unsignalized
2=Factor for storage of all vehicles (1.8 may be acceptable on collector streets)
S=queue storage length per vehicle, feet, typically 25' for automobiles

Taper lengths can be shortened but should not be lengthened. Single lane taper length is typically 50' for roadways with speeds between 30 to 40 mph. The length of a single right-turn deceleration lane is the same as that for a single left-turn lane.

Left turn lane design criteria are also dependent on traffic volume and speed of roadway and consist of the following components: storage (minimum length of 100'), taper, deceleration, and width as represented in **Figure 21**. The same calculation used for right turn lane design can be used for left turn lane design and storage length. For median left-turn lanes, the absolute minimum median width is 14'. Where dual left-turns are provided, a minimum median width of 28'. Where pedestrians may be present, the divider must be a minimum 6'.

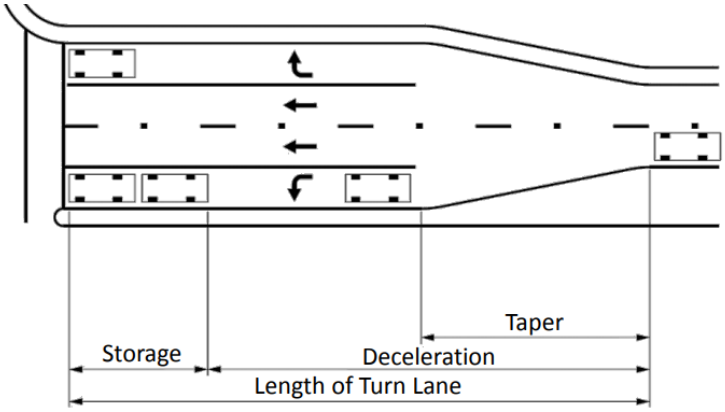


Figure 21. Left Turn Lane Design
(Source: Urban Intersection Design Guidelines, Texas Transportation Institute)

Additional information can be found in the TXDOT Roadway Design Manual, Chapter 3, Section 2.

Corner radii directly impact vehicle turning speeds and pedestrian crossing distances. Minimizing the size of a corner radius is critical to creating compact intersections with safe turning speeds. While standard curb radii are 10' – 15', many cities use corner radii as small as 2'. In urban settings, smaller corner radii are preferred and actual corner radii exceeding 15' should be the exception.

Two of the most important corner design elements are the effective radius and the actual curb radius. Actual curb radius refers to the curvature along the curb line. Effective radius refers to the curvature that vehicles follow when turning, which may be affected by on-street parking, bicycle lanes, medians, and other roadway features. **Figure 22** represents the actual curb radius compared to the effective radius.

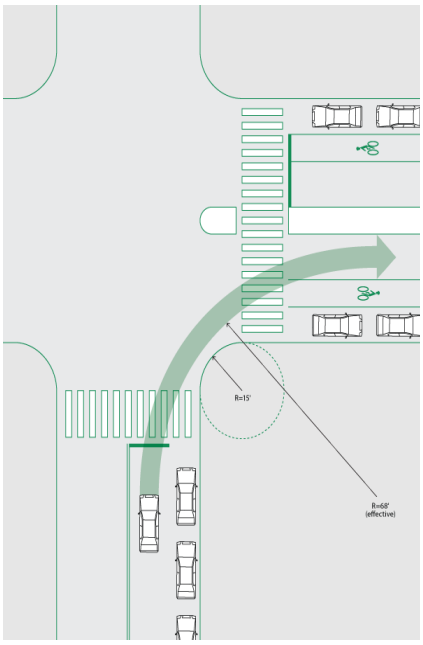


Figure 22. Actual and Effective Curb Radii
(Source: NACTO Urban Street Design Guide)

When reconstructing or designing new intersections, provide ADA ramps on all sides, even in the absence of continuous sidewalks, as these may be added in later projects. Ensure ADA ramps are aligned with travel path. This may require more than one ramp per corner, or relocation of signal poles or other hardware. All of this should be considered when improving an intersection. All current ADA requirements must be met, as well as including appropriate striping, signal hardware, and signage.

Crosswalks should be striped in the continental style, with wide bars perpendicular to the direction of pedestrian travel, rather than with two outlines. This creates much more visibility of the crosswalk for both pedestrians and motorists. Street-name signs should be included in both directions, even on one-way streets, to benefit pedestrians.

Intersections with traffic signals should conform to the latest version of the Texas Manual of Uniform Traffic Control Devices (TMUTCD), Highway Capacity Manual (HCM), the Institute of Transportation Engineer's (ITE) Traffic Signal Timing Manual, and the Texas Accessibility Standards (the state's version of ADA).

Transit Design Considerations

Roadway Elements

In general, roadway design should take into account transit operations, particularly at high-volume intersections. Areas where buses stop, called bus pads, should be constructed of concrete, even on asphalt roadways, to minimize pavement damage caused by the heavy vehicles repeatedly stopping. If right-of-way is sufficient, consider providing bus pull-outs, so buses can leave the stream of traffic and not obstruct other vehicles.

Stops/Shelters

In most cases, transit stops are a pole with signage indicating the routes and times of service using that stop. Shelters should be provided at high-volume stops, the definition of which is left to the transit provider, depending on overall ridership. Shelters should be considered near high-volume transit-patron generators, including schools and concentrations of employment. Some agencies are now including LED or other displays to indicate vehicle arrival times, or simply display the agency's website or phone number.

In areas where multiple buses use a single stop, such as downtown, it may be necessary to have "near-side" stops, where bus stops are located in advance of the intersection, to allow more bus queuing space. In general, however, "far-side" stops, where the stop is beyond the intersection, are beneficial, for several reasons. Motorists are not tempted to turn in front of the bus while it is stopped, the bus does not risk waiting through another signal cycle, delaying its run, and pedestrians crossing the roadway at the intersection are more visible. One significant downside of far-side stops, though, is that if the bus must wait at a traffic signal before reaching the stop, riders are apt to want to exit immediately rather than waiting.

Curb- or parking lane-adjacent bikeways, whether traditional bike lanes or buffered bike lanes, may conflict with bus movements as they pull into and out of designated bus stops. Bus operators must be conscious of bicycling traffic, and people biking must be careful to anticipate such movements if traveling alongside or immediately behind moving buses. Furthermore, off-street cycle tracks can conflict with boarding areas and stop facilities, such as seating, signage and shelters.

To resolve these conflicts, transit agencies and public works departments have collaborated to build "floating bus stops," which allocate space behind bus stop facilities for bike movement. This design allows buses to pull into and out of stops without crossing bike lanes, and permits people biking to continue past bus stops without yielding to moving or stopped buses, though they must yield to bus passengers crossing the bikeway. These treatments require adequate width between curb lines and property lines to accommodate the bus stop and off-street bikeway in addition to a sidewalk. Communities tend to target floating bus stops on corridors with high rates of bicycling ridership and transit frequency.

Refer to the Tyler Transit Study for further guidance regarding transit as well as corridor/intersection specific transit recommendations.

Pedestrian Connectivity

Equally important to transit operations is ensuring riders can get to and from the stops. Every transit rider is also a pedestrian at the beginning and end of their trip, and sidewalks and connectivity to transit stops can have a great influence on people's willingness to take transit. Accordingly, pedestrian-realm improvements should be part of any discussion of transit service. Sidewalks should be complete and well-maintained, particularly along transit corridor streets and near major ridership draws such as schools and employment concentrations. Tyler's Unified Development Code (UDC) requires sidewalk construction on both sides of streets (Section 10-230), but this only took effect in March 2000. There may be numerous streets constructed prior to this date that lack sidewalks on one or both sides.

We recommend establishing a policy of preferencing sidewalk repair and construction in potential heavy-use areas as listed above, per the UDC's desire that residential areas have "direct access to all neighborhood facilities, including the elementary school, parks and playgrounds, religious institutions, and shopping centers." We further recommend enhancing these pedestrian realms whenever possible, with additional shade, improved street lighting, and wide sidewalks.

Reference the Tyler Transit Study that will provide recommendations and transit design elements that are more corridor specific than what has been provided in the Tyler Master Street Plan.

Level of Service

Traffic congestion is a performance measure or indicator that is analyzed to determine necessary improvements along corridor. Congestion is determined using a capacity analysis or level-of-service (LOS) calculation that defines the volume of traffic that can be accommodated by the roadway. Roadway LOS is based on a number of factors including traffic volume compared to facility capacity, travel time, distance, road conditions and safety hazards. Roadway LOS can be measured along the corridor, at an intersection, a road segment or traffic analysis zone.

LOS is a tool that is used to quantify traffic congestion along specific roadways within the entire transportation network. LOS is determined by dividing the peak hour traffic volume by the available capacity (V/C). As represented in **Figure 23**, Roadways are designated from LOS A (free-flowing) to LOS F (congested, forced flow condition). Generally, LOS C/D are acceptable levels of service whereas LOS E/F are considered "failing" and roadway volumes are typically higher than the actual roadway capacity. This roadway network performance measure helps to balance where the demand exceeds the supply to determine if additional capacity is needed or if it can be reduced.

Level of Service	Description	Volume-to-Capacity Ratio
A	highest driver comfort; free flowing	< 0.60
B	high degree of driver comfort; little delay	0.60 - 0.70
C	acceptable level of driver comfort; some delay	0.70 - 0.80
D	some driver frustration; moderate delay	0.80 - 0.90
E	high level of driver frustration; high levels of delay	0.90 - 1.00
F	higehst level of driver frustration; excessive delays	> 1.00

Figure 23. Level of Service Criteria

Connectivity

Multiple Points of Access

In the design of new subdivisions, a limited number of access points is often considered a selling point in terms of security. This is especially true for gated communities, where each access point also requires a large capital and operating expense. Nevertheless, limited access is at odds with both congestion management and emergency response, by deliberately creating a bottleneck. A subdivision with only one point of entry concentrates all its traffic at one point on one arterial, often demanding a traffic signal, and creating a congestion hotspot. Higher VMT is also generated, along with its associated air quality impact. Finally, emergency response is lengthened when routes are more indirect than they need be, and a single vehicle crash, downed tree, or other situation impacts a larger number of people, and can even block their access entirely.

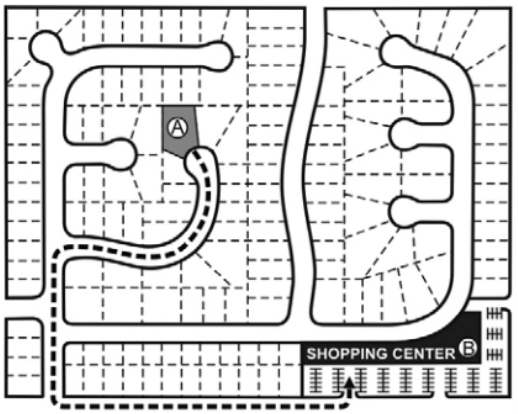
For these reasons, many cities restrict the number of properties or house lots per point of access. Tyler's Unified Development Code (UDC), Section 10-167, has an identical requirement of cul-de-sacs not exceeding 600' without a variance. Currently, the UDC's Section 10-187 addresses multiple points of access, with subdivisions of up to 60 lots requiring only one point of access, 61-120 lots a second point, and 121 or more lots three points. A divided 4-lane boulevard is allowed to count as two access points.

However, Section 10-102 of the UDC, pertaining to General Requirements of Access, does not refer to these multiple points of access, except that "All subdivisions must have adequately designed access or approach as approved by the development services engineer." Article IV, Division C, which sets out design standards for entry areas to gated communities, also makes no mention of requirements for multiple access points based on the development size. It is recommended that these sections have explicit references added to UDC Section 10-187.

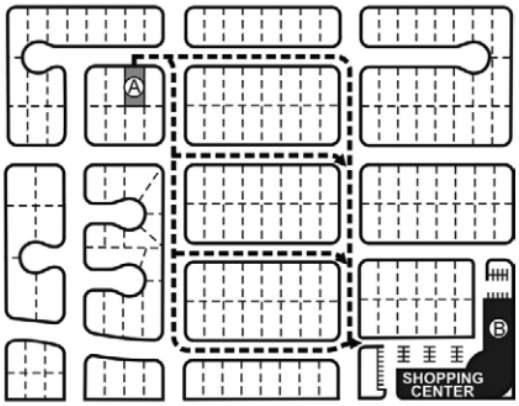
Furthermore, it is beneficial to have rules about block length, which can also ensure multiple access points and better connectivity within larger developments. Figure 24 represents a well connected roadway network that allows for greater trip choice and felxibility.

Even if a development abuts vacant land, stub streets are required to be platted to ensure later connections. Currently, Tyler's UDC has similar criteria in Section 10-114, with a block-length limit of 1,200' without Planning Commission approval, and block lengths of more than 600' are "discouraged." Pedestrian access easements are encouraged but not required at the midpoints of blocks over 600'.

It is not recommended that these limits be changed; they are appropriate metrics and are in line with those imposed by similar cities. The Dallas city code, Section 51A-8.504 sets a maximum block length of 1,200', the same as Tyler. Longview's Unified Development code mandates a maximum block length of 600' within a subdivision and 900' along a subdivision boundary, again similar to Tyler's requirements.



(A) Conventional suburban hierarchical network.



(B) Traditional urban connected network.

Figure 24. Connected Street Network
(Source: ITE Designing Walkable Urban Thoroughfares)

A connectivity ratio can also be calculated by dividing the number of street links (sections between intersections) by the number of street nodes (intersections). A minimum ratio is established based on the amount of connectivity desired. These standards are effective at creating connectivity but challenging to measure.

Spacing

In much of the U.S., particularly in the west, land was surveyed on a system of one-mile grids. This is the basis for many cities having major arterials at roughly a one-mile spacing. A one-mile grid, with typical suburban or general urban densities, would result in the need for 4- to 6-lane arterials if few other streets provided connectivity. This is generally feasible, but creates heavy traffic on a limited number of roadways (see also the block length and connectivity discussions elsewhere in this plan).

This is the reason for many street plans, including Tyler's, to include collectors and other lower-volume but still connecting streets at one-half or even one-quarter mile intervals. It is preferable to include a tighter grid of proposed streets at first, as topography, existing development patterns, or community desires, will often result in one or more potential street connections not being feasible. But with a full complement of street types, the remaining roadways will be able to adequately handle the typical level of generated traffic, and provide pedestrian and bicyclist connectivity.

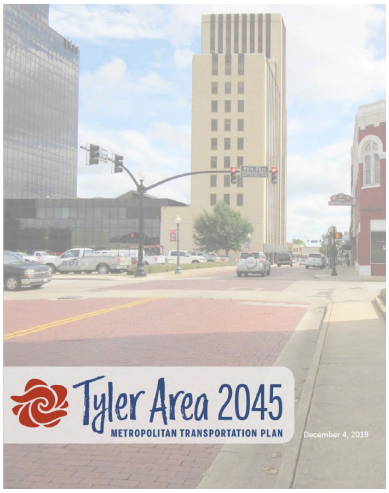
For collector streets in particular, new subdivisions and development areas will typically not have every local street connect to a regional arterial, but will have a major or minor collector draw traffic from the neighborhood and connect to the arterial with a traffic signal. Some balance of this is necessary so as to not violate the standards of connectivity discussed above, as in general shorter block lengths and greater connectivity of the street grid is beneficial for traffic and even more so for pedestrians and bicyclists.

In most cases, collectors are shown on a thoroughfare plan at one-quarter or on-half mile spacing, in between the larger grid of arterials, but considerable leeway is given to developers as to the exact configuration within their development, as long as connectivity to arterials and adjacent neighborhoods is maintained. Discretion can given to the Planning Commission to approve modifications to planned collector alignments, for example, as long as the endpoints remain the same. Collectors typically do not serve long-distance travel (that is the role of arterials and freeways) and their function, as discussed elsewhere in this narrative, is largely a balance of short-distance trips and access between local streets and major roadways.

Appendix

Previous Plans Review

Tyler Area 2045 Metropolitan Transportation Plan, 2019



The MTP process is conducted by the MPO in coordination with Texas Department of Transportation (TxDOT), transit operators, numerous stakeholders from throughout the region, and the public to create a vision for the future of the community. It prioritizes short- and long-term investments in the regional transportation system over the next 25 years through analysis, collaboration with planning partners, and a proactive public participation process that involves all users of the transportation system.

The MTP has a planning horizon of 2020 -2045. The planning area for the Tyler Area 2045 MTP encompasses much of Smith County, Texas, overlaps IH-20 and includes Arp, Bullard, Hideaway, Lindale, New Chapel Hill, Noonday, Troup, Tyler, Whitehouse, and Winona.

Goals and Objectives :

Goal	Objective
Improve Transportation Efficiency	Promote the efficient use and preservation of the multimodal transportation systems and infrastructure;
Improve Safety	Improve safety on the transportation system by developing projects that reduce hazards and improve travel conditions for all transportation users;
Improve Network Continuity	Develop transportation facilities that ensure network continuity throughout the region, providing multimodal choices and a proper balance of freeways, expressways, major and minor arterials, collectors, and local streets in coordination with the county-wide 2012 Master Street Plan and other local plans;
Improved East-West Connections	Develop adequate thoroughfares for improved east-west movements through the Tyler Area and preserve existing neighborhoods by discouraging through traffic on local and collector streets;
Improve Public Transportation	Provide for improved transit services, including local bus service, commuter bus service, and passenger rail transportation;
Improve Cycling	Develop a network of bicycle facilities that is safe and accessible, and provides connections between residential areas and activity centers;
Improve Walking	Develop improved pedestrian facilities, such as sidewalks and trails, that connect residential areas to activity centers, schools, and transit services;
Improved Access	Accommodate future land development to provide access for all transportation users based on Complete Streets principles and with acceptable levels-of-service;
Rail Preservation	Promote the development and preservation of the area's rail system to support commercial businesses and maintain existing rail right-of-way;
Improve Airport Access	Develop Tyler Pounds Regional Airport into a regional hub for air transportation and improve mass transit access to the airport;
Improve Land Use Goals	Maintain consistency with adopted land use plans and ordinances;
Improve Environmental Stewardship	Support transportation projects and activities that will protect the environment and promote energy conservation;
Improve Security	Encourage transportation investments and policies that result in a higher level of security for motorists, transit users, pedestrians, and bicyclists.

City of Tyler Capital Improvement Plan FY 2017-22

The CIP identifies and prioritizes projects within the City of Tyler into yearly plans based on principle and technical categories. The CIP is developed during the City's annual budget process. This is a 5-year plan where projects are added based on an objective scoring criteria. Additional projects are prioritized and placed on the next year's schedule as funding becomes available.

Projects that impact Transportation:

FY 2019-2021 – Cambridge Road Improvements

- Description: Project consists of widening existing 5,520 lf of 20' wide street to 2 lane 40' F-F Major Collector. There is 20' of existing pavement. Project also includes addition of 20' of right-of-way and 1 bridge.
- Roadway is too narrow to function well as a collector. Lack of curb and gutter is causing flooding and drainage issues. Received numerous calls and emails regarding this project and wanting to see the project moved up the list. Safety is the most commonly stated concerns of those that responded.

Future – Earl Campbell Parkway Extension

- Description: Construct 9,600 LF of concrete minor arterial with raised medians and bike lanes. Will require right-of-way for entire length. Will require a bridge over the RR.
- Connectivity for the traveling public. Citizens have requested this as a connection to Bellwood Lake.

Smith County Road and Bridge CIP, 2017

The Smith County CIP process began with a Road & Bridge Recommendations and Findings study that was complete in 2016. The CIP has since been updated twice, the most recent being in August 2017. The CIP is divided into two phases with three years each. A total of 86.6 miles of roadway will undergo major reconstruction and widening, 334.4 miles of roadway will experience HMAC overlay and reconstruction, and 278.3 miles of roadway will have miscellaneous roadway improvements completed.

Socio-Economic Inputs For 2025 Tyler Area MPO Travel Demand Model

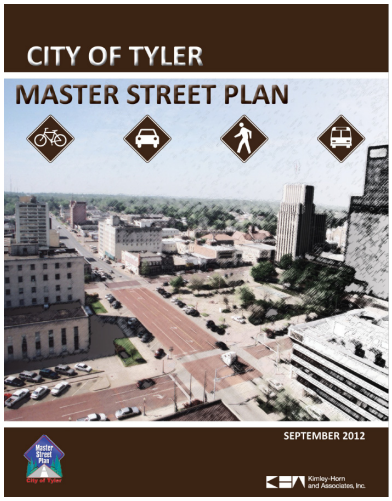
This study was conducted to obtain the socioeconomic characteristics forecast to be used in the travel demand model. It included the socioeconomic characteristic estimates for 2002 and forecasts for 2007, 2012, 2020, 2030, and 2035.

Table 1 - Socioeconomic Characteristic Control Totals

Socioeconomic Characteristic	2002	2007	2012	2020	2030	2035
Population	181,826	198,875	211,038	220,356	240,474	253,313
Household Size	2.65	2.58	2.57	2.56	2.54	2.53
Median Household Income (Year 2000 Dollars)	37,641	38,476	39,330	40,736	42,564	43,509
Basic Employment*	25,908	27,917	28,238	29,841	32,772	34,164
Retail Employment*	18,331	19,768	20,772	22,000	23,977	25,018
Service Employment*	47,976	52,709	55,046	57,828	63,124	66,001
Total Employment*	92,215	100,394	104,056	109,669	119,873	125,183

*Employment estimates based on covered employment as reported by Texas Workforce Commission.

City of Tyler Master Street Plan, 2012

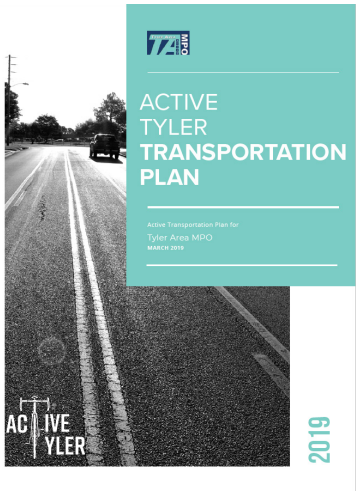


The 2012 MSP is an important tool in facilitating orderly urban and rural development in the community for the next 20 to 40 years. The 2012 plan expanded the MSP study area to include all of Smith County. The plan serves as a long-range thoroughfare plan that identifies the location and type of roadway facilities that are needed to meet projected long-term growth. It is not a list of construction projects but serves as a tool to use in facilitating the preservation of future corridors. The MSP uses four context zones for major/minor arterials and collectors including Urban Core, General Urban, Suburban, and Rural. This allows for context sensitive roadway design to be utilized. The guidelines of this study included: 2020, 2030, and 2035.

- Preservation of existing roadway alignments and adequate rights-of-way for future long-range transportation improvements;
- Minimizing the amount of land required for street and highway purposes;
- Identifying the functional role of each street should be designed to serve in order to promote and maintain the stability of traffic and land use patterns;
- Ensuring continuity of the thoroughfare system and connectivity for all east-west and north-south traffic patterns;
- Maximizing mobility while minimizing the negative impacts of street widening and construction on neighborhoods and the overall community by recognizing where future improvements may be needed and incorporating thoroughfare needs;
- Making efficient use of available resources by designating and recognizing the corridors that will likely require improvements;
- Providing ample opportunity for public participation and community feedback to ensure proper roadway classifications, alignments and roadway design standers. Informing citizens of the streets that are intended to be developed as arterial and collector streets, so that private land use decisions can anticipate which streets will become major traffic facilities in the future and;
- Providing information on thoroughfare improvement needs, which can be used to determine priorities and schedules in the City's Capital Improvement Program (CIP).

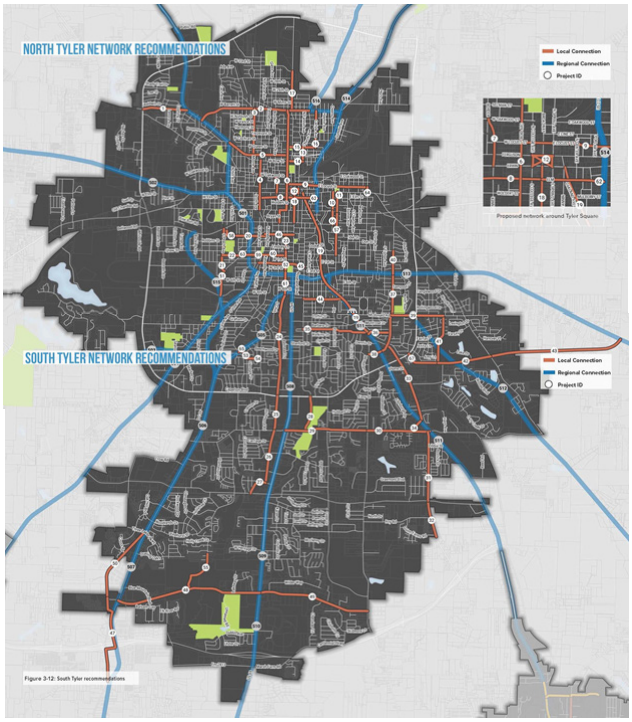
The plan includes a street context map as well as the Master Street Plan Map that includes the location and classification of existing and future roadways. A bicycle and trail plan was also a part of this study. Proposed roadway cross sections were also developed by context area. Within each context area, a different set of design criteria are specified for each roadway classification.

Active Tyler Transportation Plan, 2019



The Active Tyler Transportation Plan, adopted in 2019, guides transportation investments to encourage active transportation. The goals of the plan are to "encourage active transportation as a mode choice, educate people about the benefits of bicycling and walking, create a vision for a network of bicycling and walking facilities [and] identify a path for success." At the time of plan adoption, five miles of existing bike lanes existed within the City of Tyler and limited existing infrastructure served the communities of Arp, Bullard, Noonday, Lindale, New Chapel Hill, Troup, Whitehouse, and Winona.

The stakeholder outreach conducted for this plan utilized a two-prong approach that engaged people already using existing active transportation in addition to engaging a broader segment of the population through interactive workshops, traditional open house meetings, pop-up events, and online engagement. General feedback received from the public includes a desire to bike and walk in the greater Tyler area, but people have concerns about safety conditions and the lack of connections to trails and off-road facilities.



Combined with the existing conditions findings and stakeholder feedback, the recommended facility network was also informed by analyses that measured demand, bicycle traffic comfort, pedestrian activity, and equity. Recommendations generally are categorized as

- Regional connections: Long distance routes that may connect several communities and contexts.
- Local connections: Shorter distance connections within a municipality that should consider both bicycle and pedestrian facilities based upon the context and typology of the street.
- Sidewalk connections: Pedestrian connections that increase walkability and provide access.

The recommended local projects also underwent a prioritization process that involved assigned weighted scores. Both bicycle and sidewalk prioritization methods included equity, public input, and transit factors; bicycle prioritization factors further included mobility, connectivity, safety, and cost while a sidewalk prioritization factor examined “walk friendly” zones. As a result, the Project Lists tables in Appendix A includes a designated bicycle and pedestrian “tier” for each local roadway project, ranging from Tier 1 to Tier 3. As the recommended network does not offer specific street designs or facilities, the plan provides a facility selection process and generalized design guidelines to provide flexibility for implementation that is adaptable to each jurisdiction and local conditions. The Context-Typology-Facility Matrix identifies appropriate facility types for each combination of land use contexts and roadway classifications for different route segments within the recommended network. The plan does not specify roadway sections for each of these facility types.

Additionally, the plan outlines local funding sources, special purpose districts, state funding, and federal funding sources to be considered for implementation. Lastly, the plan includes a list of performance measures to indicate progress and success. These performance measures include education, encouragement, connectivity and access, implementation and maintenance, and safety and data.

City of Tyler Comprehensive Plan, Tyler 1st Vision

Tyler 1st is the City's comprehensive plan that was originally adopted in 2007. It underwent an update in 2013 and is currently in the final stages of another update. The 20-year plan creates a strategic framework for future actions for the City and acts as a roadmap as the City continues to grow. It addresses downtown revitalization, historic preservation, parks and recreation, transportation, and housing and neighborhoods. It defines a vision for the future linked to overall goals and policies.

Plan Principles:

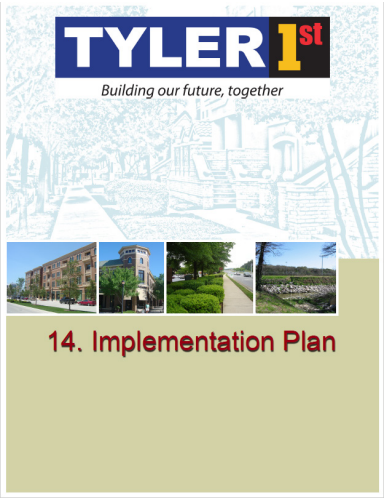
Promote Balanced Growth

- Enhance links to I-20 and Toll 49
- Enhance infrastructure in targeted growth areas/priority annexation areas

Provide Transportation Options

- Encourage continuous bicycle and pedestrian routes and trails that connect city destinations.
- Adopt land use strategies that create higher-density, mixed-use clusters of "transit-ready" development that can support expansion of the public transportation system.
- Plan for and preserve potential new transportation corridors and work with regional partners to support efficient transportation options throughout East Texas.
- Emphasize links within the city via multimodal connections with the airport, rail, and bus services.
- Accommodate regional traffic flow by proactively planning for future corridors and alternate routes and connectivity options.
- Identify and develop specific gateways.

City of Tyler Comprehensive Plan, Implementation Plan

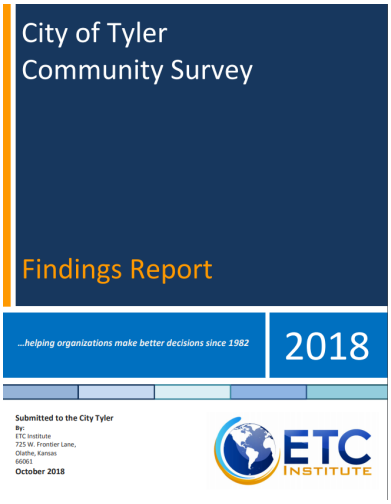


This section primarily focuses on tools and specific activities that are needed to implement the Tyler 1st Plan and overall stewardship of the plan to keep it useful and current. The first three sections provide a general discussion of the tools needed to advance the plan, focusing especially on zoning and on urban design. The fourth section describes ways to incorporate the Plan into day-to-day decision making and to assess progress and make needed revisions so that the Plan remains relevant. The last section of this chapter is a set of action plans corresponding to each of the plan elements. Although there is more detailed focus on actions that the City can take to implement the plan, many actions will also need the participation of private sector partners.

The section also provides implementation matrices developed to provide more specific guidance about how to put the plan to work and begin transforming ideas into action. The plan has a long-term horizon, looking ahead to 2030, but it also includes several short- and medium-term actions that are necessary prerequisites to long-term results. Each action plan includes goals, outcomes, strategies and actions responsible parties a target timeline and potential resources.

City of Tyler Community Survey 2018

In the summer of 2018, ETC Institute administered a survey to residents of the City of Tyler. The purpose of the survey was to help the City establish priorities for infrastructure, parks, recreation, facilities, programs and services within the community. This report contains an executive summary of the methodology for administering the survey and major findings with charts showing the overall results for most questions on the survey and trend data from the 2006 and 2015 community surveys. It also contains GIS maps and tables that show the results of the random sample for each question on the survey and includes a copy of the survey instrument.



Tyler Unified Development Code, 2019

The UDC outlines the street design standards for the City of Tyler as well as guidance on street connectivity, private streets alleys, ways, and driveways, sidewalks, thoroughfare closure, and traffic impact analysis.

Minimum thoroughfare paving widths:

Type	Classification	Row Width	Face To Face	Residential Lot Capacity
	Cul-De-Sac	55'	28'	Cul-de-sacs
F	Residential	55'	28' [1]	Less than 60
E	Collector Residential	60'	32'	60 or more
D	Commercial Street	60'	40'	
C	Collector Major	70'	40' [2]	
B	Arterial Minor	105'	78'	
	Arterial Minor W/Bike Lane	115'	88'	
A	Arterial Major	130'	101'	

Sidewalk Requirements:

Street Type	Street Name	Sidewalk Required	Minimum Sidewalk Width	Location of Sidewalk	Sidewalk Alternative
	Cul-de-Sacs	No			
F	Residential	Yes	4 ft. [a]	Both sides @ 5 ½ ft. back of curb	Yes Master Plan [b]
E	Collector-Residential	Yes	4 ft. [a]	Both sides @ 5 ½ ft. back of curb	Yes Master Plan [b]
D	Commercial Street	Yes	4 ft. [a]	Both sides @ 5 ½ ft. back of curb	Yes Master Plan [b]
C	Collector	Yes	4 ft. [a]	Both sides @ 9 ½ ft. back of curb	[c]
B	Arterial Minor	Yes	4 ft.	Both sides @ 4 ft. from ROW	[c]
A	Arterial Major	Yes	4 ft.	Both sides @ 19 ½ ft. back of curb	[c]

This page intentionally left blank.


Tyler Area
TA
MPO