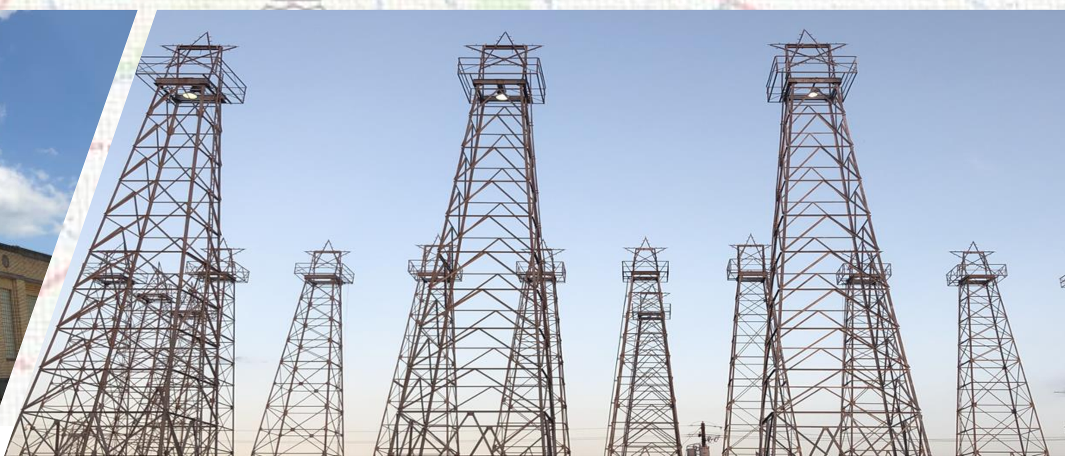
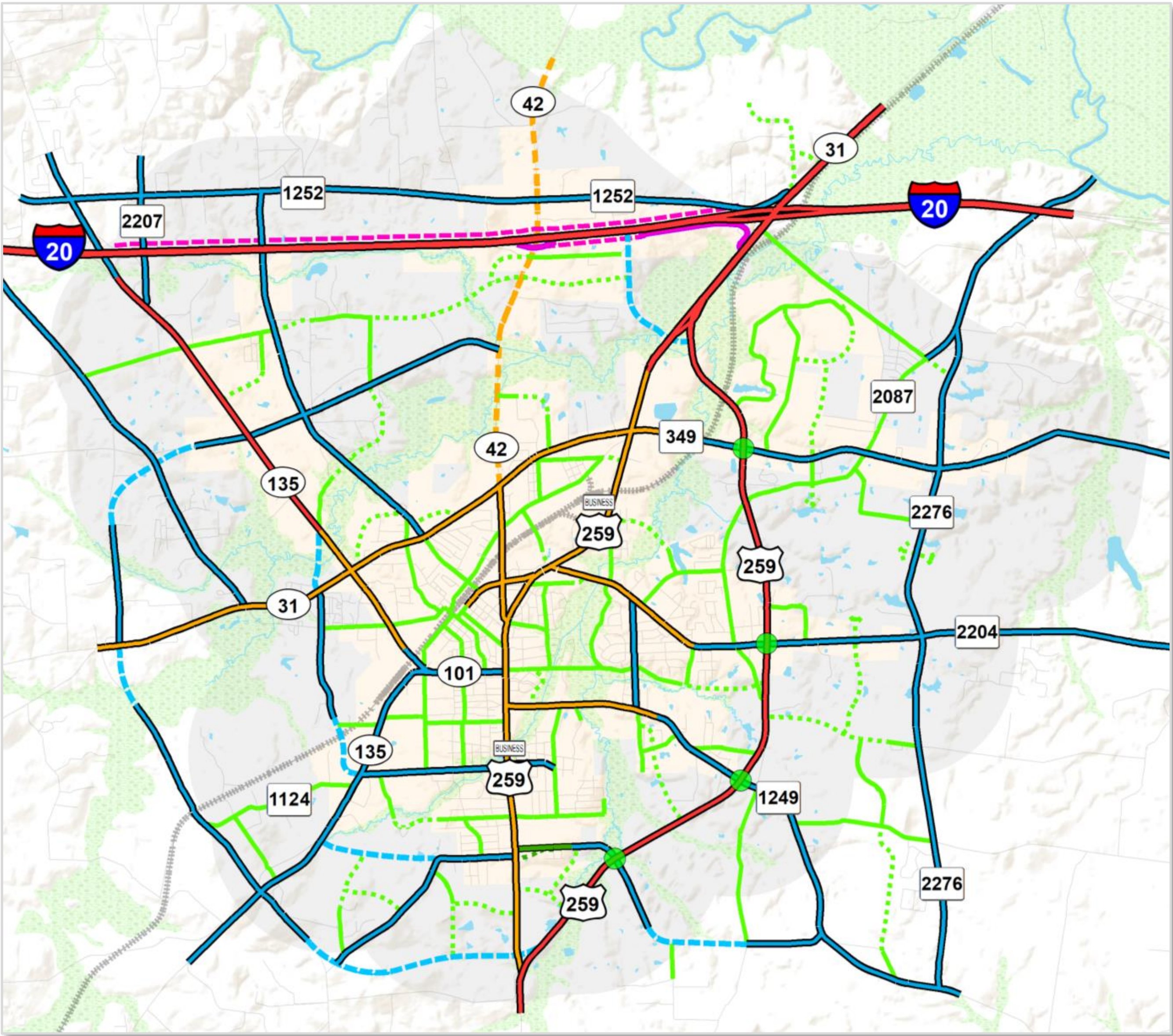
KILGORE
THE CITY OF STARS

Thoroughfare Plan

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Introduction

Introduction

The Kilgore Thoroughfare Plan is intended to create a cohesive vision for Kilgore, provide key strategies to alleviate current transportation issues, such as congestion, and formulate strategies to act as a guide for future development.

The Transportation element of the Kilgore Comprehensive Plan is intended to serve as a guide for transportation decisions within the City. It was developed based upon previous transportation planning efforts, available transportation data, detailed transportation planning analysis, and with the collaboration and cooperation of key stakeholders and input from the City Staff and residents.

This Plan should be referred to when considering a wide range of decisions related to both transportation and land use. Transportation decisions do not exist within a vacuum but are directly related to decisions regarding land use and building form. Therefore, the ultimate objective of this Plan is to create a balanced transportation system within Kilgore which provides for the safe mobility of residents, considers both current and future needs, enhances connectivity and mobility options, and promotes a more livable community through a proactive approach to the City's appearance.

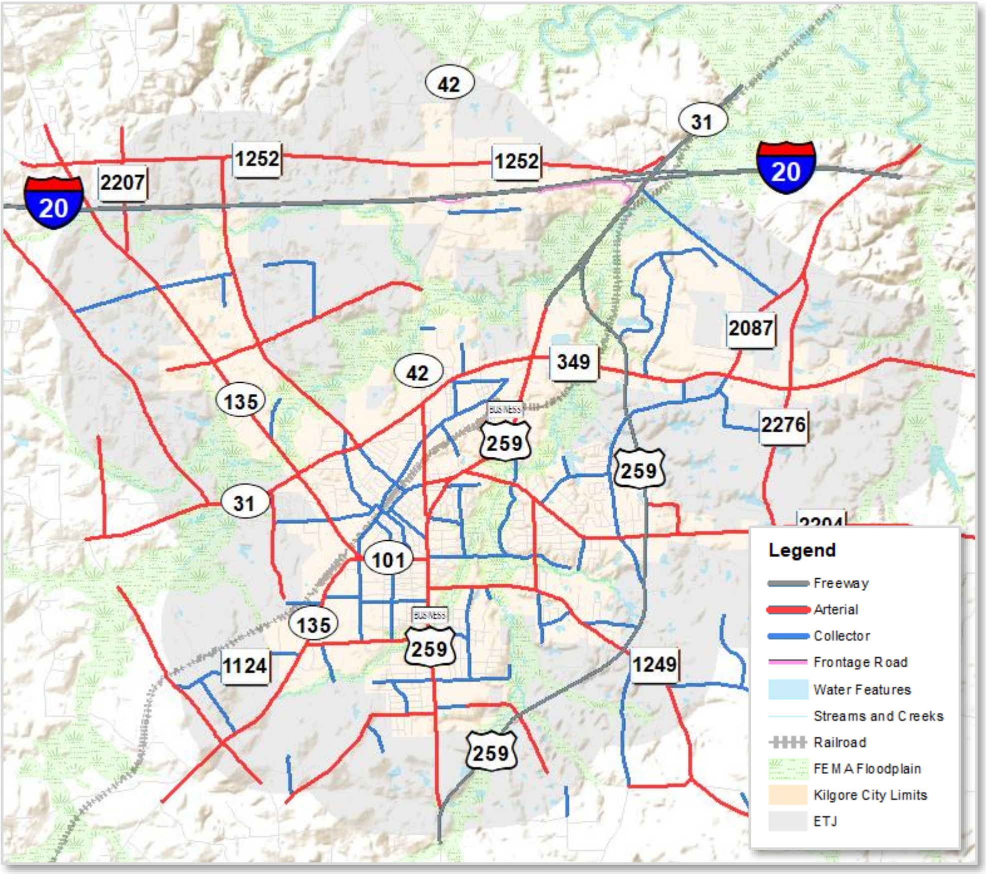
Study Area

Kilgore is located in east Texas, just off IH-20 between Dallas-Fort Worth and Shreveport, Louisiana, and just southwest of Longview, Texas.

Kilgore is well known as an historic 1930's oil boomtown and boasts the famous Kilgore Rangerettes drill team, the Texas Shakespeare Festival, and the World's Richest Acre historical landmark.

The City has several major roadways that comprise the backbone of its transportation network. The largest of these facilities is IH-20 to the north as well as BUS 259, which bisects the City from north to south along with SH 42. Other major roadways include US 259 (which acts as an eastern loop around the City), SH 31, SH 135, FM 349, FM 1249, and FM 2204.

Figure 1: Kilgore Study Area



PLANNING PROCESS

The planning process was broken into three distinct phases, which include;

PHASE 1: PLAN INPUT

This phase included obtaining and incorporating initial comments from the public and stakeholders to identify key issues that need to be discussed in the plan. This information was used to create a set of goals and objectives to develop the thoroughfare network. Tasks under this phase included compiling relevant planning and capital programming efforts to ensure consistency with long-term system improvements as well as assessing existing network conditions.

PHASE 2: PLAN DEVELOPMENT

Plan development includes evaluation of future needs using the regional travel demand model as well as data from the Longview and Tyler MPOs as appropriate. The thoroughfare plan coordinates with future land use and housing plans of the 2030 Comprehensive Plan to ensure system compatibility and connectivity. Location of land uses, type, density and intensity were included in the evaluation. Future major employers, significant population concentrations, and community amenities were also considered. Development of the thoroughfare plan was coordinated with the downtown plan, and updated to address connectivity, community needs, and the long-term requirements for efficient and effective network development. Arterial roadway classifications and design standards were also updated. Additionally, considerations such as access coordination and median treatments were discussed.

PHASE 3: ACTION PLAN

The Action Plan provides a list of short-term and long-term recommended actions for implementation of the thoroughfare plan and will include roadway needs and policy and program considerations. Short-term actions are less than 10 years, with long-term actions ranging from 10-20 years.

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Plan Input

PUBLIC / STAKEHOLDER INPUT

Input from key stakeholders during the Comprehensive Plan Advisory Committee Kick-Off meeting on July 16th and the City Staff Charette on July 17th, 2019 provide guidance and how the plan should be developed. Listed below are key comments received. Due to their relevance, not all these concerns are addressed in the Thoroughfare Plan. Responses to each of these concerns are listed in Appendix A.

Transportation Issues

- Lack of east-west connectivity.
- Floodplains restrict roadway network development along SH 42 and IH-20.
- Need for IH-20 service roads to spur development.
- Access to Synergy Park.
- Too many large driveways spaced too close.
- Curb and gutter issues, with a need for flexibility in transitional areas.
- Concern that concrete roads don't work in Kilgore.
- On-street parking an issue on narrow roadways.
- Trucks have difficulty negotiating existing traffic circle.
- Problems associated truck activity on SH 135 and SH 42.
- Discontinuous sidewalk network, especially around schools.
- Safety issues at intersections at IH-20, SH 31, FM 1252 and US 259.
- Trucks accessing and egressing from landfill causing fatalities.

Planning Issues

- Don't want to have a plan that sits on shelf, want legacy document with an implementation/action plan.
- Want credible process to create a defensible plan that is realistic and achievable.

VISION STATEMENT FOR TRANSPORTATION

The vision statement for transportation is based on the vision statement stated in the 2008 Master Plan with a specific focus on transportation. The purpose of this vision statement is to provide guidance for the development of the Thoroughfare Plan and the future transportation network for the City of Kilgore. The vision statement for Kilgore foresees a;

"well-maintained network of roadways and trails that serves the needs for all Kilgore residents and businesses through the provision of an efficient, effective, and safe transportation system to create a vibrant livable community".

PLAN GOALS AND OBJECTIVES

The goals and objectives are designed to relate directly to principles and strategies promoted by the City of Kilgore while providing more detailed guidance to the long-term development and maintenance of its transportation system.

EXPAND MOBILITY AND ACCESS

Objectives:

- Judiciously improve the capacity and flow of the transportation infrastructure, as appropriate.
- Continuously evaluate existing and planned roadway corridors for future transportation needs.
- Develop roadway streetscape and context sensitive design policies and standards that could enhance multi-modal considerations, connectivity between communities, historic preservation, economic development, and user safety.
- Maintain functional classification and roadway design standards in the City's Thoroughfare Plan.
- Promote system connectivity to adjacent cities and the regional transportation network.

FOCUS ON MAINTENANCE AND FISCAL RESPONSIBILITY

Objectives:

- Maintain and enhance the condition of the existing transportation infrastructure with special consideration for older neighborhoods and rural areas.
- Identify and investigate new pavement technologies and paving systems.
- Continue asset management program to ensure system condition is continuously monitored, maintenance projects prioritized, and the overall network kept in acceptable condition.
- Leverage public and private funding sources to optimize transportation investments.
- Identify and investigate regional, state, and federal funding initiatives to support local transportation programs and projects.
- Include roadway conditions into the ranking and prioritization of roadway projects.

IMPROVE ECONOMIC VITALITY

Objectives:

- Improve access to employment, commerce, education, and community resources.
- Provide for the efficient movement of goods and services.
- Give priority for freight movement in selected corridors, where appropriate.
- Strengthen the integration of transportation and land use.
- Employ roadway design principles that support community identity and wayfinding.

ENHANCE QUALITY OF LIFE

Objectives:

- Exceed federal, state and local air quality standards.
- Embrace principles of streetscapes and context sensitive roadway design where possible.

- Consider a variety of land-use scenarios at select locations to promote active transportation options and improve air quality.
- Ensure safe and efficient routes to schools for pedestrians and cyclists, with preference towards elementary and middle schools.

It is essential that these goals and objectives interface with and support existing plans and policies. Without such support, plans could produce conflicting policies that could negate their benefits and create confusion and conflict amongst local stakeholders.

Consequently, the goals and objectives of the Thoroughfare Plan were designed to directly support the goals of the Kilgore 2030 Comprehensive Plan, which are:

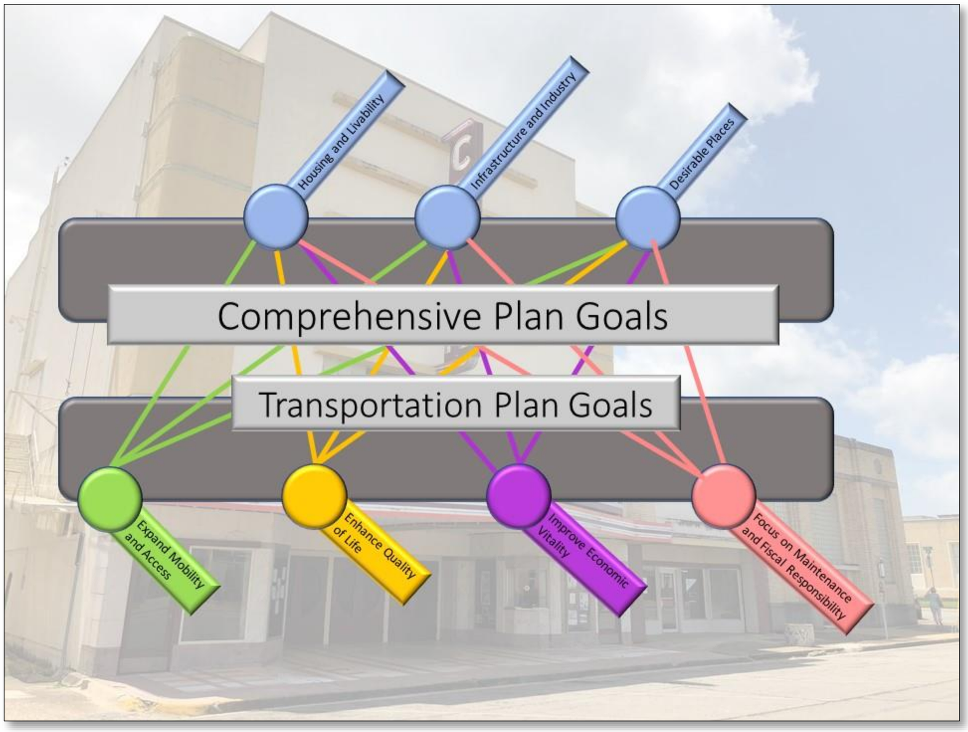
Housing and Livability – Kilgore should be a welcoming community, emphasizing quality of life for all people.

Infrastructure and Industry – Kilgore should be a great location for businesses and development

Desirables Places – Kilgore should be a vibrant city with a strong sense of place.

Maintaining and supporting a robust roadway network that promotes community identity and stresses livability and economic growth mirrors the goals and objective set out in the Comprehensive Plan. Figure 2 illustrates the connections between the principles of the Kilgore 2030 Comprehensive Plan and Thoroughfare Plan goals.

Figure 2: Relationship Between Thoroughfare Plan and 2030 Comprehensive Plan Goals

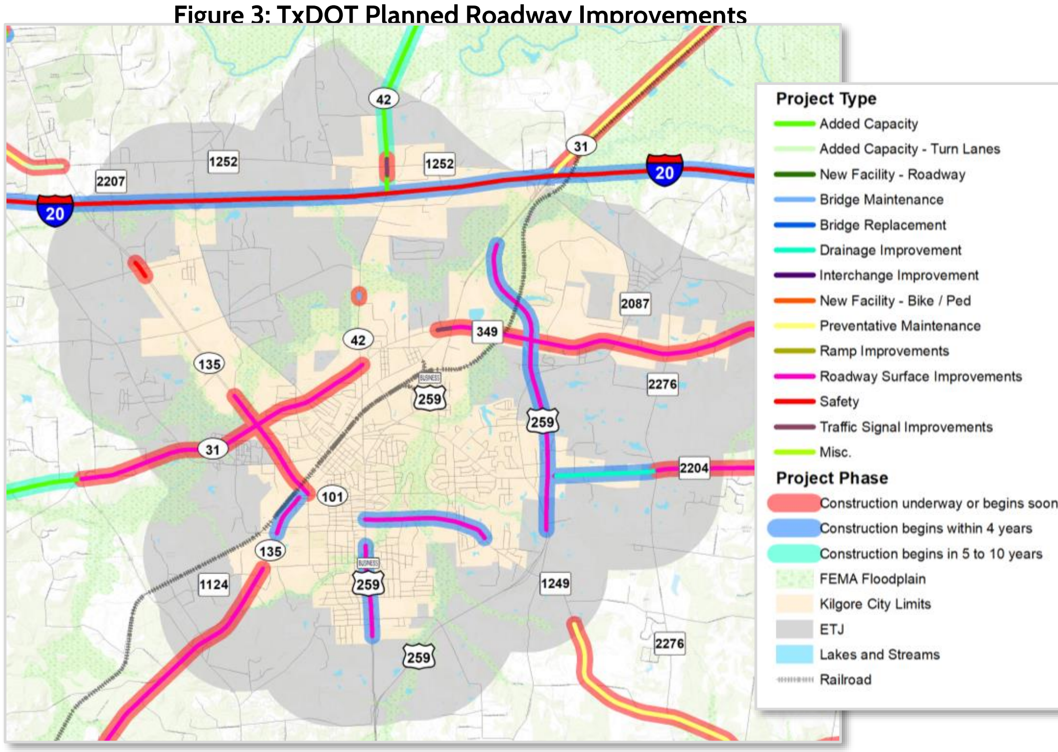


CURRENT PLANS AND CONDITIONS

TXDOT PLANNED ROADWAY IMPROVEMENTS

As shown in Figure 3, the Department of Transportation has numerous roadway projects slated for implementation within next years within the City of Kilgore. The majority of these projects are roadway maintenance or safety improvements, with only one capacity project scheduled for 42 north of IH-20 as well traffic signal improvements at @ FM 1252 and FM 349 @ 259.

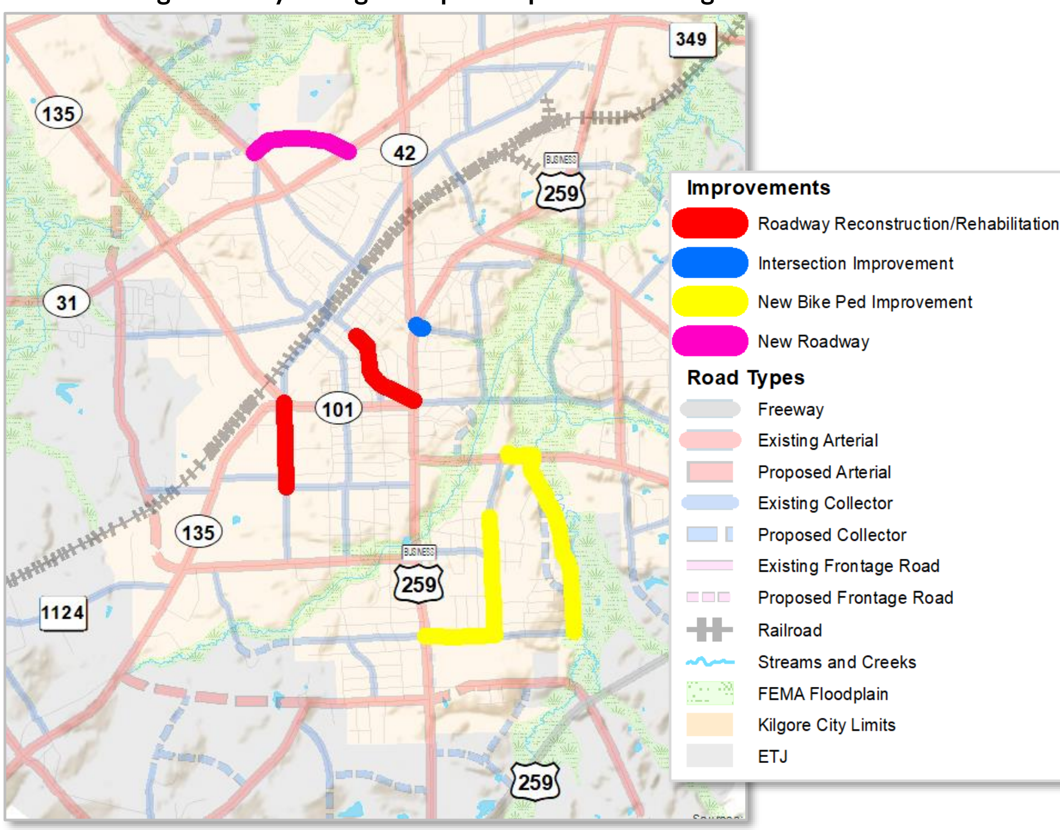
Figure 3: TxDOT Planned Roadway Improvements



CITY OF KILGORE CAPITAL IMPROVEMENT PROGRAM

The FY2019-2024 Capital Improvement Program (CIP) lists several roadway reconstruction and bike/ped system improvements scheduled for implementation (See Figure 4). Note that there are no added capacity projects listed in the current CIP.

Figure 4: City of Kilgore Capital Improvement Program

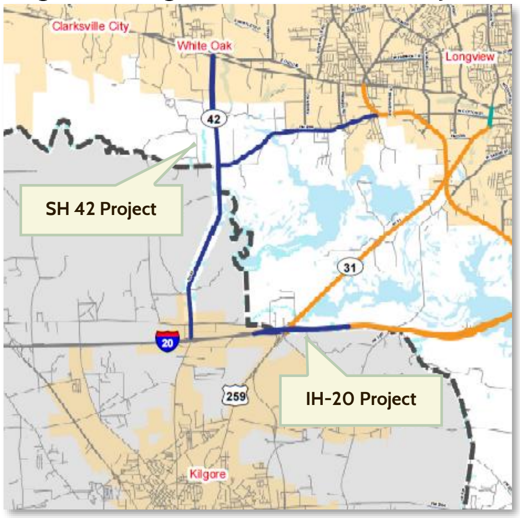


LONGVIEW MPO METROPOLITAN TRANSPORTATION PLAN

As stated in its latest Metropolitan Transportation Plan, MTP 2045, the Longview MPO lists the following projects slated for construction in Kilgore between 2020 and 2029 (See Figure 5).

- IH-20 / SH 31 Interchange improve left exit interchange over Union Pacific Railroad.
- SH 42, from US 80 in White Oak south to IH-20 in Kilgore, widen from 2 to 4 lanes with a center turn lane and curb and gutter.

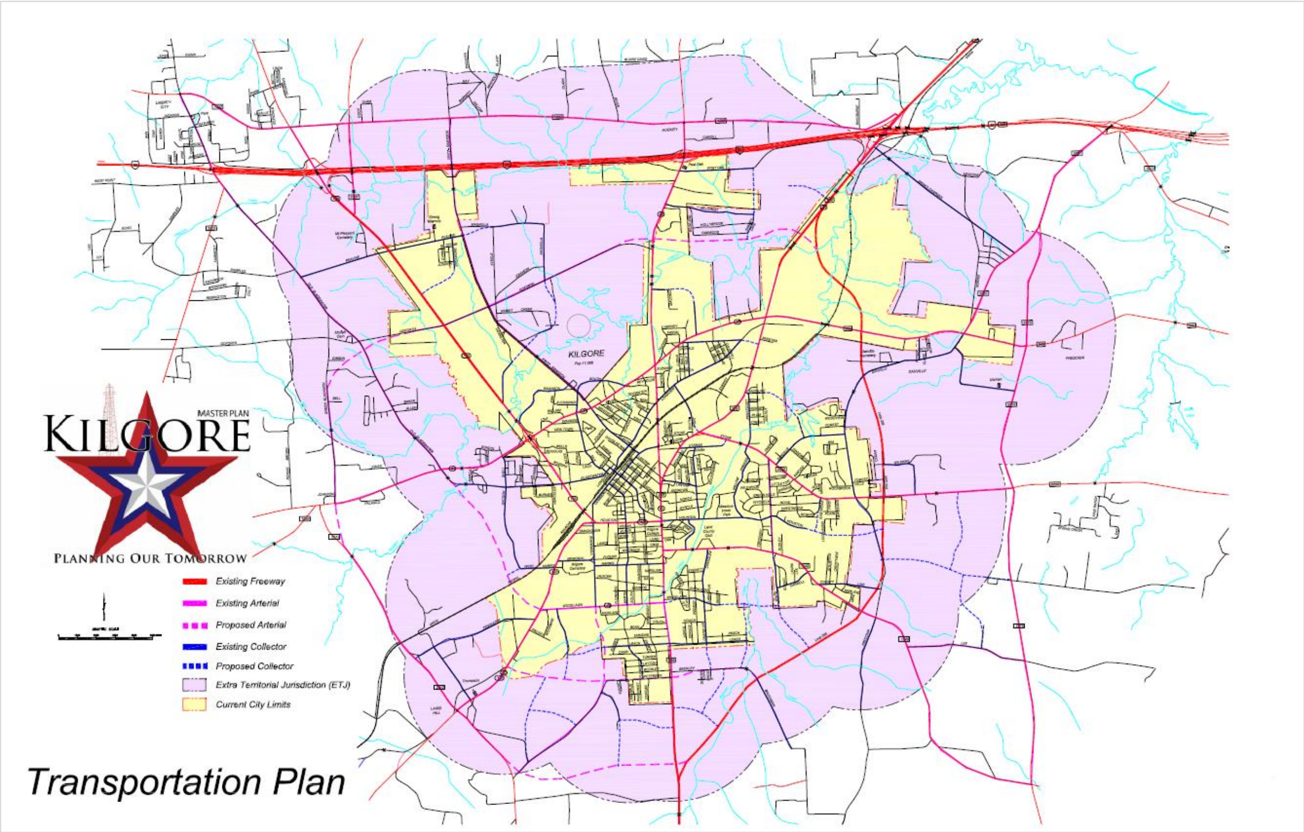
Figure 5: Longview MPO Planned Projects



2008 KILGORE MASTER PLAN

Part of the 2008 Master Plan update included the development of a transportation plan (see Figure 6), which was designed as a visionary document to enable orderly urban and rural roadway development for the next 50 – 100 years in the City of Kilgore. The plan was designed as a long-range plan that identifies the location and type of roadway facilities needed to meet long-term growth and assists the City in preserving future corridors for transportation system development as the need arises but did not prioritize the timing for implementation.

Figure 6: 2008 Kilgore Master Plan - Transportation Plan



The plan listed several objectives it wished to achieve; they were:

- Preservation of adequate rights-of-way for future long-range transportation improvements;
- Making efficient use of available resources by designating and recognizing the major streets that will likely require improvements;
- Minimizing the amount of land required for street and highway purposes;
- Identifying the functional role that each street should be designed to service in order to promote and maintain the stability of traffic and land use patterns;
- 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;
- Ensuring continuity of the thoroughfare system and connectivity between existing and proposed developments;
- Maximize mobility while minimizing the negative impacts of street widening and construction on neighborhood areas and the overall community by recognizing where future improvements may be needed.

Recommendations of the plan included adoption of the transportation plan, accommodation of future amendments and revisions, and updating subdivision regulations.

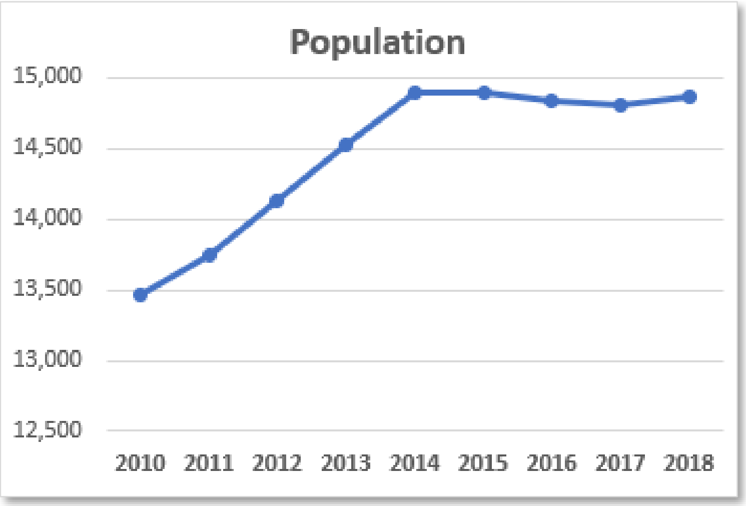
EXISTING CONDITIONS ASSESSMENT

POPULATION

Since 2010, the City of Kilgore has grown by around 1,400 persons, with an annual growth rate of 1.25%. As shown in Figure 7, the largest increase of approximately 1,500 persons occurred from 2010 to 2014, with the total population remaining relatively constant since then.

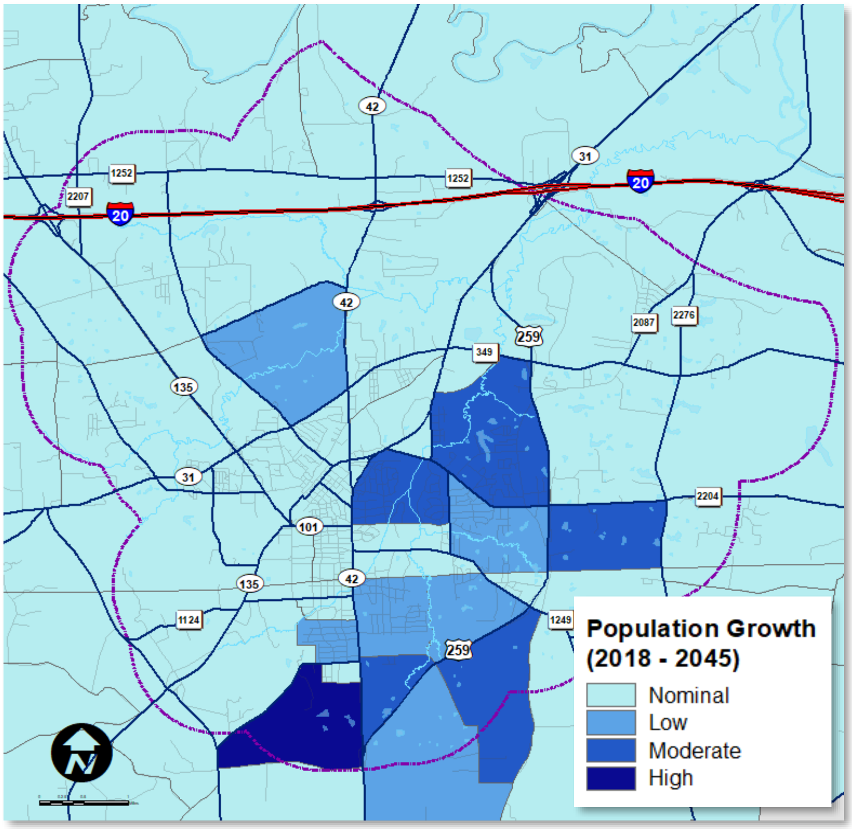
As shown in Figure 8, forecast growth in population is focused mostly in the central and southern areas of the City, with the highest area of growth near the intersection of SH 42 and US 259.

Figure 7: Population Growth in Kilgore (2010 - 2018)



Source: US Census

Figure 8: Projected Population Growth in Kilgore (2018 - 2045)



Source: Longview MPO

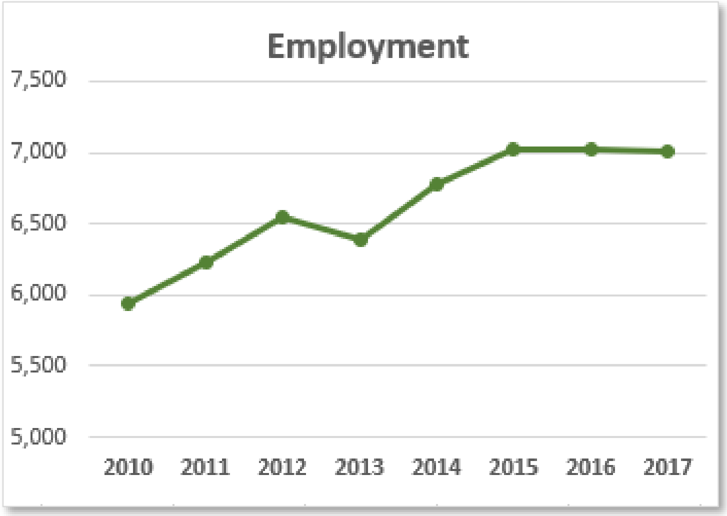
EMPLOYMENT

For employment, the general pattern follows that of population. As illustrated in Figure 9, employment in Kilgore shows a large increase between 2010 to 2015, with a slight drop in 2013. Overall employment has grown by over 1,000 employees since 2010, with an annual growth rate of 2.41%.

As depicted in Figure 10, forecast employment growth shows a much different pattern than population. The highest concentrations of employment growth are adjacent to the SH 31 and IH-20 interchanges with pockets of employment growth scattered to the south. Note that there is little employment growth forecast in the northwestern and southeastern areas of the City.

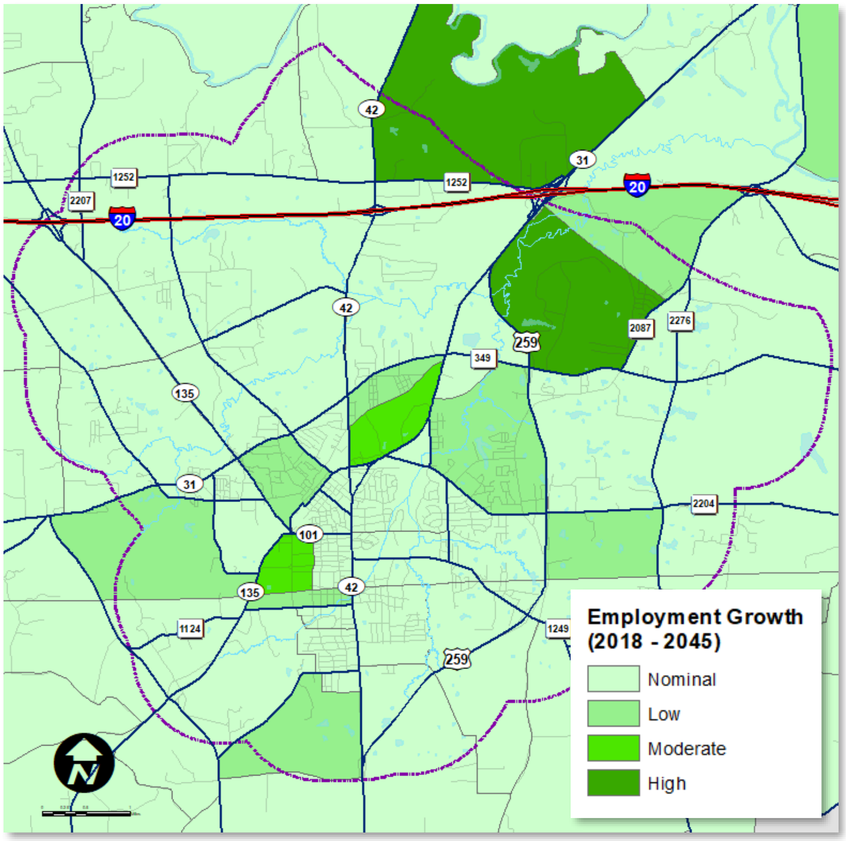
As shown in Table 1 on the next page, major employers within Kilgore focus on local and industrial services.

Figure 9: Employment Growth in Kilgore (2010 - 2018)



Source: US Census

Figure 10: Projected Employment Growth in Kilgore (2018 - 2045)



Source: Longview MPO

MAJOR EMPLOYERS

Table 1: Major Employers in Kilgore

Company	Type	# of Employees	Company	Type	# of Employees
Haliburton Services	Oil and Gas	705	City of Kilgore	Municipal Government	160
Kilgore Independent School District	Public Education	600	BJ Services	Oilfield Services	155
General Dynamics SATCOM Technologies	Satellite and Communications	550	Yamaha / Skeeter Products, Inc.	Recreational	197
Kilgore College	Higher Education Institute	320	Triumph Group	Machined Aircraft Parts & Trans. Equip	122
Region VII Education Service Center	Regional Public Education Service Provider	290	Weatherford International	Oil & Gas Services	112
Martin Midstream Partners, LP	Corporate Headquarters	241	Baker Petrolite	Specialty Polymers	105
Closure Systems International, Inc.	Plastic Closures	227	Ana-Lab Corp.	Analytical Services	99
Cudd Pressure Control	Oilfield Services	225	Allied Waste Services	Solid Waste Management	92
Exterran	Compression Services	197	Permian Tank	Oil Storage & Facility Equipment Manufacturer	85
Orgill, Inc.	Warehouse Distribution	185	Frank's Casing Crew and Rental Tools, Inc.	Oilfield Services	83
Caterpillar	Surface Mining Equipment	184	Surface Equipment Corporation	Pressure Vessel Manufacturer	70
Pak-Sher Company	Plastic Bags	160	Progressive Waste Solutions	District Headquarters, Waste Collection and Disposal	63

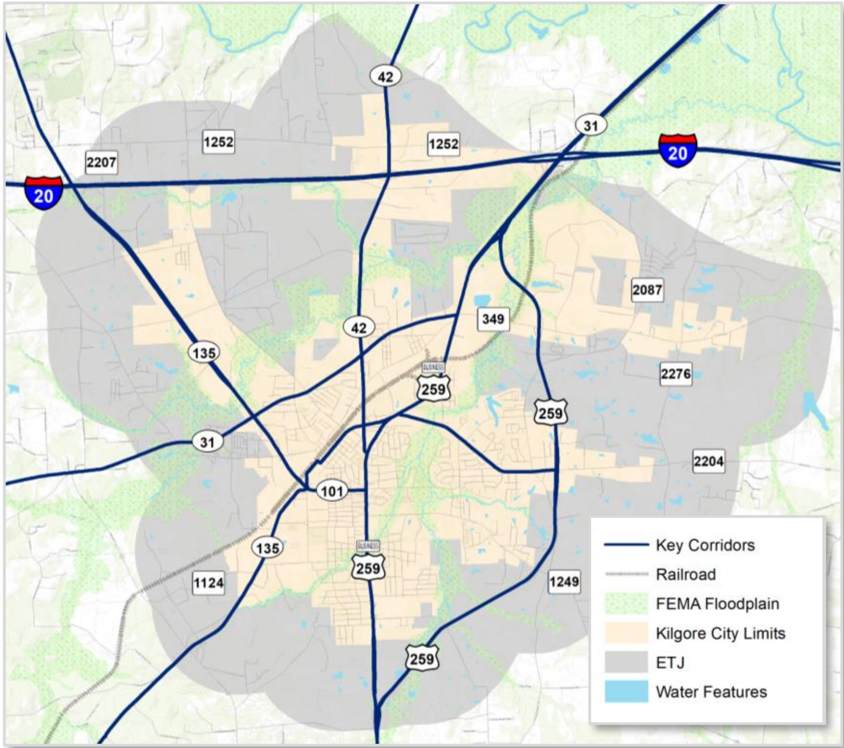
Source: Kilgore Economic Development Corporation

KEY CORRIDORS

The City has several major roadways that comprise the backbone of its transportation network (see Figure 11). The largest of these facilities is IH-20 to the north as well as SH 42, which bisects the City from north to south. Other major roadways include US 259 (which acts as an eastern loop around the City), SH 31, SH 135, FM 349, FM 1249, and FM 2204.

Figure 11 also shows that all the key corridors are on the TxDOT network system and are therefore the responsibility of the State of Texas to operate, maintain, and improve. This poses significant issues, as the City is often held accountable for issues associated with the TxDOT system. It is therefore recommended that the City work with TxDOT to define appropriate operational enhancements, other safety considerations, and access management treatments.

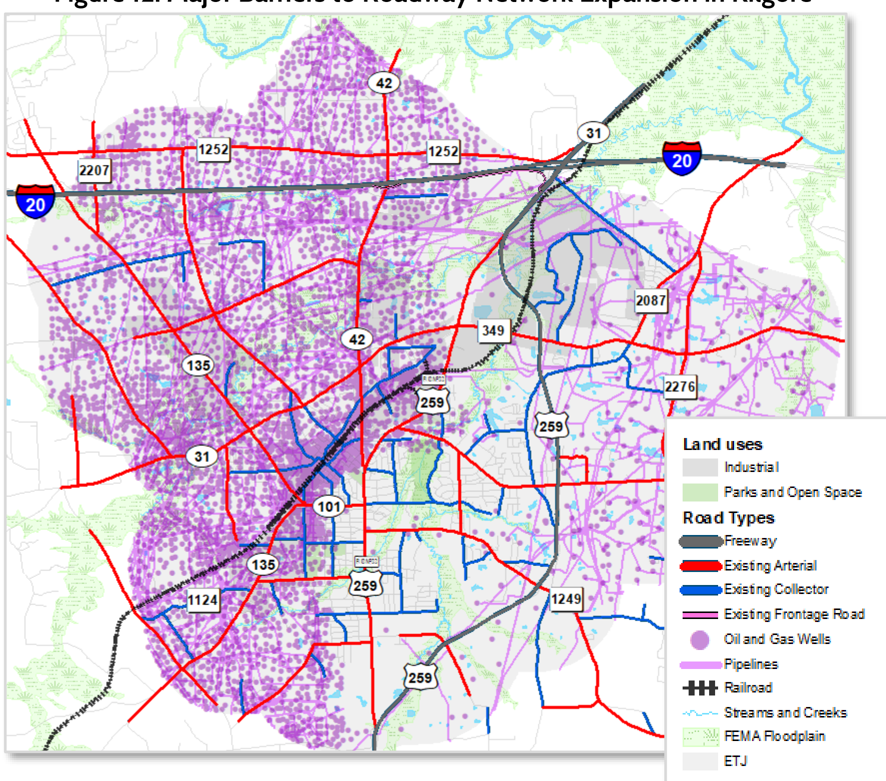
Figure 11: Key Corridors



BARRIERS

Due to the presence of significant oil and gas deposits as well as floodplains and railways, the City of Kilgore has significant barriers to development of its roadway network. As illustrated in Figure 12, to the west the City has significant petroleum facilities and industrial lands which make it difficult to develop and grow its roadway network. To the north there are significant floodplain issues which pose additional challenges for development. However, there are fewer barriers in the eastern regions of the City, suggesting that this area could be more favorable for growth.

Figure 12: Major Barriers to Roadway Network Expansion in Kilgore



LEVEL OF SERVICE

ROADWAY CAPACITY

The purpose of a transportation network is to accommodate the movement of people and goods at an acceptable service level on an appropriate classification of facility that suits the context of its surrounding land uses. The maximum amount of traffic that can be processed along a roadway is generally considered the capacity of that roadway. The capacity of a street is its ability to accommodate a stream of moving vehicles, measured as a flow rate, and is typically expressed in terms of vehicles per hour. The capacity of non-highway roadways can be affected by geometric configuration, operational controls, and environmental elements, including the following factors.

(a) Signalized intersections. The operation of frequent signalized intersections and the extent of progressive signal timing will usually be the principal determination of arterial capacities.

(b) Un-signalized intersections and driveway curb cuts. Turning movements and crossing volumes can reduce arterial capacity.

(c) Curb parking or loading. The entering and exiting activity of parked and dwelling vehicles can intermittently interrupt traffic movement and reduces arterial capacity and the presence of parked cars along the roadway edge tends to reduce travel speeds.

(d) Lane configuration and width. Lane widths of less than 11 feet tend to reduce travel speeds along a roadway, especially in the presence of significant percentage of heavy vehicles.

(e) Turning traffic. Left-turn and, to a lesser extent, right-turn movements impede the flow of through traffic; these movements are often provided separate turn lanes at key locations.

(f) One-way operation. One-way operation is generally more efficient than two-way operation as left-turn conflicts are eliminated, and it is easier to attain traffic signal progression.

(g) Heavy Vehicles. Heavy duty vehicles (trucks and buses) take up more space on the roadway and have lower performance characteristics than typical passenger vehicles.

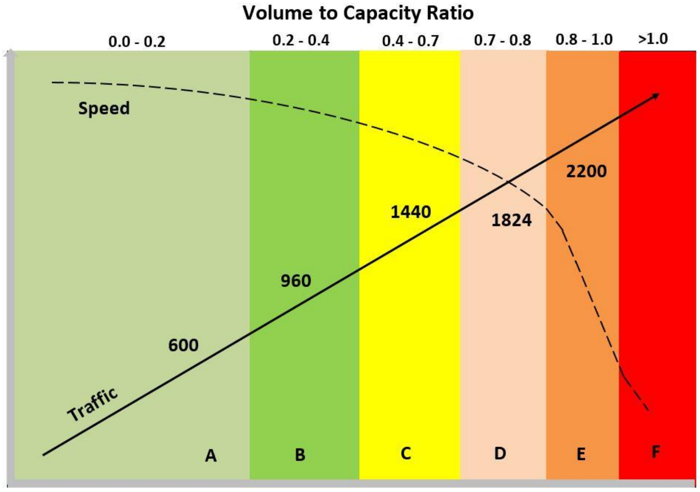
(h) Pedestrians. Street crossings with high pedestrian volumes interrupt intersection-turning movements. Standard pedestrian walking speeds effect signal phase and cycle lengths.

UNDERSTANDING LEVEL-OF-SERVICE

Level-of-Service (LOS) is the performance measure used to evaluate the function and flow of traffic through a transportation network. LOS is a measure of congestion expressed as the volume to capacity ratio of a roadway. Volumes represent an estimate of the number of vehicles on a road segment, while capacity is the maximum number of vehicles a roadway was designed to accommodate within a segment.

Traffic operational performance is based on a LOS scale from A through F, with A referring to free flow traffic conditions and F representing severely congested facilities. The closer a roadway's volumes are to equaling or exceeding their capacity, the lower the level-of-service (LOS D-F); the lower the volumes and further below the roadway's capacity, the higher the level-of-service (LOS A-C). Figure 13 illustrates the relationship between level-of-service and traffic speed and volume.

Figure 13: Volume/Capacity Ratios vs Level of Service



Most cities design for LOS C and D operational conditions during the peak hours. Economically, LOS C or D roadways slow traffic down just enough for commuters to take notice of local businesses along a corridor; these conditions are also ideal for pedestrian activity. In some cases, mitigation of LOS may be constrained due to right-of-way or environmental factors. A description of the operational condition is listed in Figure 14 below.

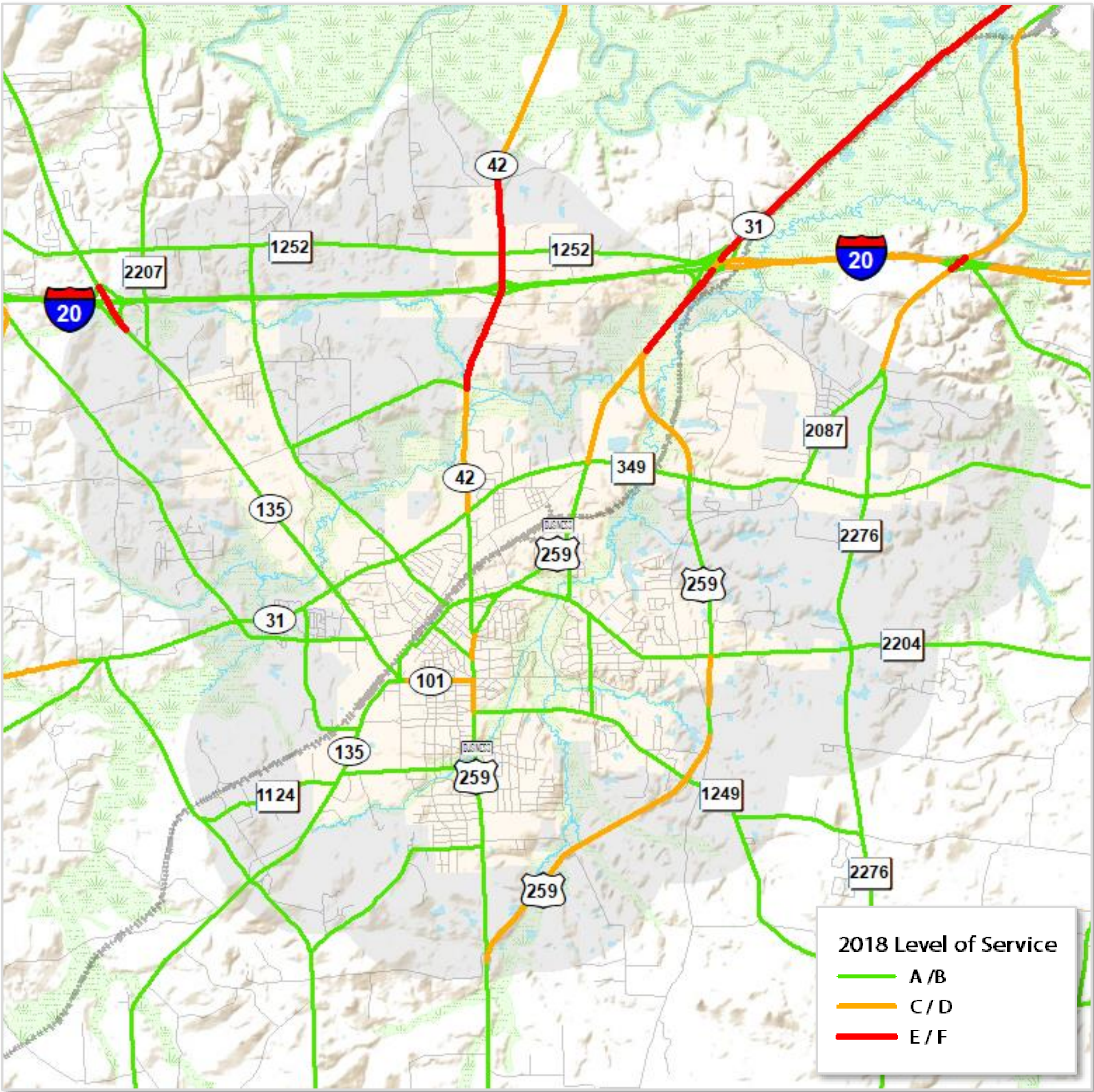
Figure 14: Level of Service Description

LOS ABC: Traffic flow in this category moves at or above the posted speed limit. Travel time in this category is not hindered as a result of congestion because traffic volumes are much less than the actual capacity.	
LOS DE: This category is slightly more congested than LOS ABC; however, traffic volumes are beginning to reach their capacity of the thoroughfare. Traffic usually moves along at an efficient rate and posted speeds may not be fully reached.	
LOS F: Congestion is apparent in this level-of-service category. Traffic flow is irregular, and speed varies. The posted speed limit is rarely, if ever, achieved in this category. In more congested corridors, traffic can be at a mere standstill with limited progression during peak hours.	

2018 LEVEL OF SERVICE

As shown in Figure 15, 2018 congestion levels within the City of Kilgore were very low. All roadways within the central core of the City show acceptable levels of congestion. Roadway segments with high levels of congestion are limited to sections of SH 42, SH 31, SH 135, and Old Kilgore Highway. Apart from SH 31, areas of high congestion on these roadways usually occur as they cross IH-20.

Figure 15: 2018 Level of Service in Kilgore



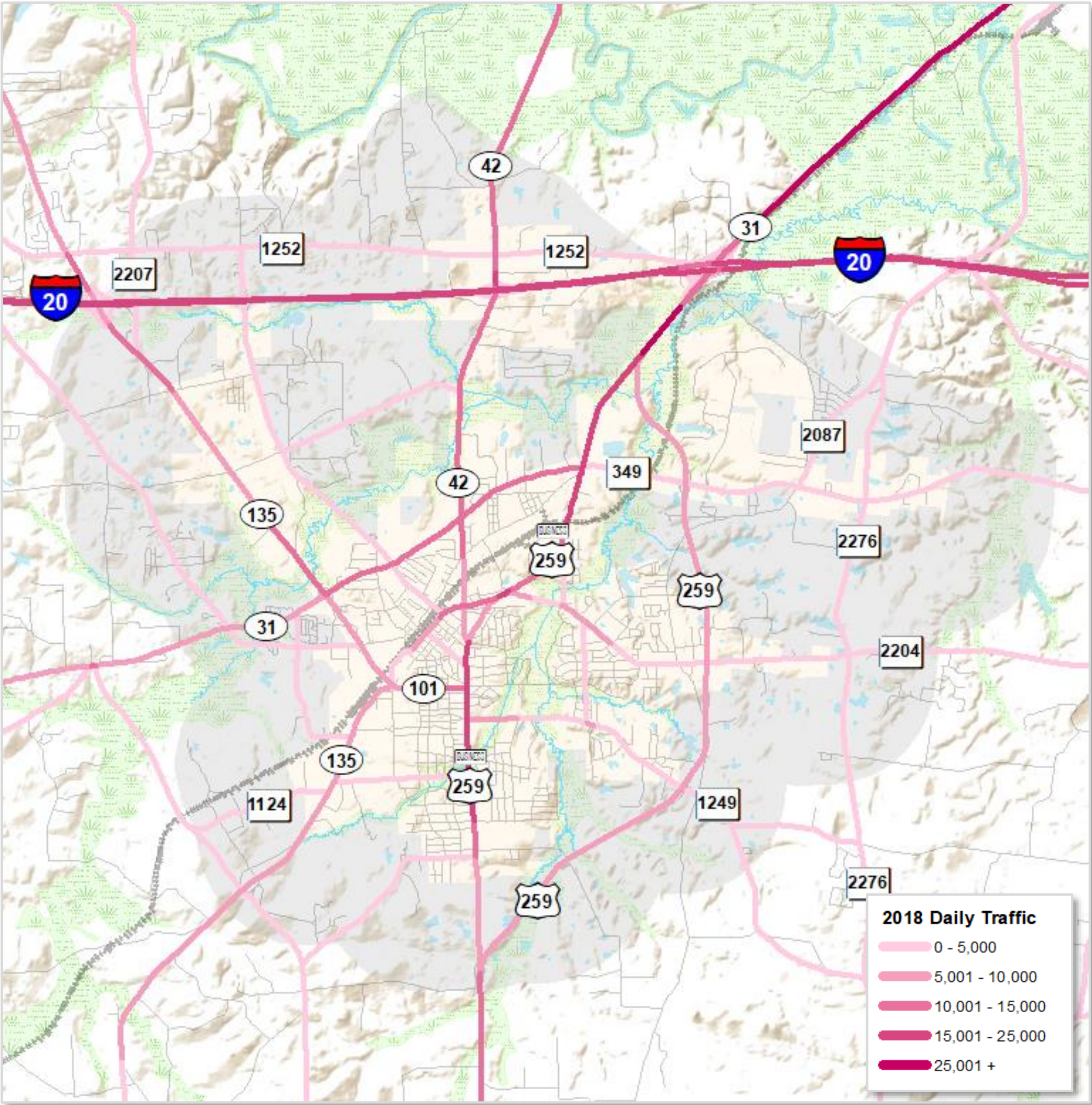
Source: Longview MPO

TRAFFIC VOLUME

Volumes are not representative of congestion, but of demand and preference of routes within the City of Kilgore. Depending on available roadway capacity, roadways with high volumes could in fact have low levels of congestion. Conversely, roadways with lower volumes could have high congestion levels.

As shown in Figure 16, most heavy traffic volumes occur on IH-20 and SH 31. Traffic volumes are low within most roadways in Kilgore. The only roadway with high volumes is SH 42 from East Lantrip Street to Leach Street.

Figure 16: 2018 Daily Traffic Volumes in Kilgore



Source: Longview MPO

OVERVIEW OF TRAFFIC ACCIDENTS IN KILGORE

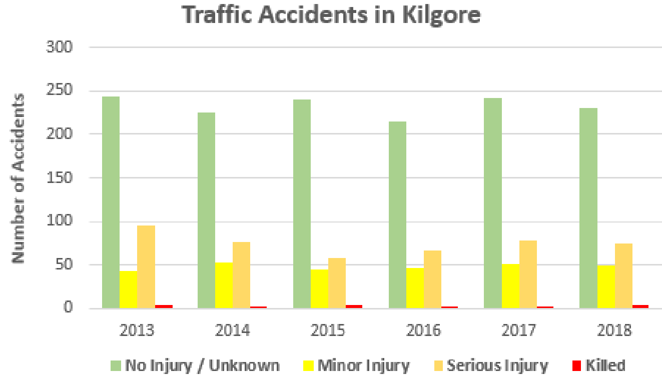
The annual number of vehicle crashes is important in telling whether a roadway network is safe, and where improvements can be made to improve public safety.

The cost of accidents imposes substantial costs on the community and its residents. According to the 2009 FHWA Highway Safety Manual, total costs (per person) associated with fatal accidents are over $4 million, with $ 216,000 for accidents with incapacitating injuries, and $79,000 for accidents with non-incapacitating injuries. Even accidents with no injuries cost $7,400 per person.

Texas Department of Transportation (TxDOT) Crash Records Information System (CRIS) reported 2,150 traffic accidents in the City of Kilgore from 2013 to 2018; 17 of these accidents resulted in fatalities. Distracted driving was associated with 112 accidents while 32 accidents were caused by driving while intoxicated. Approximately 8 of these accidents involved cyclists and 19 involved pedestrians. The number of crashes has remained relatively stable at an average of 358 crashes per year over this time period. As shown in Figure 17, most accidents resulted in no injuries, although accidents involving a serious injury were the next highest category of accidents. In terms of total accidents, 2013 had the highest number of crashes (386) while 2016 had the fewest (329).

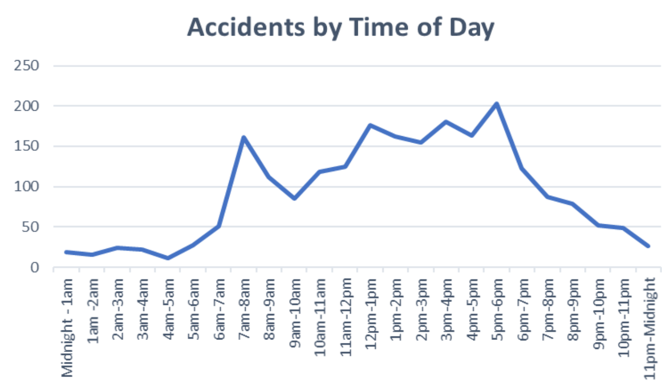
As illustrated in Figure 18, an analysis of all accidents between 2013 and 2018 shows that most accidents occur in the afternoon through the end of evening rush hour. Most accidents in the morning occur between 7-8am, while most evening accidents occur between 5-6pm during the evening rush hour. As expected, these traffic accident patterns follow a typical daily cycle of travel demand. Figure 19 reveals that most accidents occur on Mondays and Thursdays, while Sundays have the lowest level of accidents. Fridays show the most recent reduction in accidents, while accidents on Saturdays are increasing.

Figure 19: Kilgore Traffic Accidents by Year and Type



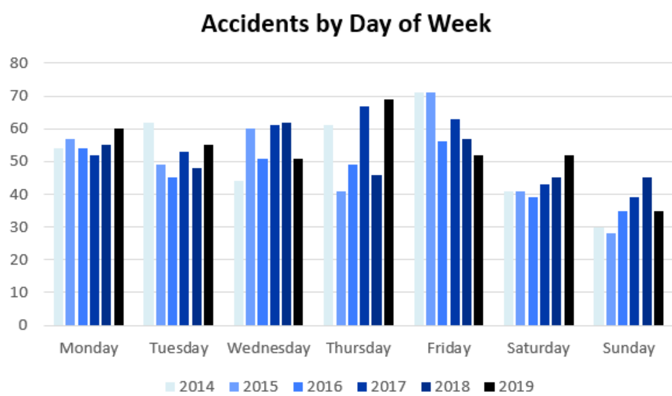
Source: TxDOT CRIS

Figure 19: Accidents in Kilgore by Time of Day



Source: TxDOT CRIS

Figure 19: Accidents in Kilgore by Day of Week



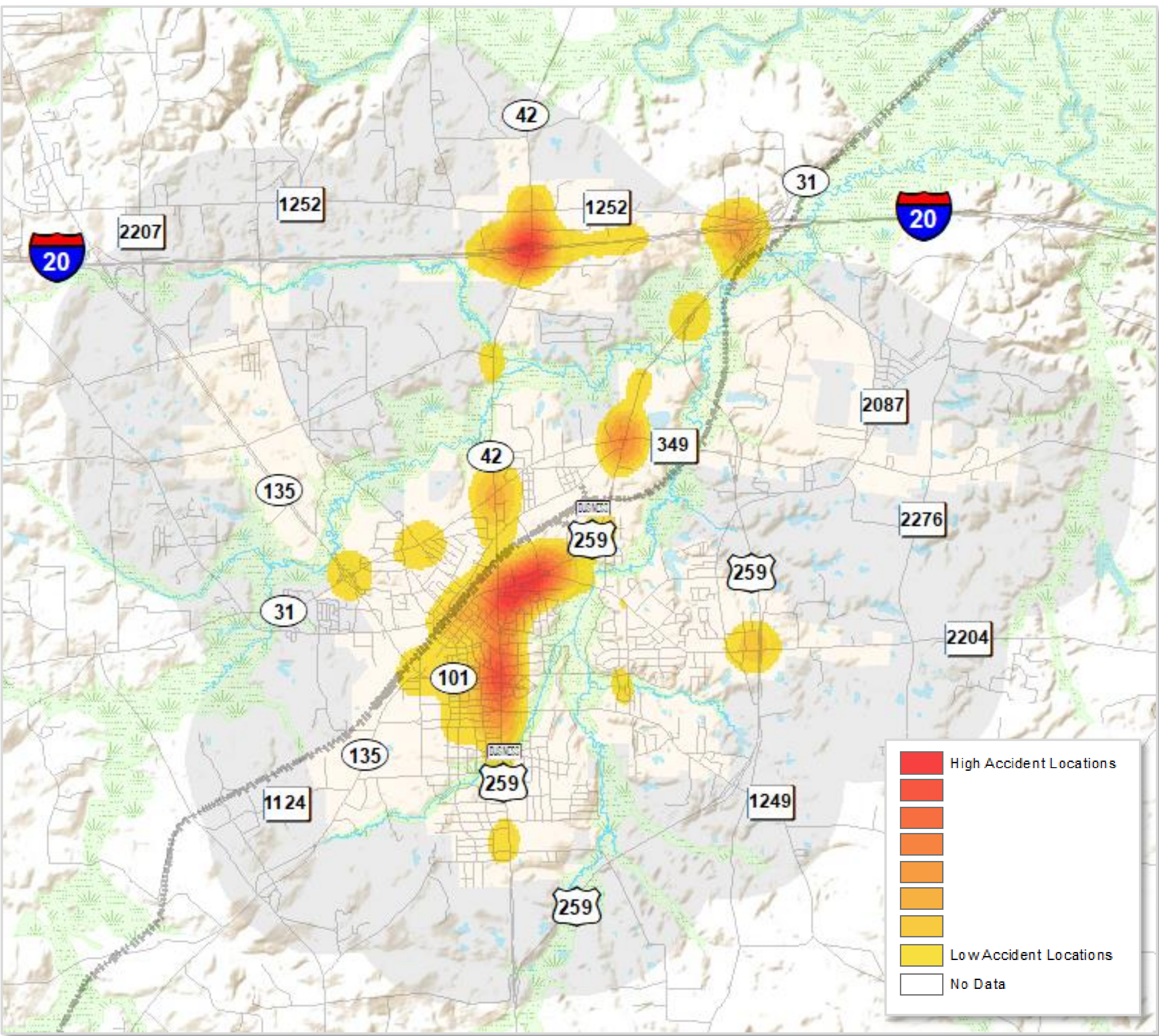
Source: Kilgore Police Department

LOCATIONS OF ACCIDENTS IN KILGORE

Specific road segments with high crash rates were identified. The top accident locations are: BUS 259, from Stone to Thompson, North Kilgore Street, from Stone to Campbell, SH 42 at IH-20, SH 42 at SH 31, SH 42 at North Kilgore Street, SH 42 at Houston, SH 31 at IH-20, and SH 31 at FM 349. Of concern are the roadways along BUS 259 and North Kilgore Street; the sheer number of accidents at this location and the existing roadway design suggest that a more detailed analysis of traffic movements in the immediate area may be warranted.

Top contributing factors for accidents include, driver inattention/distraction, failure to control speed, failure to yield, driver fatigue, faulty evasive action, following too closely, poor visibility, and alcohol. These observations suggest that most accidents may be mostly caused by driver behavior and not by any roadway design issues. However, as Figure 20 demonstrates, there seems to be a strong correlation between accidents and intersections, particularly through the downtown corridor.

Figure 20: Locations of Traffic Accidents in Kilgore



A review of Kilgore Police data from 2014 to 2019, reveals that the following intersections that have consistently the highest number of crashes in Kilgore, they are:

- US 259 Business at SH 31
- US 259 Business at Dudley Road / FM 1249
- US 259 Business at Brook Street
- US 259 Business at Harris Street
- US 259 Business at Pentecost Road
- US 259 Business at Woodlawn Street
- US 259 at Post Oak Road
- SH 42 at SH 31 (has the high number of crashes since 2014)
- SH 42 at North Kilgore Street
- SH 135 at Peavine Street
- Houston Street at Commerce Street

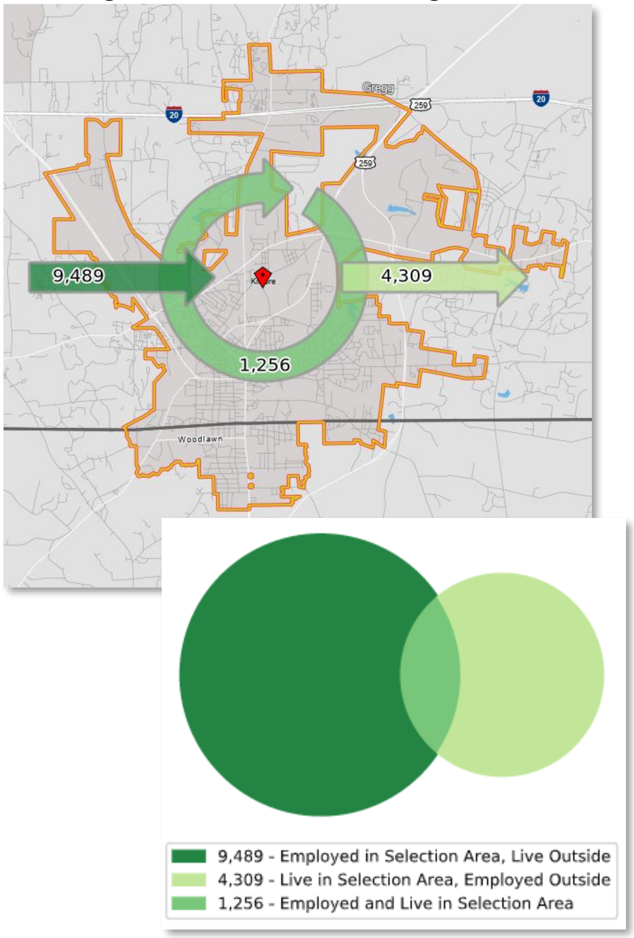
PLANNING CONTEXT

LOCAL AND REGIONAL TRAVEL PATTERNS

As shown in Figure 21, only a small percentage of people live and work within the City of Kilgore. Most people who work in Kilgore actually live outside the City, while a significant number of persons live within the City but work elsewhere.

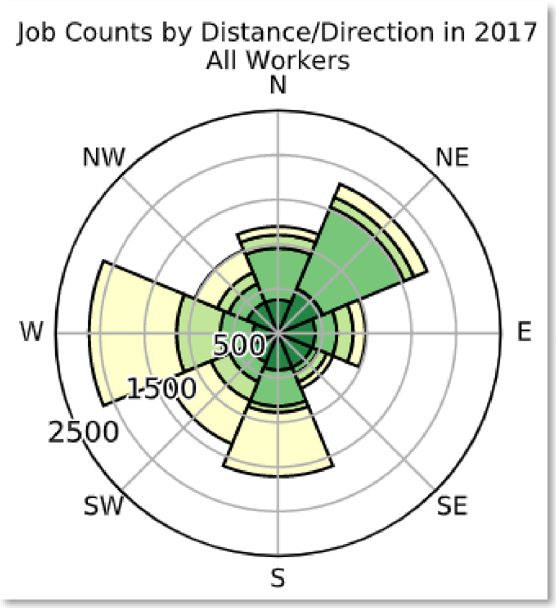
Figure 22 below reveals that most workers live within 24 miles of work, with over 25% of workers living 10 miles away. However, a significant percentage (over 25%) of workers over live 50 miles away. Commuting flows occur primarily in the northeastern, western, and southern areas of the City, with longer commutes along the western and southern corridors.

Figure 21: Workers Flows in Kilgore



Source: US Census

Figure 22: Worker Commutes by Direction



Jobs by Distance - Work Census Block to Home Census Block

	2017 Count	2017 Share
Total All Jobs	10,745	100.0%
Less than 10 miles	3,173	29.5%
10 to 24 miles	3,125	29.1%
25 to 50 miles	1,476	13.7%
Greater than 50 miles	2,971	27.7%

Source: US Census

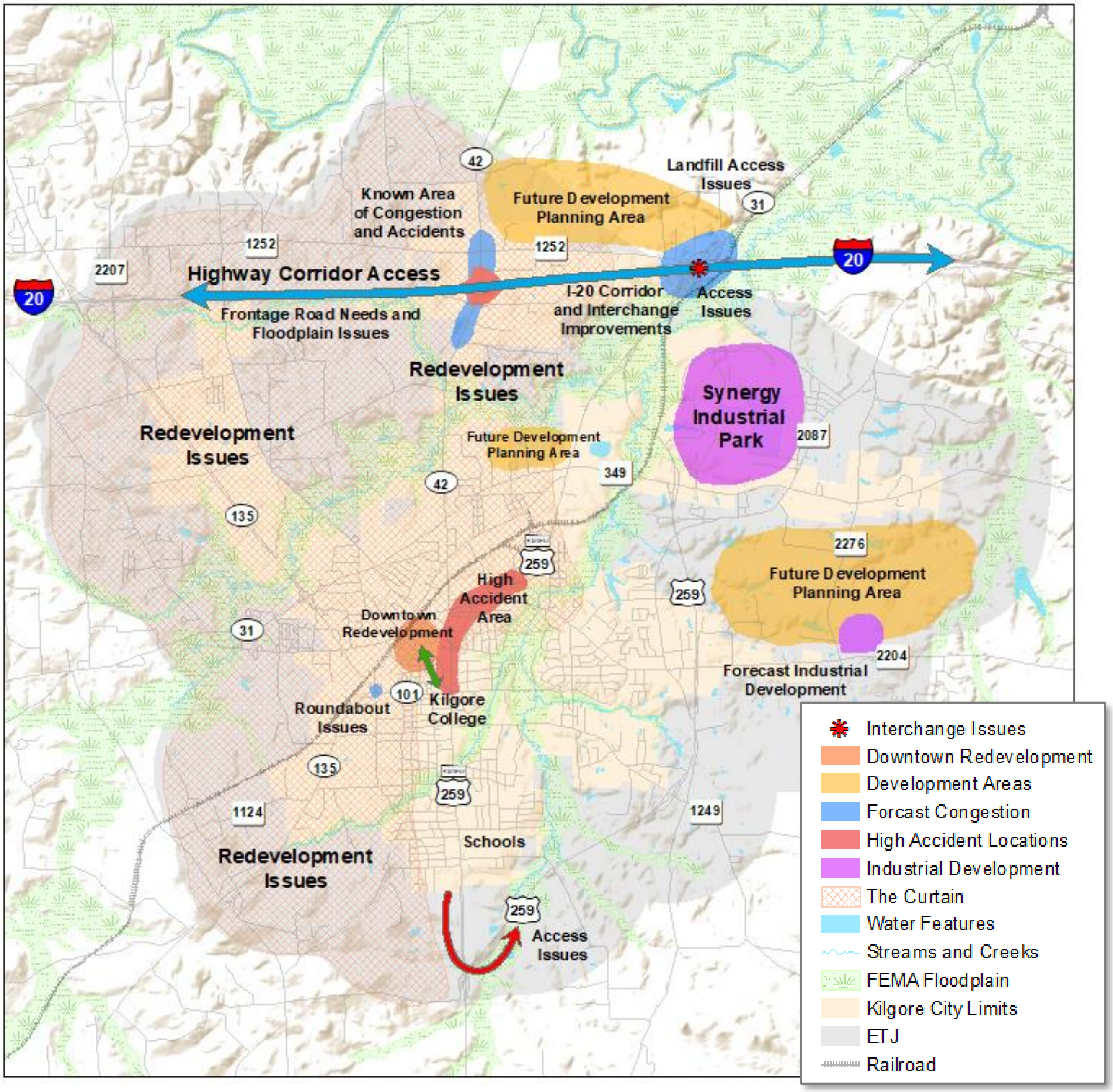
KEY PLANNING, GROWTH, AND DEVELOPMENT ISSUES

Due to the location of significant barriers to the west and north, long-term development activity in Kilgore will most likely be focused to the south and east. This is accentuated by the accessibility provided by US 259 along the eastern edge of the City. Currently the roadway has few congestion issues, except along key access points to IH-20.

IDENTIFIED ISSUES AND NEEDS OF THE ROADWAY NETWORK

Perhaps the most pressing need for the Kilgore transportation network is to address safety and access needs at selected locations within the community. Many intersections seem to be misaligned or poorly designed with the accident analysis indicating high accident activity at many intersections. It was mentioned by stakeholders that there are numerous conflicts with trucks accessing and egressing from industrial properties adjacent to numerous corridors throughout the City. Additionally, access to IH-20 for both residents and commercial trucking is a widespread concern. Other issues include the need for additional bicycle and pedestrian facilities and a more coherent access management strategy for businesses along major commercial corridors within Kilgore. Figure 23 below illustrates identified issues and transportation needs within the City of Kilgore.

Figure 23: Roadway Issues and Needs

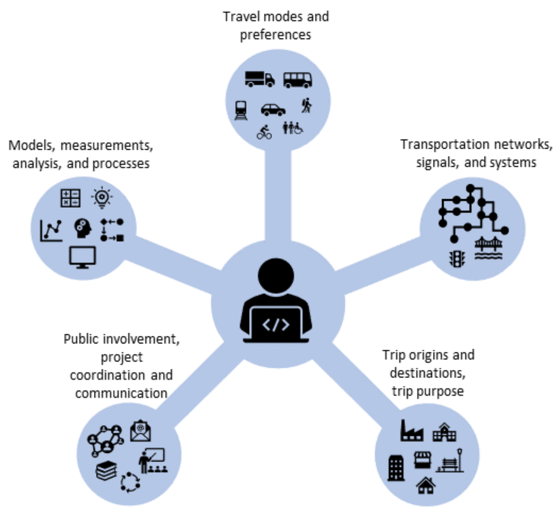


Plan Development

EVALUATION OF FUTURE ROADWAY NEEDS / TRAVEL DEMAND FORECASTING

The City of Kilgore Thoroughfare Plan was developed using several mobility analyses tools, including the Longview regional Travel Demand Model (TDM), maintained by the Texas Department of Transportation and the Longview Metropolitan Planning Organization (MPO). This model forecasts trips in the region based on several factors, including trip purpose (work, home and shopping), trip length, and congestion. Regional trip forecasts are based on projections of future population and employment which help determine total daily trips, trip origins and trip destinations.

Figure 24: Components of Travel Demand Modeling



The data provided by the model, along with expert technical judgment, was used in tandem to develop the Kilgore Thoroughfare Plan. Using a regional model in the transportation planning process provides a more comprehensive analysis in anticipating future trips within and around the City of Kilgore.

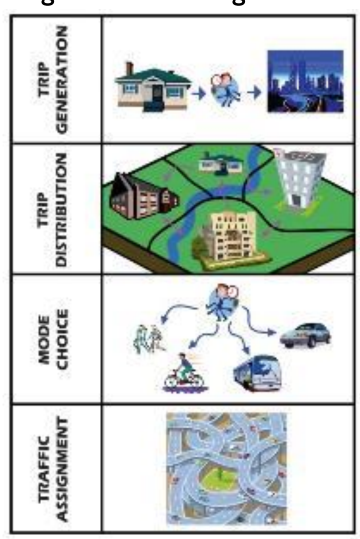
The model was used to help prioritize projects and aid in making recommendations for the future street network. The model-based analysis was completed through the following steps during the transportation development process:

MODELING PROCESS

Travel demand models are comprised of a series of mathematical models that simulate travel on the transportation system. The model divides the City of Kilgore into zones called TSZs, or traffic survey zones, which have specific demographic and land use data associated with them and are used to determine trip demand and travel patterns. As shown in Figure 25, the modeling process encompasses the following four primary steps:

- Trip Generation – the number of trips produced and attracted to a destination or TSZ based on trip purpose.
- Trip Distribution – the estimation of the number of trips between each TSZ, i.e., where the trips are going.
- Modal Split – the prediction of the number of trips made by each mode of transportation between each TSZ.
- Traffic Assignment – the amount of travel (number of trips) loaded onto the transportation network through path-building. This is used to determine network performance.

Figure 25: Modeling Process

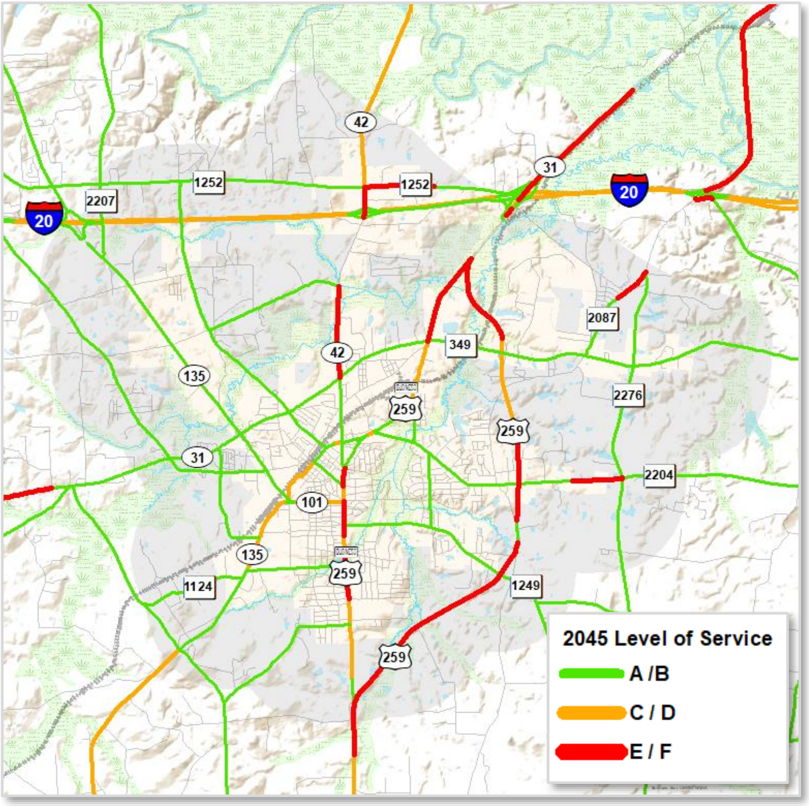


The model provides the City with an accurate tool to identify system improvements and create a forecast network that will accommodate future transportation needs.

FORECAST ROADWAY CONDITIONS

As shown in Figure 26, the Longview TDM outputs indicate that 2045 congestion levels within the City of Kilgore will increase significantly from 2018. The most congested roadways within the City are SH 42, US 259, SH 31, and Old Kilgore Highway. Roadway segments with high levels of congestion are limited to SH 42, SH 31, SH 135, and Old Kilgore Highway. Sections of FM 2204, FM 2087, and FM 1252 are forecast to have high levels of congestion.

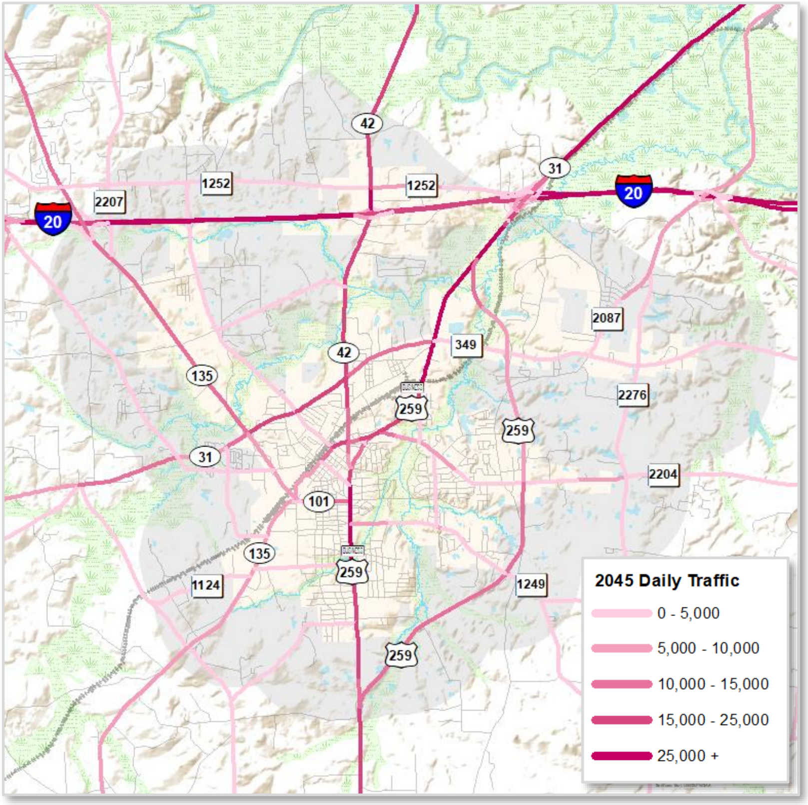
Figure 26: Forecast 2045 Roadway Level of Service



FORECAST ROADWAY VOLUMES

Figure 27 illustrates forecast roadway volumes in 2045 from the Longview MPO TDM. When compared to the 2018 volumes, we see several roadways have increased volumes. These include SH 31, SH 42, and IH-20. It is also worth noting that many roadways in Kilgore show little change in volumes. Most roadways to the east and west of the central core show only nominal changes in volumes.

Figure 27: Forecast Roadway Volumes



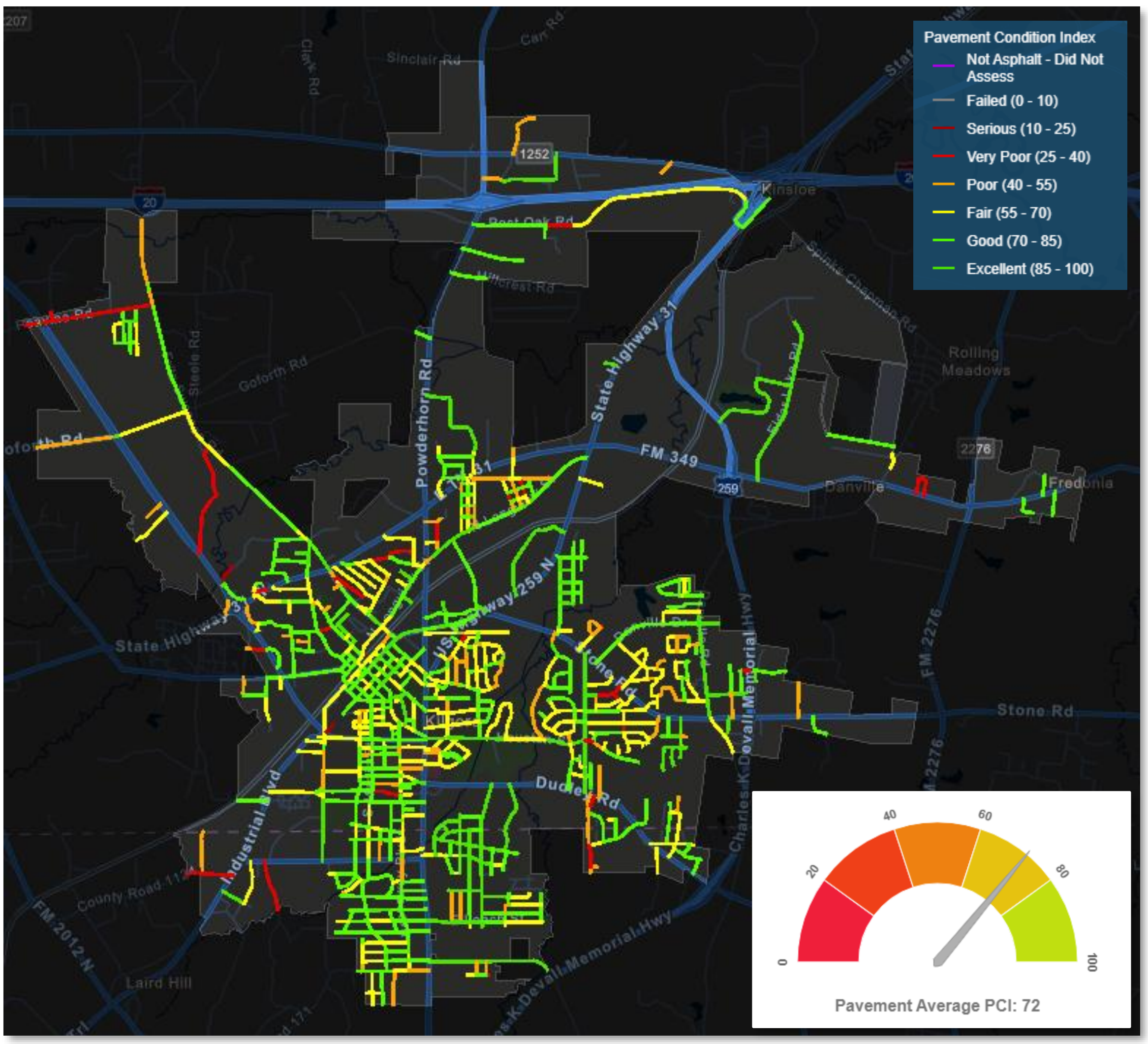
ASSET MANAGEMENT

Asset management came about in the 1990's from the general public's wish for more government accountability, increasing demands on the transportation network, declining transportation funds, increasing construction costs, technological advances, and a deteriorating national roadway infrastructure. Transportation professionals and stakeholders determined that they needed to improvement management of roadways to reduce life-cycle costs and improve transparency to the public on transportation investment decisions.

In its simplest form, Asset Management is a process designed to reduce roadway and bridge life-cycle costs while maintaining an acceptable level of risk and quality of service. Asset Management provides fact-based solutions to justify capital investments and ensures cost-effective and sustainable level of roadway performance throughout its network.

The City of Kilgore currently uses Street Logix to assess the condition of its roadway network. As shown in Figure 28, the roadway network within Kilgore is currently assessed with a Pavement Condition Index of 72 and is rated in good condition.

Figure 28: Pavement Condition Scores in Kilgore



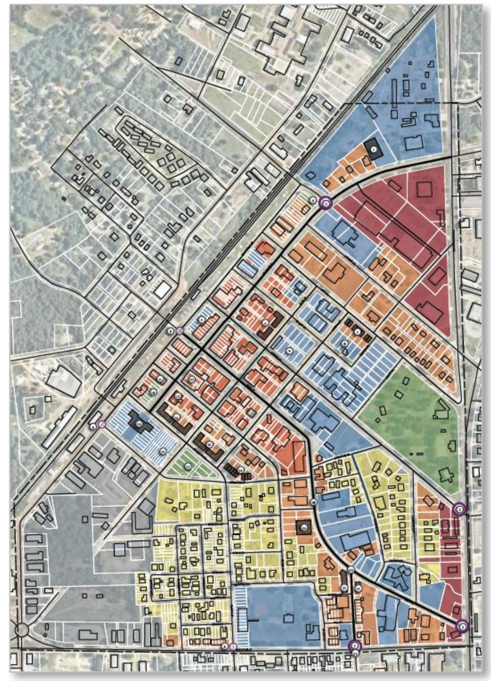
FUTURE LAND USE / HOUSING PLAN COORDINATION

COORDINATION WITH DOWNTOWN PLAN

Roadways in this district are geared towards creating a more livable downtown while retaining the historic feel of Kilgore. A series of two-lane streets with varying cross-sections are aimed to support residential, boutique/cottage style office and specialty retail, and a mixed-use core area. Streetscaping elements, including landscaped medians, wayfinding and sidewalks are intended to provide an open feel to key corridors in the district. Gateways and intersection treatments at key intersections have been identified to define district edge as well as tie the area together. Features for these treatments should be coordinated with theme, look and color.

Within the mixed-use core area, wide sidewalks, plazas and on-street parking are envisioned to create a "sense of place" and allow for street amenities and gathering area. The Kilgore Thoroughfare Plan supports these initiatives by recommending intersection improvements along North Henderson Road / BUS 259 and Houston Street / SH 101 to enhance access to downtown, reduce congestion and improve roadway safety.

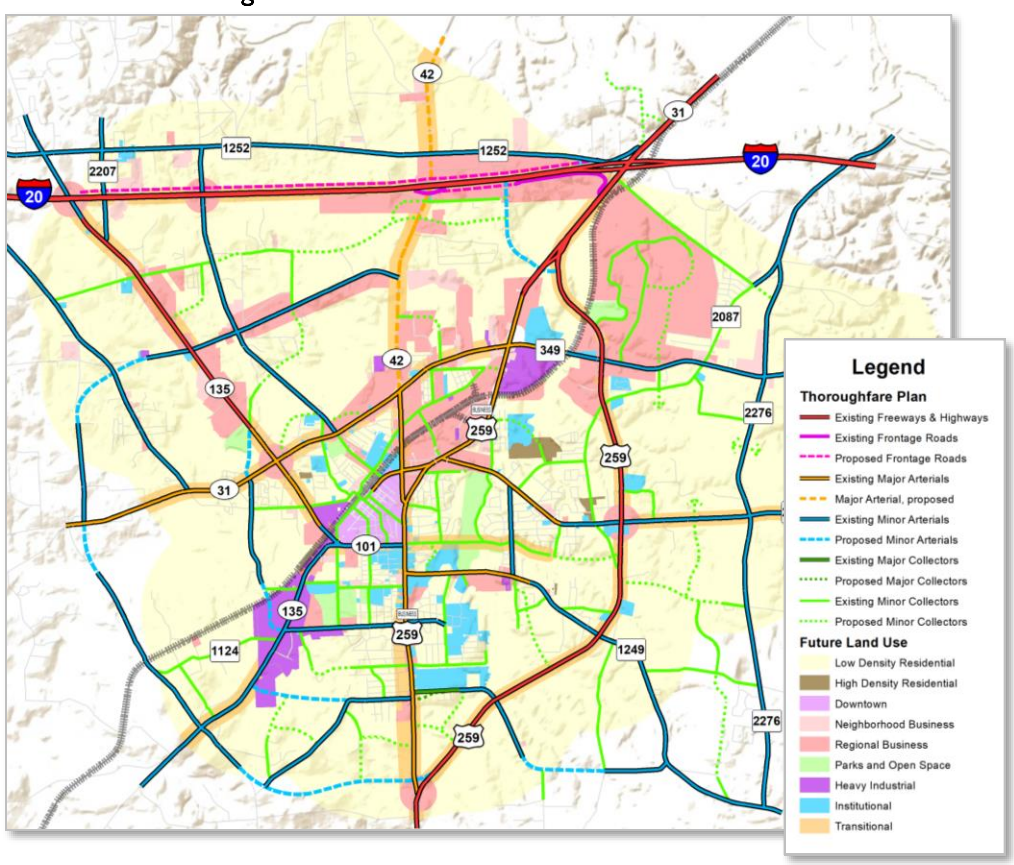
Figure 29: Kilgore Downtown Plan



COORDINATION WITH FUTURE LAND USE PLAN

As shown in Figure 30, the revised Thoroughfare Plan continues to support future land uses within the City of Kilgore. Specifically, the plan encourages continued economic development opportunities along IH-20 and the Synergy Business Park as well as residential development along the eastern portion of the City.

Figure 30: Coordination with Future Land Use

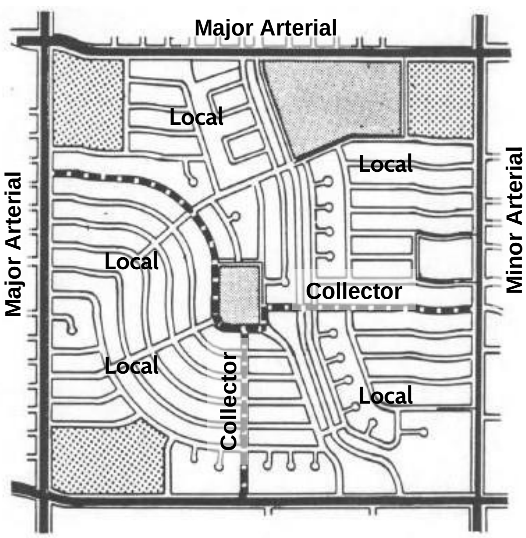


FUNCTIONAL STREET CLASSIFICATION

The functional classification of streets is used to identify the hierarchy, function, and dimensions of a facility. Streets and highways are grouped into classes based on facility characteristics, such as geometric design, speed, traffic capacity, and access to adjacent lands. Functions range from providing mobility for through traffic and major traffic flows, to providing access to specific properties. The roadway functional class allows travelers ease of access to origins and destination through a combination of streets. Functional class can be updated over time if surrounding land uses change significantly. A facility will move up in hierarchy as the surrounding area becomes denser and additional cars are drawn to the area. Population and land use densification may also decrease the functional class of a roadway as the area becomes more walkable. The network in Kilgore varies in functional classes, with a mixture of freeways, highways, arterials, collectors, and local roads.

Effective development of a clearly defined functional classification system (and design principals) leads to an optimized circulation system as demonstrated in Figure 31. Major advantages include preservation of residential neighborhoods, long-term stability in land use patterns and value of commercial properties, fewer traffic accidents, and a decreased proportion of urban land devoted to streets. In areas developed in accordance with functional circulation concepts, approximately 20 percent of the urban land is devoted to streets, including arterials, while in a typical gridiron system, 30 percent or more can be obligated to streets.

Figure 31: Classic Suburban Roadway Classification



Most large cities in Texas incorporate a traditional functional classification system to organize roadway types within their jurisdiction. This system provides key information and standards for each roadway type to assist citizens and developers in understanding the types of roadways that are planned for the region's transportation system and how those roadways may be designed.

The Kilgore Thoroughfare Plan consists of all the major roadways in the City of Kilgore by their assigned functional classification. This classification sets the required right-of-way to be acquired or preserved to accommodate future traffic demand in the region. This plan also looks at ways to incorporate multi-modal elements along corridors within the city. Where these elements are needed, alternative thoroughfare design elements may be implemented through retrofit or redesign as reconstruction is needed. The functional classification of thoroughfares in the City of Kilgore are identified as, major and minor arterials, collectors and local roadways. Freeways and frontage roads are also discussed for informational purposes.

Freeways and Frontage Roads

Freeways are usually not discussed in detail on city thoroughfare or transportation plans. The regional, statewide and national scale of freeways that traverse through Kilgore limit the ability for the City of Kilgore to impact the decisions made at the state and national level. However, the impact of these facilities on the mobility and needs in the City are essential to consider when evaluating and planning the transportation network.

Kilgore is currently serviced by one major interstate freeway, IH-20, which provides regional access to Dallas-Fort Worth metroplex and Shreveport, Louisiana and east-west mobility along its northern border. US 259 is the major highway that provides north-south mobility through the City of Kilgore to the City of Longview and runs along the eastern side of the City.

Frontage roads are also significant as they provide important access parallel to limited-access freeways and toll roads in and around the City. Access to these roads is essential for the success of businesses that front these roads. Currently, IH-20 has discontinuous frontage roads along its ROW in Kilgore.

Arterials

Arterials focus on moving regional traffic. Next to freeways, these types of thoroughfares typically carry the highest amounts of traffic and have the highest operating speeds.

Major Arterials

Major arterials are designed to allow large volumes of traffic to operate at a high level of mobility. A major arterial is designed for longer distance trips and provides access to major activity centers and adjacent cities. There should be a limited number of driveways directly accessing major arterials and should only connect to other major arterials or freeways. Typically, on-street parking should not be allowed on a major arterial. Currently the City of Kilgore does not differentiate between Major and Minor Arterials.

State Highway 42 and US 259 are examples of major arterials. They both provide north-south corridors for local residents and serve as a link between Kilgore and Longview as well as other cities to the north. State Highway 31 is another major arterial that runs east-west through the City and provides a direct connection to the nearby City of Tyler. Other arterial roadways include SH 135, FM 1252, FM 1249, FM 2276, and FM 2204.

Minor Arterials

Minor arterials connect traffic from collectors to primary arterials. They are designed to accommodate moderate traffic volumes at relatively low speeds, and often extend to a larger geographic area. If right-of-way and/or level-of-service are adequate, minor arterials may accommodate on-street parking. West Woodlawn Road, Fritz Swanson Road and Old Texas 135 are examples of minor arterials.

Collectors

Roadways designated as collectors are designed for short trips and low speeds. They serve primarily to connect trips to higher functional class facilities and on moving traffic between neighborhoods and different areas within the City. These types of thoroughfares carry moderate volumes of traffic and have lower speeds to accommodate access to adjacent properties. The number of lanes can range from two (2) to four (4) depending on the current and future demands and the potential development. Center turn lanes may be incorporated on major collectors, but raised medians are rarely found on these types of streets. Sometimes collectors are broken down into major and minor collectors. Major collectors provide higher levels of mobility, handle more traffic, and have fewer driveways and intersections than minor collectors. Baughman Road, South Commerce Street, and Spinks Chapman Road are examples of collectors.

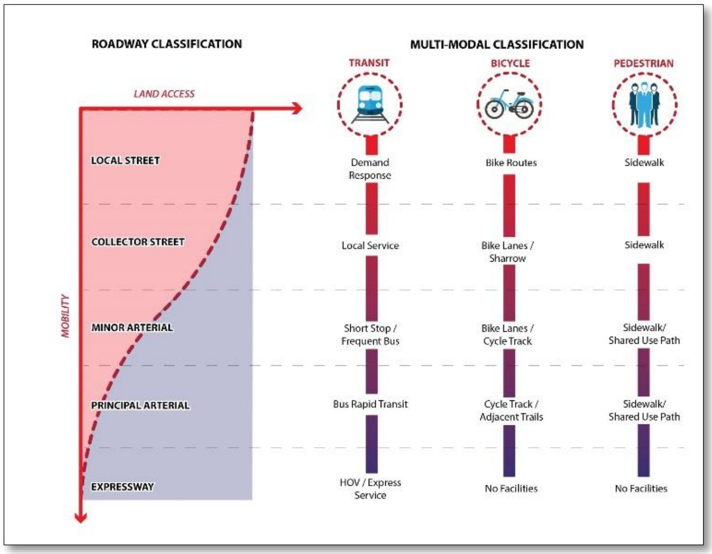
Local Streets

Local streets are typically not designated on a Thoroughfare Plan because it \ does not require right-of-way dedication. As new development occurs, local streets are typically preserved and built by the developer. Once the development is complete, the city takes over maintenance and ownership of the right-of-way. Local streets are focused on providing access to homes in residential neighborhoods where speeds are less than 30 miles per hour (mph), and traffic volumes are the lowest. In most cases lane striping is not implemented, and on-street parking is permitted, depending on the surrounding uses and building types.

FUNCTIONAL CLASSIFICATION, LAND ACCESS AND MODE OF TRANSPORT

As illustrated in Figure 32, roadway classification, land access, and mode of transport (mobility) are highly inter-related. Local streets focus more on access to adjacent land uses and are more amenable to alternative forms of transportation, such as transit, bicycling, and pedestrians. Priority for mobility over land use access occurs as functional classes transition from local roads to collectors and arterials. At the top end of mobility are freeways and tollways, which are exclusively focused on mobility than land access, do not support cycling or pedestrian activity, and only support express transit services.

Figure 31: Roadway Classification, Land Access, and Mode Utilization



TYPICAL ROADWAY CHARACTERISTICS BY FUNCTIONAL CLASSIFICATION

All functional classes have general characteristics, such as spacing, capacity, speed, required right-of-way, and specific design criteria to delineate how each facility should be utilized. Table 2 below sets out current characteristics defined for each type of functional class of roadway.

Table 2. Roadway Characteristics by Functional Class

Attributes	Freeway	Major Arterial	Minor Arterial	Collector	Local
Roadway Spacing	2-10 miles	1-2 miles	0.25-1 mile	0.1-0.25 miles	200-500 feet
Facility Length	15+ miles	5-15 miles	1-5 miles	0.25-1 mile	<0.25 mile
Traffic Volume (vehicles/day)	100,000+	35,000-80,000	10,000-35,000	1,000-10,000	<1,000
Right-of-Way (feet)	300-500	100-120	70-100	60-70	50-60
Number of Lanes	Main + Frontage Roads	4 to 6	3 to 5	2 to 4	2
Median	Yes	Typical	Optional	Not Typical	No
Speed Limit (mph)	55-75	35-55	30-45	25-35	30 Max.

GENERAL GUIDANCE ON FUNCTIONAL CLASSIFICATION

While functional classification does have defined engineering design standards, there is a degree of flexibility in assigning functional classifications due to overlap between class characteristics. Guidance on classification on roadways should generally adhere to the following:

1. Determine if the nature of the roadway in question is primarily to serve as access to adjacent land uses or more for throughput or mobility purposes and should be sensitive to the needs of adjacent land uses. Refer to Figure 30 on page 29 for more information.
2. Evaluate existing roadway characteristics such as current right-of-way, number of lanes, observed traffic volumes, the presence of medians or two-way left turn lanes (see page 46), the presence of on-street parking, and length of the roadway segment in question. Speed characteristics should be examined based on observed typical speeds as well as desired speeds for the facility.
3. Ensure that the operating characteristics of the facility are consistent with recognized attributes of the functional classification for which it is assigned. Significant deviation from recognized standards may require a reassessment of its functional classification, or the creation of a separate class for the facility (which is usually not recommended).
4. It is strongly recommended that a registered professional engineer be consulted when determining the appropriate roadway classification.

RECOMMENDED FUNCTIONAL CLASSIFICATION AMENDMENTS

As mentioned previously, the thoroughfare network was amended to accommodate updated growth projections. New classifications were developed to provide consistency with existing roadway design implementation, provide options for multi-modal elements, and to provide more flexibility in developing new street sections. Recommendations provide consistency in thoroughfare design as well as providing flexibility by redefining and expanding the sub-classes of collectors.

Table 3: Proposed City of Kilgore Thoroughfare Classifications

Roadway Class	Lanes	Area Type	Min ROW (feet)
Major Arterial	4-5	Commercial	100'
Minor Arterial	2	Urban	100'
Major Collectors	3	Commercial	60'
Minor Collectors	2	Urban	60'
Local Roads	2	Urban	60'
	2	Rural	60'

Table 3 contains the proposed functional classifications for the Kilgore Thoroughfare Plan. Descriptions of design standards and cross-sections of each classification are discussed in the following pages.

DESIGN STANDARDS

THOROUGHFARE DESIGN STANDARDS

Versatility is a strength in any policy document because it gives policymakers flexibility to address unforeseen issues that may arise during the implementation phase. To provide flexibility in the Thoroughfare Plan, new thoroughfare design standards were developed to accommodate a variety of land uses adjacent to both urban and rural rights-of-way including potential future developments. The various design controls, criteria, and elements presented in this section shall be used to design each roadway to accommodate the expected traffic volume and provide consistency in traffic operations.

There are established roadway design standards that are utilized by communities across the United States; these standards are based upon decades of research and field experience. Guidelines for these revised design standards came from a variety of sources, including:

- American Association of State Highway and Transportation Officials (AASHTO), A Policy on Geometric Design of Highways and Streets, latest edition.
- Transportation Research Board, Highway Capacity Manual, latest edition.
- Texas Manual on Uniform Traffic Control Devices, latest edition.

SECTION II: PLAN DEVELOPMENT

DESIGN CRITERIA

SIDEWALKS

Sidewalks are installed on public right-of-way in the parkway or easement and must have a maximum 2% cross-slope toward the street and a minimum of 1% cross slope to facilitate drainage. New sidewalks should be a minimum of 5 feet in width and the longitudinal grade along the sidewalk should not exceed 5% unless the grade of the adjacent roadway requires otherwise. All new sidewalks should be accessible by persons with mobility impairments, in compliance with the Americans with Disabilities Act. Pedestrian crossings of streets should be provided with accessible ramps. Crosswalks should be marked across arterial streets.

LANE WIDTHS

Driving lane widths are generally to be in the range of 11 feet to 12 feet, but not less than 10 feet in width. For higher speed, higher capacity principal arterial roadways, 12-foot wide travel lanes are preferred.

RIGHT-OF-WAY (R.O.W.) WIDTH

Right-of-way width is generally determined by the pavement section required to perform the function and carry the traffic for which the thoroughfare is designed to accommodate, plus provisions beyond the pavement for sidewalks, utility locations, drainage and safety areas.

MEDIANS

The width of medians will vary based on right-of-way limitations, future roadway expansion, and other such factors. The general practice is to use 16-foot wide raised medians in urban areas. This permits the construction of 12-foot left-turn lanes for channelization, while leaving 4 feet for buffer between oncoming traffic.

PARKWAYS

Parkways are the area between the edge of the roadway and the edge of the street right of way and in urban areas cover a wide range of widths with minimums of approximately 8 feet. Parkways can contribute to the capacity and efficiency of a roadway by providing a clear zone for needed roadway edge utilities and provisions. Sidewalks and utilities are typically situated within the parkway of a thoroughfare, typically with a 3-foot wide green space buffer between the sidewalk and the roadway.

CURRENT DESIGN STANDARDS

Previous design standards for the City of Kilgore from the 2008 Master Plan and Engineering Design Manual were evaluated and used to ensure consistency of the revised design standards. Tables 4 and 5 on the next page reveal previous design standards for comparison. Note that the thoroughfare design standards differ significantly from each other.

Table 4: 2008 Engineering Design Manual Thoroughfare Design Standards

City of Kilgore Engineering Design Manual 2008 Thoroughfare Design Standards					
Street Type	FF/Curb Pavement Width	Min ROW Width	Lanes	Parkway	Median
Collector A	23' each way	80'	2 @ 11.5'	9'	14'
Collector B	40'	80'	2@12' + 1@16' (CLT)	19.5'	0
Local Street (Non-residential)	30'	60'	2@15'	14.5'	0
Local Street (residential)	30'	60'	2@13'	14.5'	0
Country Lane	24'	60'	2@12'	18'	0

Table 5: 2008 Master Plan Design Standards

City of Kilgore 2008 Master Plan Thoroughfare Design Standards							
Street Type	Sidewalks/Bike Lanes	Min ROW Width	Lanes	Parkway (includes sidewalks / bike lanes)	On-Street Parking	Curb and Gutter (outside lanes only)	Median
Minor Arterials	2@5' Bike Lanes (no sidewalks)	105'	4 @ 12'	2@13.5'	None	2@2.5'	20' or 20' CLT
Major Commercial Collector	2@5' Sidewalk	70'	2@12'	2@14.5'	2@8'	2@2.5'	None
Major Collectors	2@5' Sidewalk	70'	2@12'	2@14.5'	None	2@2.5'	16' CLT
Residential Collectors 1	Unknown	60'	2@12'	2@13.5'	1@ 8' (One side only)	2@2.5'	None
Residential Collectors 2	2@5' Bike Lanes	60'	2@11'	2@13.5'	None	2@2.5'	None
Local Street	Unknown	55'	29' (Pavement Width)	2@13'	Unknown	Unknown	None

RECOMMENDED DESIGN STANDARDS

An overview of the recommended design standards for arterials, collectors, and local roads is listed in Table 6. It is recommended that the new thoroughfare design standards from the 2019-2020 Thoroughfare Plan be incorporated in existing subdivision regulations to ensure consistent roadway construction throughout the City.

Table 6: Recommended Thoroughfare Design Standards

Roadway Class	Lanes	Area Type	Min ROW (feet)	Travel Lane Pavement (feet)	Median (feet) (Flush / Raised)	Parkway (includes sidewalks / bike lanes)	Sidewalk (feet)	On-Street Parking
Major Arterial	4-5	Urban Commercial	120’	2 @ 24’	14’/18’ or 14’ CLT	2@18’	6’-8’	No
Minor Arterial	2	Urban	100’	2 @ 12’	-	2@18’	5’-6’	No
Major Collectors	3	Urban Commercial	60’	2 @ 12’	14’ CLT	2@11’	5’-6’	No
Minor Collectors	2	Urban	60’	30’	-	2@15’	5’	Yes
Local Roads	2	Urban	60’	30’	-	2@15’	5’	Yes
	2	Rural	60’	24’+ 2@2’ shoulders	-	2@16’	Optional	Yes

*Interior curb and gutter included in median width. Outside curb and gutter included in parkway width.

DESIGN STANDARD CROSS-SECTIONS

Graphics depicting recommended design cross-sections are shown below in Figures 32 through 38 on the following pages.

Figure 32: Major Arterial Roadway Cross-Section with Median

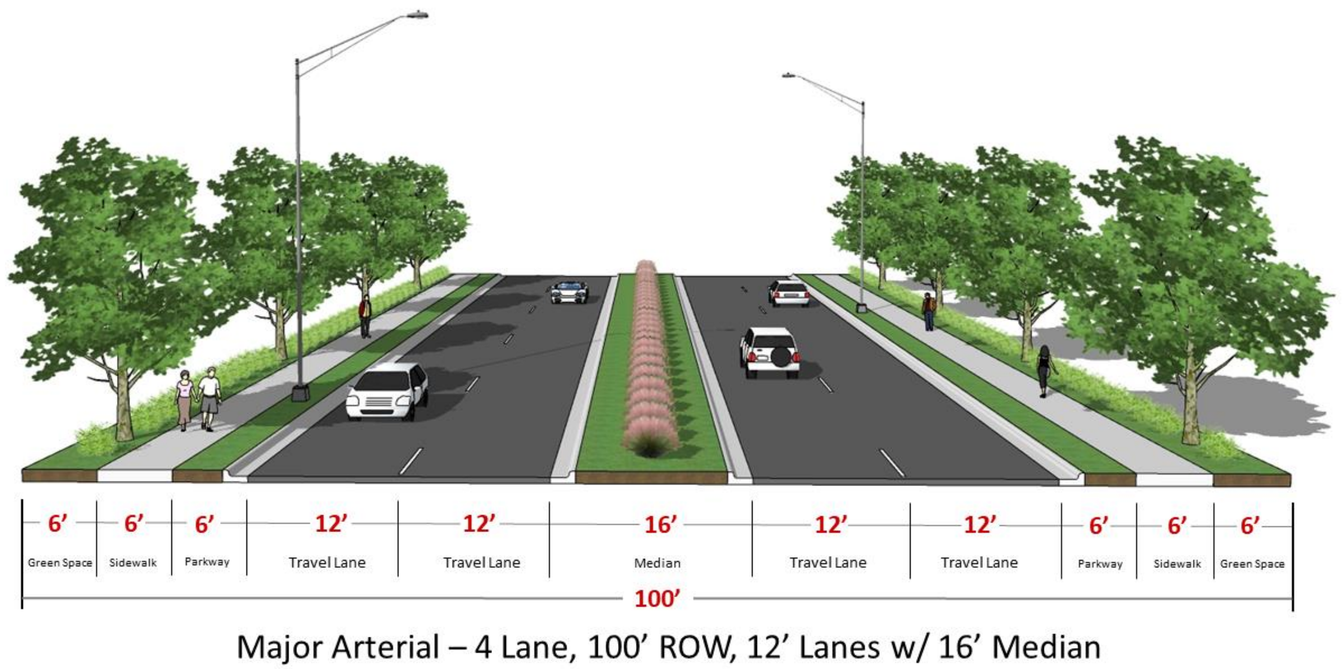


Figure 33: Major Arterial Roadway Cross-Section with Continuous Left Turn Lane

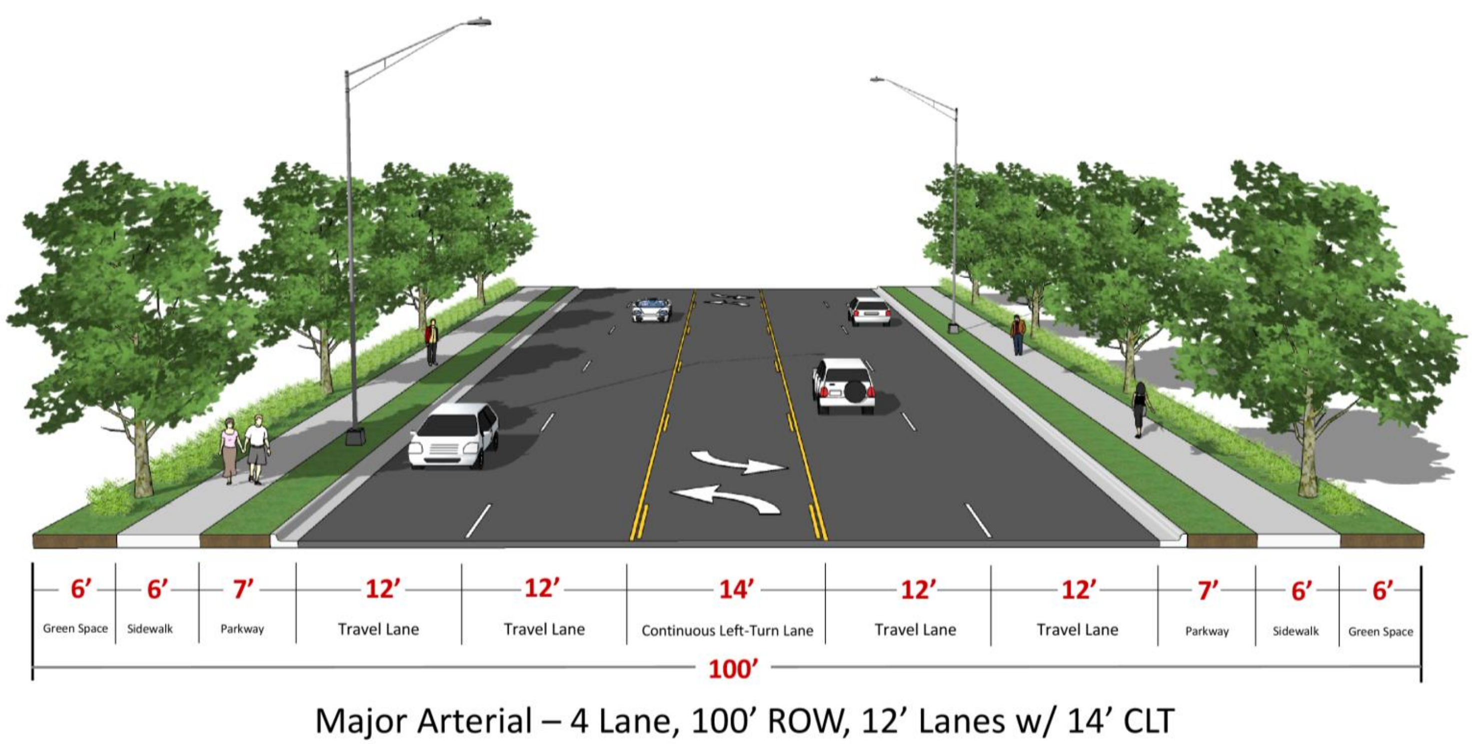
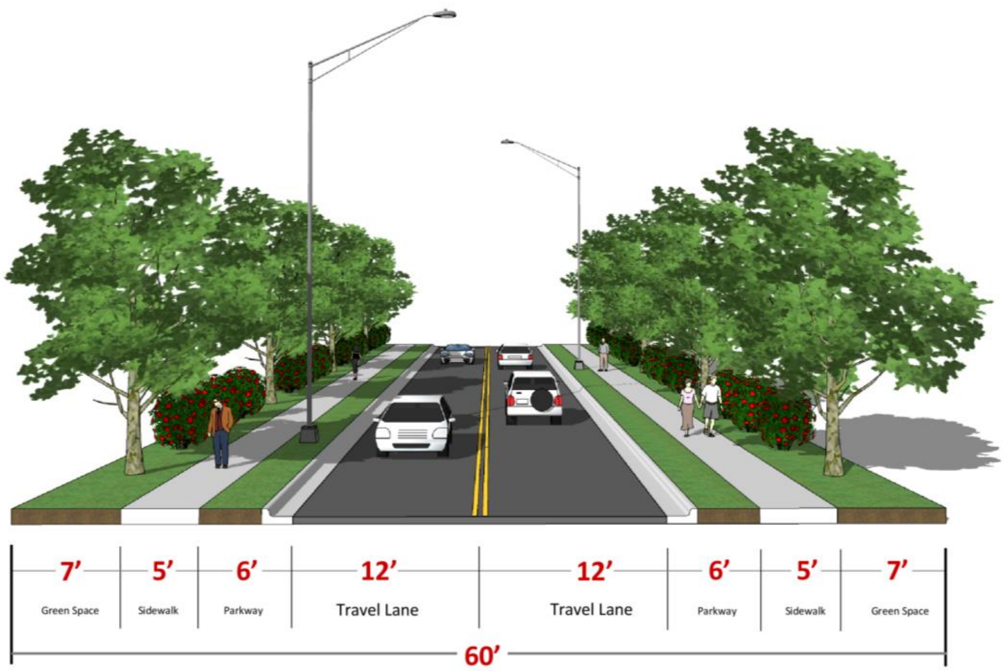
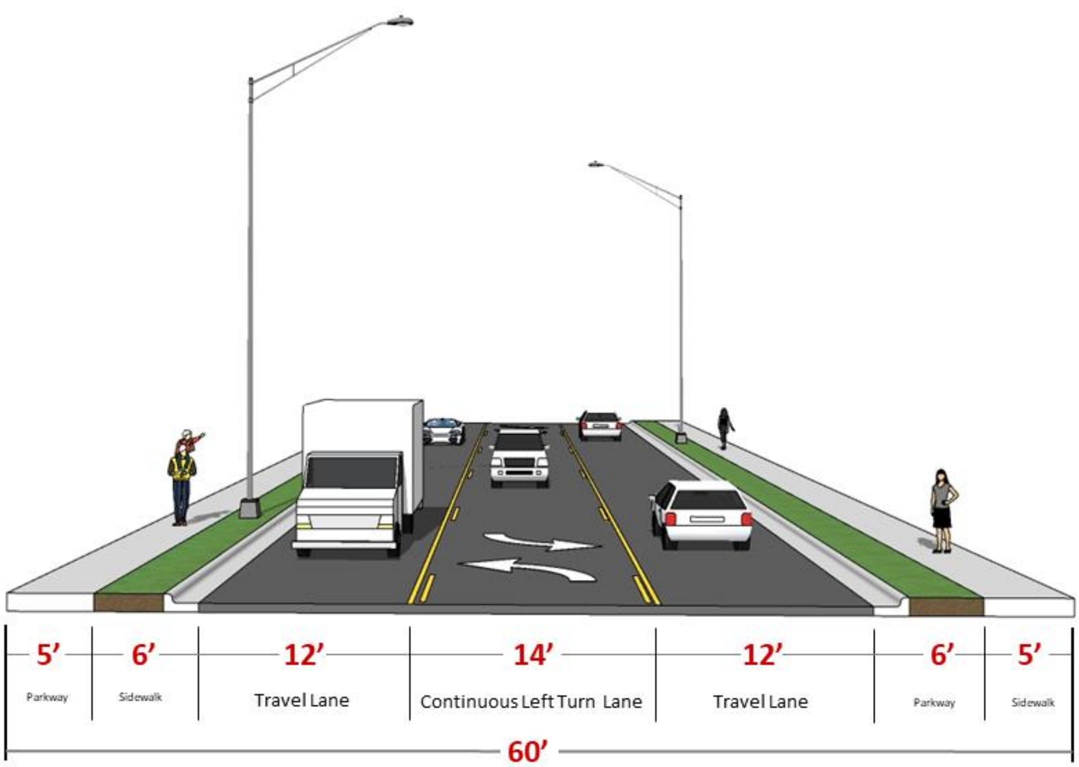


Figure 34: Minor Arterial Roadway Cross-Section



Minor Arterial – 2 Lane, 60' ROW, 12' Lanes

Figure 35: Major Collector Roadway Cross-Section



Major Collector – 3 Lane, 60' ROW, 12' Lanes w/ 14' CLT

Figure 36: Minor Collector Roadway Cross-Section

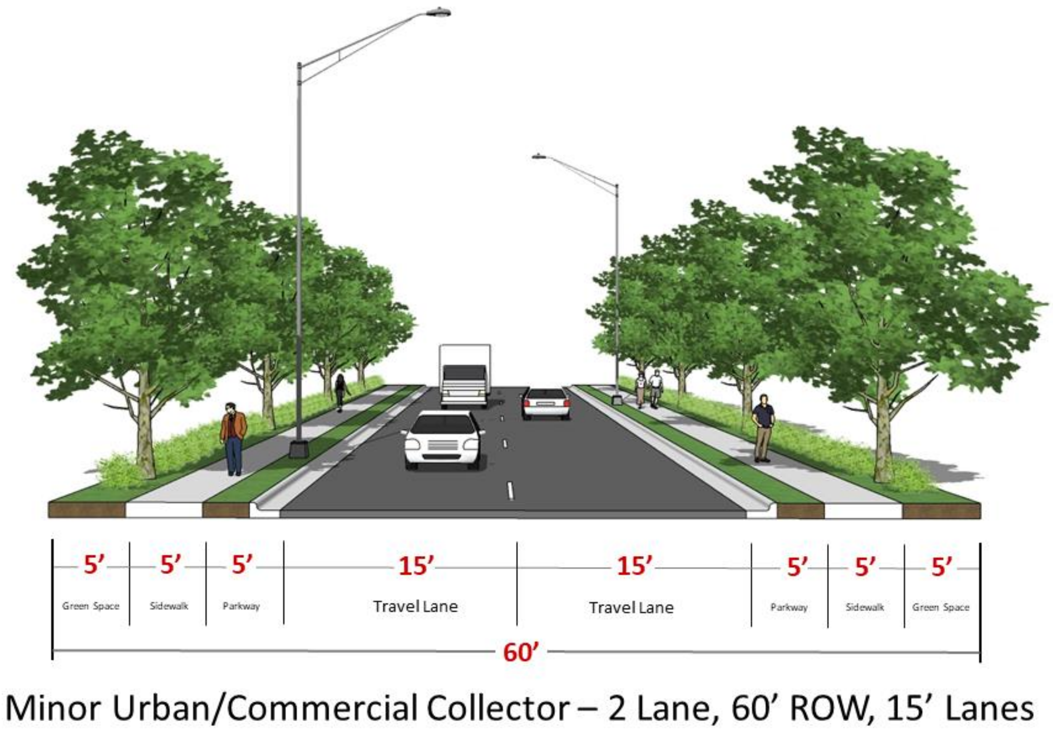


Figure 37: Local Urban Roadway Cross-Section

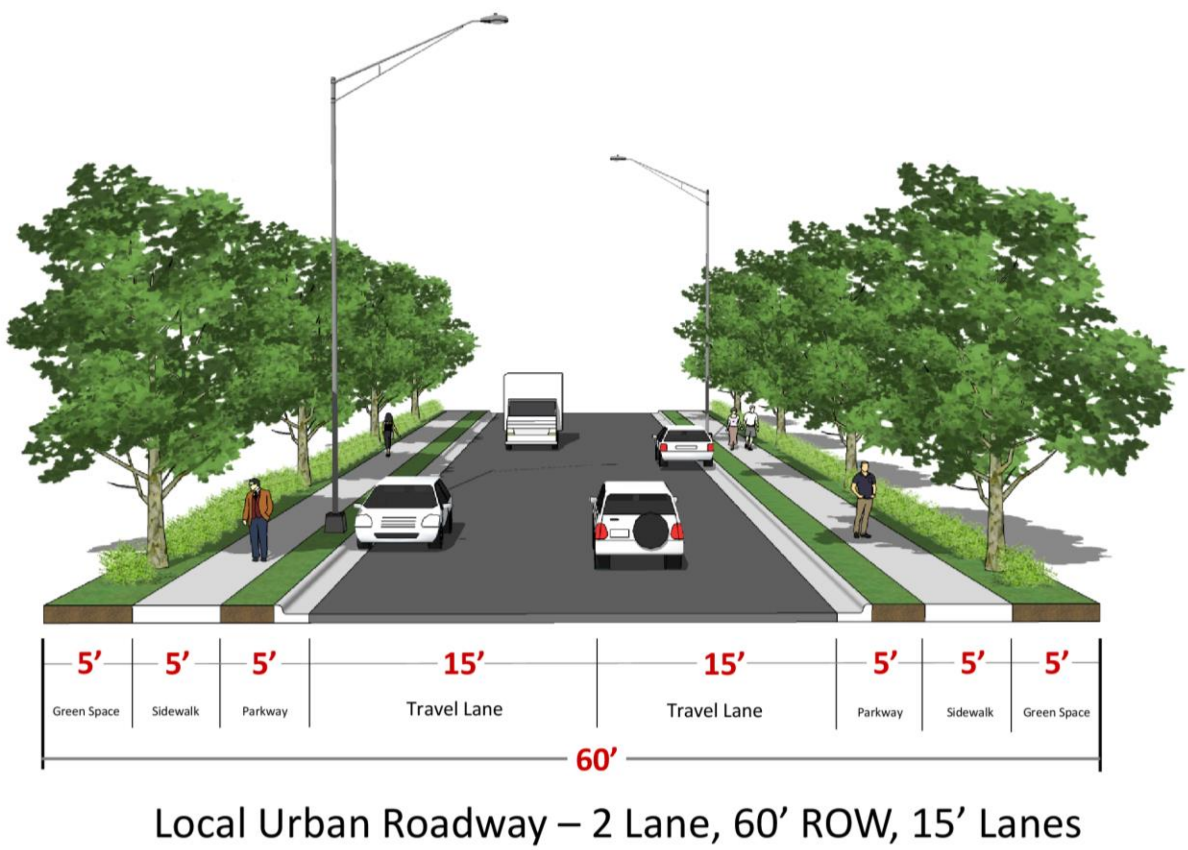
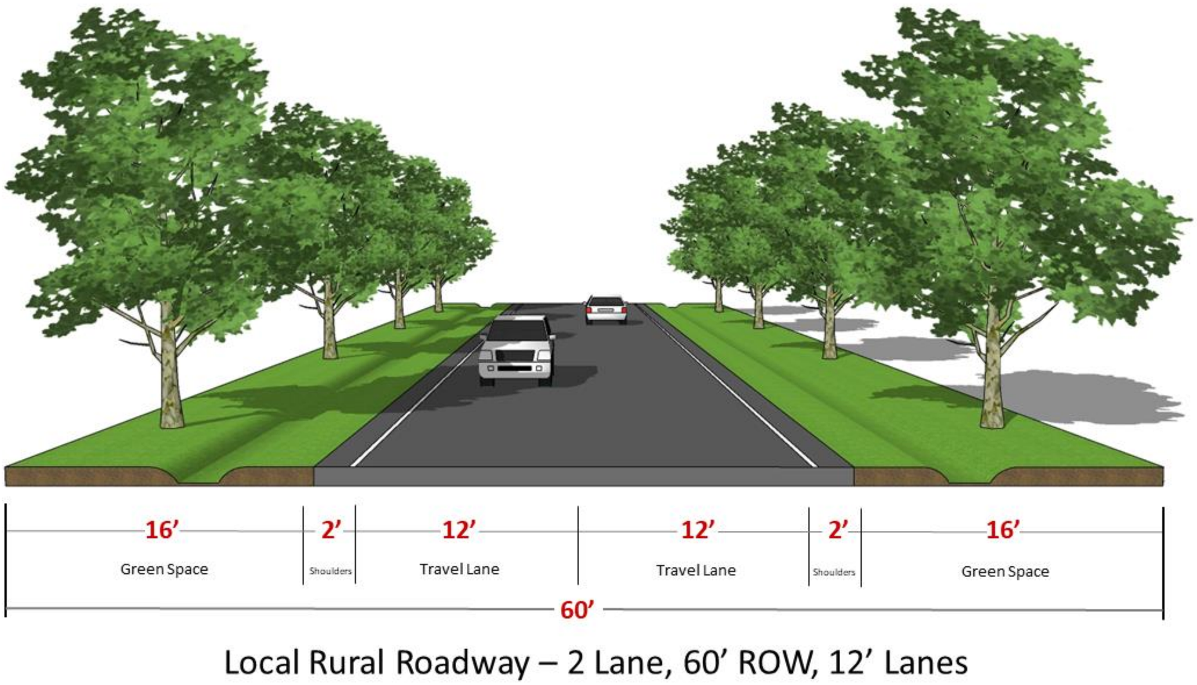


Figure 38: Local Rural Roadway Cross-Section

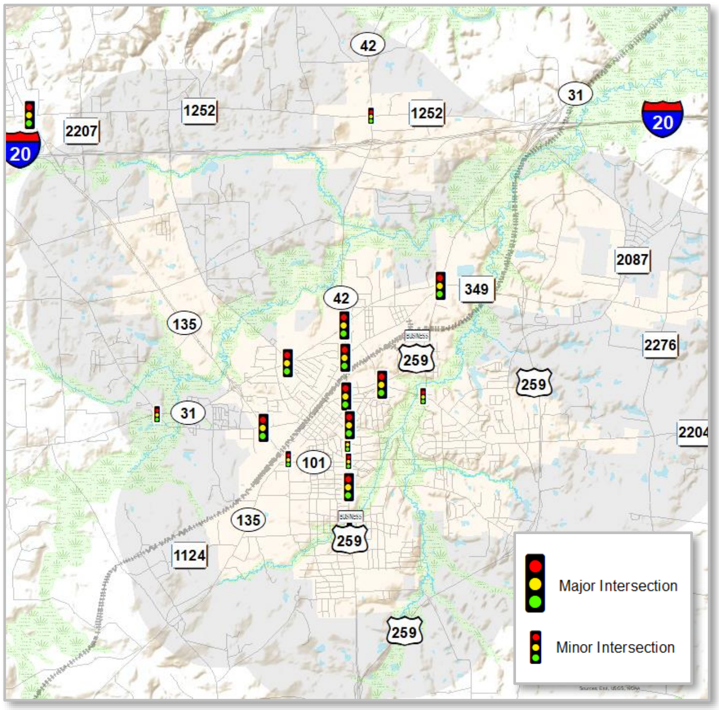


KEY INTERSECTIONS

TRADITIONAL INTERSECTIONS

The ability for the roadway network to operate effectively relies on the ability of intersections to efficiently process traffic. Operational conditions typically break down when insufficient turn-lane capacity is available to remove turn movements from the traffic stream. To ensure the ability to provide channelized turn movements, such as a second left-turn or right-turn lane, provision for additional ROW should be provided at key major and minor arterial intersections as illustrated in Figures 41 and 42 on the following pages. To determine the exact dimensional requirements of specific intersections, a traffic analysis should be conducted at the time of facility implementation.

Figure 40: Intersection Locations in Kilgore



As currently defined, divided roadways can accommodate a separate left-turn lane. By adding an extra 22 feet of ROW, a second left-turn and separate right-turn bay can be added as needed to an intersection. Travel lanes of 11' provide sufficient roadway width for turn movements.

Table 7 identifies necessary distances by roadway class for storage and transition requirements. The distances identified allow for minimum turn-lane storage and lane transitions. In high intensity development areas, a traffic analysis should be conducted to determine appropriate intersection requirements.

Table 7: Intersection ROW Requirements

Roadway	Major Arterial	Minor Arterial	Major Collector	Minor Collector
Major Arterial	350'	350'	300'	260'
Minor Arterial	300'	300'	260'	260'

Figure 39: ROW Requirements of Intersections Along Major Arterials

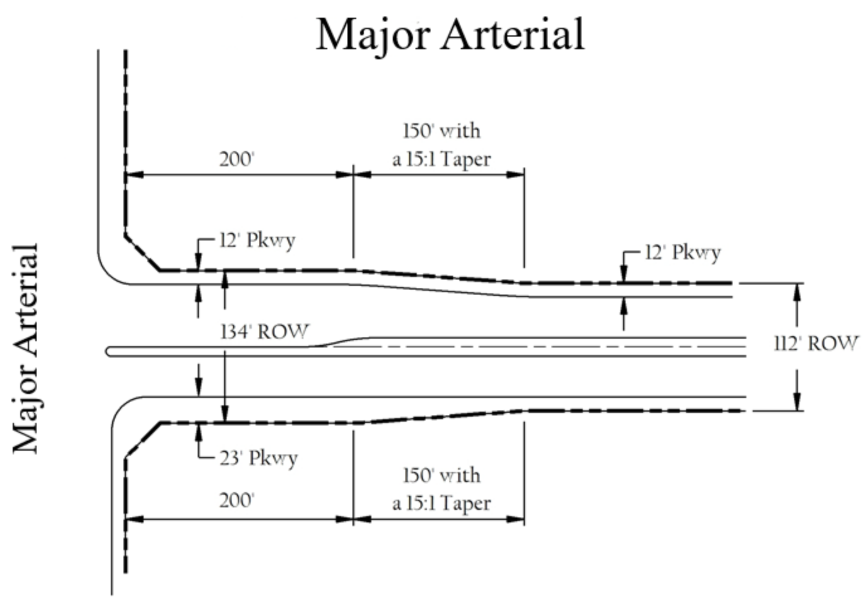
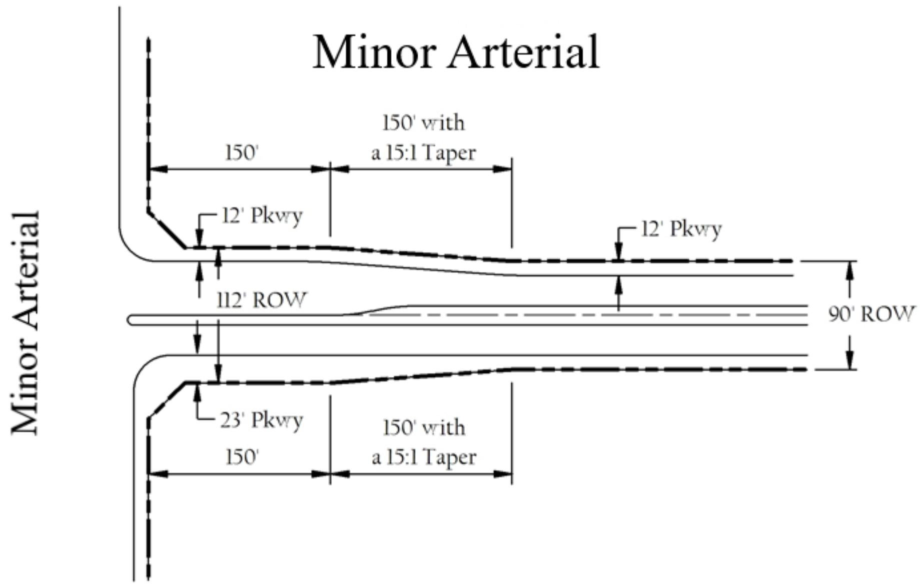


Figure 40: ROW Requirements of Intersections Along Minor Arterials



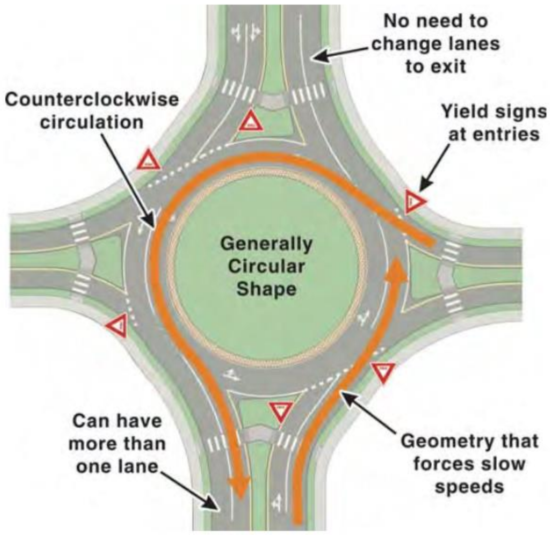
OTHER DESIGN ELEMENTS

ROUNDABOUTS

ROUNDABOUT ELEMENTS

Roundabouts are a type of intersection characterized by a generally circular shape, yield control on entry, and geometric features that create a low-speed environment through the intersection. Modern roundabouts (see Figure 43) have been demonstrated to provide a number of safety, operational, and other benefits when compared to other types of intersections. On projects that construct new or improved intersections on collector or minor arterial roadways, the modern roundabout should be examined as a cost-effective alternative to all-way stops or traffic signal control.

Figure 41: Illustration of Roundabout Elements



Source: FHWA

ROUNDABOUTS IN KILGORE

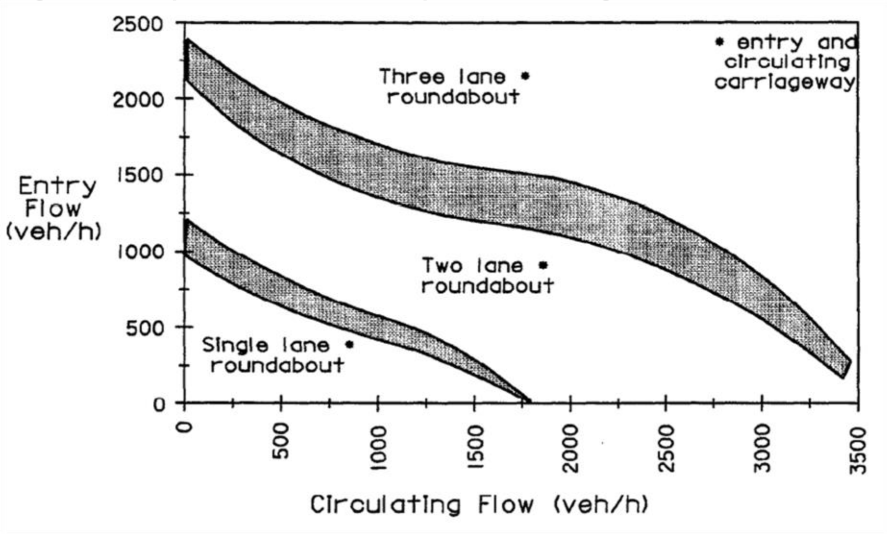
Roundabouts in Kilgore have had a mixed response and are currently under scrutiny by the general public. Much of this concern is based on the current design and performance of the existing roundabout at SH 135 / Houston Street and South Commerce Street, which is due for reconstruction in 2021.

One of the plan recommendations is to study selected intersections along Parkview, Lantrip, Henderson, and Florence, and explore opportunities to install roundabouts with the goal of reducing accidents, minimizing traffic signal needs, and reducing emissions. Efforts to expand roundabouts should be based upon modern designs, a robust public participation process, and coordination with TxDOT (if required).

GENERAL GUIDANCE ON ROUNDABOUT IMPLEMENTATION[1]

The decision to install roundabouts within a community or along a specific ROW can be done for various reasons, including as an intersection capacity improvement, to improve roadway safety, to support traffic calming and/or bicycle and pedestrian programs, or improve community aesthetics. There are a multitude of elements that contribute to the decision on whether to construct a roundabout. For mini roundabouts, the reasons usually pertain to safety, whereas for larger facilities the reasons can also include tourism, community enhancement, and economic development opportunities.

Figure 42: Required Number of Entry and Circulating Lanes for Roundabouts



Source: State of Maryland DOT, *Roundabout Design Guidelines*, p. 9.

There are six basic steps that are recommended by the FHWA when planning for a roundabout.

1. Consider the context. Are there any site-specific reasons or community concerns that would restrict roundabouts of a particular size?
2. Determine a preliminary lane configuration and roundabout category based on capacity requirements (see Figure 44 as an example).
3. Development of a selection process that justifies the construction of a roundabout compared to reasonable alternatives and identifies the information required to complete the analysis.
4. Perform the analysis as outlined in the selection process using identified data.
5. Determine the required ROW requirements for the preferred design.
6. Conduct an economic evaluation if additional ROW is required or other intersection control alternatives are considered more viable.

[1] Source: FHWA, Roundabouts: An Informational Guide.

Additional steps can also include a comprehensive public involvement process and a report documenting the process and describing the preferred alternative in detail.

SITE-SPECIFIC CONDITIONS

Factors that may trigger additional examination of applicability of a roundabout include, but are not limited to, the following:

- Physical or geometric constraints that make it increasingly difficult or impossible to construct a roundabout. This could include limited ROW, environmental concerns, or drainage issues.
- Traffic composition may make it difficult for users to negotiate roundabout. An example of this would be high volumes of oversized trucks.
- Location of the roundabout site to nearby structures or devices that would create additional, more complicated design issues. Examples include drawbridges, railroad crossings, or location of nearby interchanges.
- Proximity of bottlenecks that would consistently back up into the roundabout.
- Problems associated with grades and topography that would limit visibility or overly complicate roundabout construction.
- Unacceptable delays or inconsistencies in operating speeds along the roadway approaches.

For more information on roundabouts, please refer to the FHWA information guide at:

https://www.fhwa.dot.gov/publications/research/safety/00067/00067.pdf

INTERSECTION ALIGNMENTS

During the evaluation of the Kilgore roadway network it was observed that several roadway intersections were misaligned (see Figure 45). Correction of intersection misalignments can improve traffic flow and network connectivity, reduce operational and maintenance costs, and improve traffic safety. It is recommended that the City of Kilgore work in conjunction with TxDOT to evaluate and identify misaligned intersections and prioritize realignments as needed.

Figure 43: Examples of Misaligned Intersections in Kilgore

(From left to right) Willow Springs Rd, Pentecost Rd, and FM 2204. Littleton Rd, Inwood Rd, and FM 2204. Beckley St., Baughman Rd, and S. Henderson Blvd.

ACCESS MANAGEMENT[2]

The FHWA defines access management as *"the process that provides access to land development while simultaneously preserving the flow of traffic on the surrounding system in terms of safety, capacity, and speed."* In more general terms, access management is a set of strategies formulated by traffic engineers designed to optimize access land uses adjacent to roadways using a variety of treatments designed to optimize the efficiency, effectiveness of turning movements and improve the safety of all users.

The benefits of access management are that it has the potential to reduce roadway congestion and travel times, increase traffic safety, reduce development costs, enhance access to adjacent properties, and improve coordination between land use and transportation network development.

Along SH 42, SH 31, BUS 259, and North Kilgore Street there are numerous businesses that have shared drives and/or numerous openings onto arterial streets. Due to the number of accidents along many of these arterials, especially BUS 259 in Kilgore, it is recommended that the City consider conducting an access management study to improve circulation, enhance economic growth, and reduce traffic accidents. A brief overview of asset management improvements is discussed below.

TWO WAY LEFT TURN LANES[3]

Continuous two-way left turn lanes (TWLTL) are a common access management treatment when combined with driveway consolidation and corner clearance. TWLTLs provide a separate lane within the ROW for left turning vehicles to enhance property access and are considered when existing driveways do not meet spacing criteria. The following

[2] Source: 2007 Corpus Christi Access Management Plan
[3] Source: 2007 Corpus Christi Access Management Plan

arterial roadways in Kilgore have continuous TWLTLs: BUS 259, FM 2204, North Kilgore Street, FM 1249, FM 349, SH 135, and SH 31.

These treatments function well when:

- Traffic levels are moderate (10,000 to 24,000 vehicles per day).
- Percentage of turning volumes is high.
- Density of commercial driveways is low to moderate.
- Number of driveways per block or mile is high.
- The land use does not produce many turning movements per hour.

Conversely, TWLTLs do not function well once traffic rises above 24,000 vehicles per day and are less effective in situations where commercial driveway densities are high, and driveways are closely spaced. It is recommended to consider raised medians instead of TWTLs if daily traffic exceeds 20,000 for 4-lane streets or 17,500 for 2-lane streets. It is also recommended that TWTLs have a width or at least 12 feet, with a suggested minimum of 14 feet if possible.

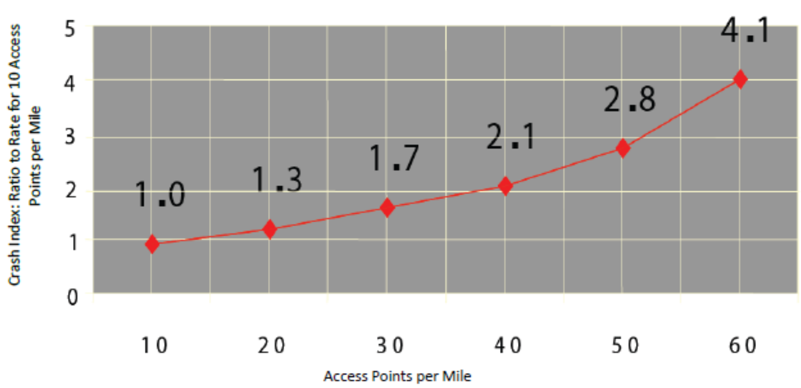
CHANNELIZED MEDIANS

Raised medians are intended to improve the safety of the roadway by eliminating the number of conflict points along the roadway, and in doing so improve the traffic flow along the corridor. Based on numerous studies form across the nation, the TxDOT Access Management Manual concludes that "roadways with a non-traversable (raised) median have an average crash rate about 30 percent less than roadways with a TWLTL". TxDOT is converting flush medians to raised medians on roadways throughout Texas, especially those that have transitioned from rural to urban in development density with associated increases in traffic volume.

Placement of median turn lanes must consider several factors. Left turns should directly feed a strategic driveway with cross access to adjacent development parking areas. In certain circumstances, it may be prudent to provide as many center left turn locations as possible to facilitate U-turns between major intersections.

DRIVEWAY SPACING AND LOCATION STANDARDS

Figure 44: Relationship Between Access Points and Traffic Accidents



Research by the National Cooperative Highway Research Program has shown a direct relationship between the number of driveways per mile and the propensity for crashes along the roadway, as shown in Figure 46.

Driveway spacing and offset from intersection standards should be established by local ordinance and/or site design guidelines. Such a measure would help control the access provided when properties develop and would eventually bring the corridor toward a better balance of throughput and local access. The establishment of the ordinance or site design guidelines would also help to classify existing driveways that are non-compliant and help to establish a list of desired driveway closures for future prioritization.

Figure 45: Driveway Consolidation in Frisco, TX

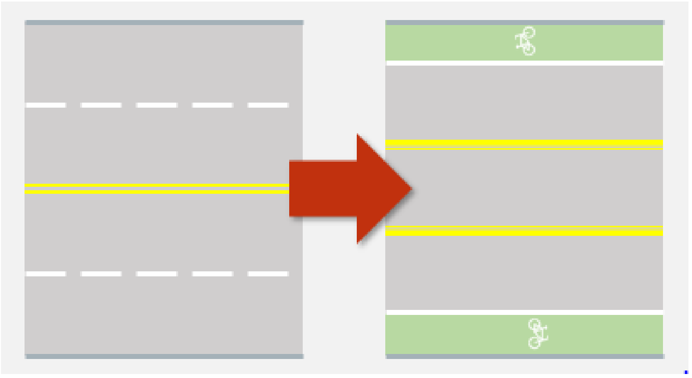
DRIVEWAY CONSOLIDATION

Managing the access points that bring traffic to and from adjacent developments requires negotiation with property owners regarding an amenity that had been previously granted them by the City and/or TxDOT. Often the closing of one or more driveways along the roadway frontage can allow for more parking on the site. However, the layout of some smaller sites relies on the provided driveways to make the on-site circulation and/or parking provisions functional. Potential treatments should be developed in conjunction with property owners to determine the overall benefit. Such benefits can include the potential to add more parking spaces, reducing the potential for driveway collisions and the number of on-site conflict points for traffic circulation. Figure 47 provides an example of driveway consolidation in Frisco, Texas.

The plan recommends that the City consider continuously evaluating access management treatments along the BUS 259 corridor through Kilgore as well as along IH-20 as development occurs.

ROAD DIET

Figure 46: Example of a Road Diet



The reduction of a travel lane for the purpose of reallocating the space to non-travel uses is called a "road diet". Road diet conversion may involve a staged implementation, installed incrementally as adjacent development transitions from an auto-oriented nature to a denser and more pedestrian oriented environment. To complement the road diet treatment and enhance the pedestrian nature of the corridor, sidewalks should also be developed to connect adjacent neighborhoods. Figure 48 illustrates the impact of a road diet on a roadway. It is recommended that the City of Kilgore continuously evaluate its roadway network for potential opportunities for road diets as appropriate.

TRAFFIC IMPACT ANALYSIS[4]

The purpose of a traffic impact analysis (TIA) is to assess the effects of a specific development activity on the existing and planned thoroughfare system. Development activity may include: rezoning, preliminary site plans and plats, driveway permits, certificates of occupancy, and Thoroughfare Plan amendments. Impact analysis methodology

[4] Sourced from the Frisco Engineering Design Standards Manual.

involves evaluating the design level of service, trip generation rates, potential trip reductions, and the impact of proposed developments on both existing and future traffic conditions. Specific data used for TIAs includes:

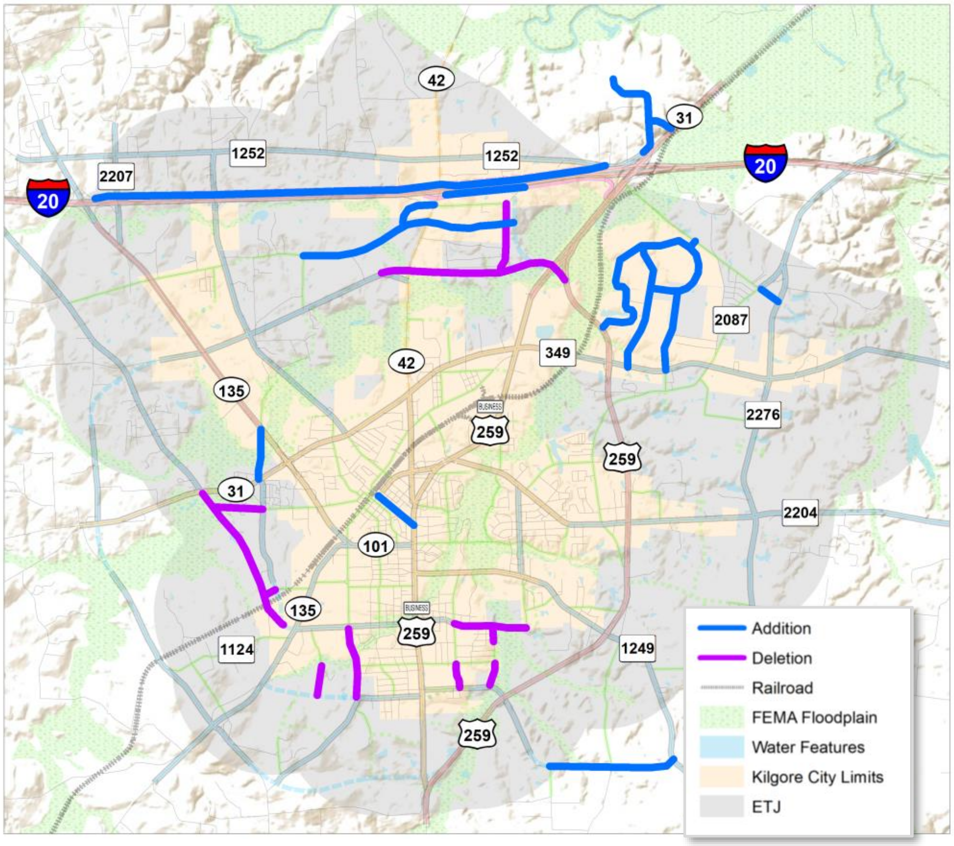
- Site location information and density of development
- Existing and proposed/projected zoning, site development, traffic volumes, trip generation, traffic signals and roundabouts
- Thoroughfare systems
- Net change in trip generation
- Trip distribution and traffic assignment
- Intersection and roadway level of service
- Proposed mitigation (if needed)

The benefits of such an analysis could be applied to the development review process and used to have developers finance upgrades of roadways when adjacent developments require such an improvement. A guide for the methodological approach and application of Traffic Impact Analysis in Kilgore is presented in Appendix B.

PROPOSED THOROUGHFARE PLAN

CHANGES FROM THE 2008 THOROUGHFARE PLAN

Figure 47: Recommended Changes from 2008 Thoroughfare Plan



As illustrated in Figure 49, the revised Thoroughfare Plan provides significant updates from the 2008 plan based on the latest transportation data, stakeholder input, and analysis. The new Thoroughfare Plan will serve as a framework from which the City can manage growth and develop and maintain efficient and effective transportation network. Key changes from the previous plan include:

Northern Changes:

Revisions include the recognition of the importance of the IH-20 as a key economic corridor through new frontage roads. This also includes provision of collector road connections aimed at supporting opportunities along the IH-20 frontage roads and from connecting arterial crossings. New interchanges along IH-20 at SH 31 aimed at providing increased accessibility and improve direct connections with the surrounding roadways. The addition of an arterial east-west connection to US 259 will provide better cross-town connectivity on a facility located outside the flood plain.

Northeastern Changes:

Changes in this sector focus on recognizing Synergy Business Park as a key employment generator by improving the accessibility to the area, including additional access points along Spinks Chapman Road and CR 349. Additional connections to undeveloped lands between CR 349 and Stone Road (CR 2205) and adjacent to CR 2276 provide new opportunities for expansion of industrial uses.

Southeastern Changes:

Revisions to the roadway network adjacent to local schools will provide enhanced accessibility from Chandler Street at peak times of congestion during the school week. The connection from CR 186 (Baughman Road) to CR 188 (at CR 173/Fredonia Road) will provide better traffic circulation and access to nearby schools, reducing traffic routing from FM 1249/Dudley Road.

Southwestern Changes:

The updated Thoroughfare Plan provides better connection points and opportunities for enhancing connectivity for future development. Previous alignments were difficult to traverse.

Western Changes:

Revisions to the Plan bring connectivity options closer to the central core of the City. Improvements also provide an option for intermodal truck traffic to bypass the existing roundabout at SH 135 and South Commerce Street, which is problematic for trucks to negotiate.

2019 THOROUGHFARE PLAN

Figure 50 on the next page shows the final updated Thoroughfare Plan for the City of Kilgore.

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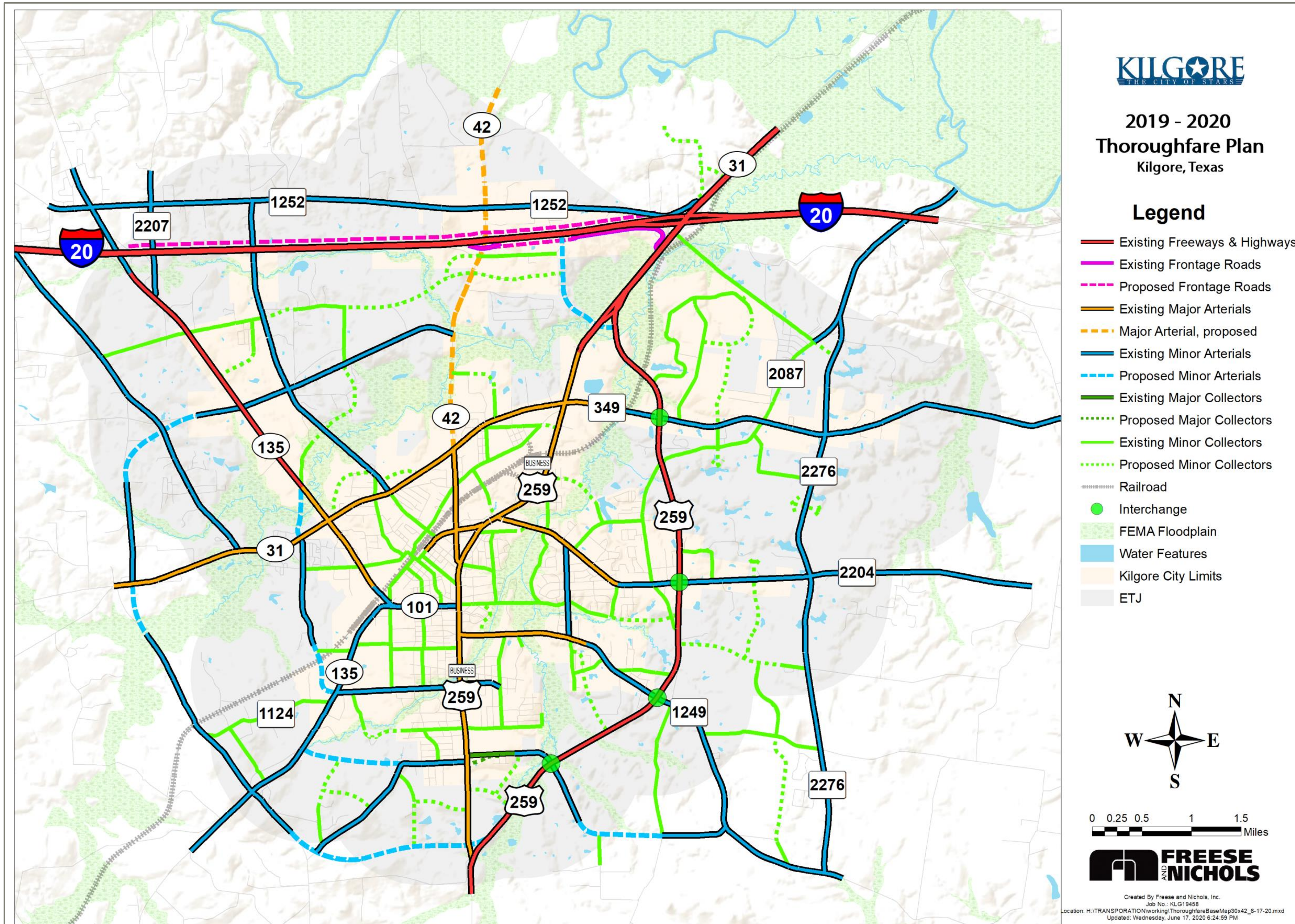
Figure 50: 2019- 2020 Kilgore Thoroughfare Plan



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Action Plan

SHORT TERM ACTIONS

Listed below in Table 8 are the recommended short-term actions for the City of Kilgore to enhance its transportation system.

Table 8: Recommended Short Term Actions

#	Who	What	When
1.0	City of Kilgore and the Kilgore ISD in consultation with FHWA and TxDOT	Continue to support the safe routes to school program in coordination with the Kilgore ISD, law enforcement agencies, and TxDOT.	Immediate
1.2	City of Kilgore and TxDOT	Create a formal joint transportation working group with TxDOT that meets regularly to coordinate work efforts, discuss common issues, and conduct studies to enhance the existing transportation system.	Immediate
1.3	City of Kilgore	Develop and incorporate roadway impact analysis into the City's development review process to determine what improvements or upgrades developers may be required to finance to support additional traffic demand due to existing and/or future development.	Immediate
1.4	City of Kilgore and TxDOT	Evaluate misaligned intersections and prioritize improvements in cooperation with TxDOT.	1-2 years
1.5	City of Kilgore and TxDOT	Conduct a roadway safety assessment in coordination with TxDOT to identify major accident areas and develop and prioritize treatments as necessary.	1-3 years
1.6	City of Kilgore in consultation with TxDOT	Continue to evaluate the suitability of roundabouts within the City and develop warrants and/or other evaluative criteria based on best practices in coordination with TxDOT and the FHWA.	1-3 years
1.7	City of Kilgore	Prioritize and initiate implementation of roadway treatments as recommended by the Downtown Plan.	2-10 years
1.8	Intermodal Freight Companies, the City of Kilgore, and TxDOT	Work with local industries and TxDOT to develop a freight transportation plan for the City to highlight key problem areas and develop low-cost solutions for improved intermodal freight movement and increased roadway safety. Evaluation current landfill access and consider improvements.	3-5 years
1.9	City of Kilgore and TxDOT	Conduct a funding study to determine how best to fund future transportation improvements. Consider development impact fees, bond programs and other funding instruments.	5 years
2.0	City of Kilgore	Regularly revise the Thoroughfare Plan, as needed.	5-10 years

LONG TERM ACTIONS

Listed below in Table 9 are the recommended long-term actions for the City of Kilgore to enhance its transportation system.

Table 9: Recommended Long-Term Actions

#	Who	What	When
3.0	City of Kilgore	Develop a long-range access management plan along BUS 259 and possibly IH-20 frontage roads.	10 years
3.1	City of Kilgore in consultation with TxDOT	Develop a comprehensive bicycle and pedestrian plan for the City of Kilgore, identifying key issues and developing a prioritized list of improvements.	10 years
3.3	City of Kilgore in consultation with TxDOT	Coordinate with TxDOT on the proposed timing for construction of frontage roads along IH-20.	10 years
3.4	City of Kilgore	Develop appropriate strategies to improve connectivity between downtown Kilgore and Kilgore College.	10 years
3.5	City of Kilgore	Consider implementing a Road Diet program along selected corridors within the City. Such a program could be incorporated into the proposed bicycle and pedestrian plan.	10 years
3.6	City of Kilgore and TxDOT	Continuously monitor and study the possibility of additional improvements to the interchange at IH-20 and SH 31/ US 259.	10-20 years
3.7	City of Kilgore and selected stakeholders	Conduct a transportation study to evaluate the possibility of expanding transit services and/or introducing complementary transportation systems (such as ride hailing or other on-demand services) into the City's transportation service network.	20 years

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Appendices

APPENDIX A

RESPONSES TO PUBLIC / STAKEHOLDER INPUT

Transportation Issues

- Lack of east-west connectivity.
  - The Thoroughfare Plan works to promote additional east-west connectivity through the construction of:
    - Frontage roads along IH-20
    - The extension of Peavine Rd / Magnolia Rd across to US 259
    - The connection of FM 2012 to US 259
    - The connection of FM 186 to FM 188
    - The connection of Peterson Rd to SH 42.
- Floodplains restrict roadway network development along SH 42 and IH-20.
  - Yes, floodplains are a barrier to roadways along portions of SH 42 and IH-20. However, roadway techniques do provide flexibility when constructing through floodplains, subject to environmental review, if necessary.
- Need for IH-20 service roads to spur development.
  - On page 49, the Thoroughfare Plan recommendations mention the construction of frontage roads along IH-20.
- Access to Synergy Park.
  - On page 49, the Thoroughfare Plan recommendations specifically mention the additional of roadways around Synergy Park to improve access.
- Too many large driveways spaced too close.
  - The Thoroughfare Plan provides general guidance on access management, including driveway spacing.
- Curb and gutter issues, with a need for flexibility in transitional areas.
  - This issue is beyond the scope of Thoroughfare Plans. The City follows its own design standards for collectors and local roads. All other roadways are the responsibility of TxDOT.
- Concern that concrete roads don't work in Kilgore.
  - Roadway construction techniques and materials are beyond the scope of Thoroughfare Plans. For arterial roadways, TxDOT construction standards apply to all freeways, frontage roads and arterials in Kilgore. The City has its own set of standards for collectors and local roadways.

- On-street parking an issue on narrow roadways.
  - Parking issues are generally not covered in Thoroughfare Plans. Note that the proposed design standards recommend on-street parking be accommodated on minor collectors and local roadways.
- Trucks have difficulty negotiating existing traffic circle.
  - TxDOT has plans to reconstruct the traffic circle in 2021.
- Problems associated truck activity on SH 135 and SH 42.
  - TxDOT has plans to reconstruct the traffic circle in 2021.
  - Plan recommendations include the creation of a freight transportation plan and a roadway safety study.
- Discontinuous sidewalk network, especially around schools.
  - The City has listed several sidewalk improvement projects in its current Capital Improvement Program (see Figure 4 on page 9) and is an active participant in the Safe Routes to School Program.
- Safety issues at intersections at IH-20, SH 31, FM 1252 and US 259.
  - An overall traffic safety study for the City is part of the Thoroughfare Plan recommendations.
- Trucks accessing and egressing from landfill causing fatalities.
  - An overall traffic safety study for the City is part of the Thoroughfare Plan recommendations.

Planning Issues

- Don't want to have a plan that sits on shelf, want legacy document with an implementation/action plan.
  - The Thoroughfare Plan includes an action plan with specific recommendations, including timeframes and key stakeholders.
- Want credible process to create a defensible plan that is realistic and achievable.
  - The City has worked closely with key stakeholders and the general public throughout the development of the Comprehensive Plan, Downtown Plan, and the Thoroughfare Plan. Recommendations are based upon pragmatic realities and propose actions well within the means of the City in terms of implementation and funding.

APPENDIX B

Traffic Impact Analysis

Standards, Methodology, Guidelines, and Format for Kilgore, Texas

The purpose of a Traffic Impact Analysis (TIA) is to assess the effects of specific development activity on the existing and planned thoroughfare system of the city. The following addresses the requirements of the TIA relative to the proposed site.

Responsibility of TIA Preparation and Review

1. A TIA shall be prepared in accordance with the following guidelines. The responsibility for TIA preparation shall rest with the applicant and must be performed by a Professional Engineer (P.E.) licensed in the State of Texas with experience in traffic and transportation engineering. The TIA report must be signed and sealed by the P.E. responsible for the analysis to be considered for review by the City. City staff shall serve primarily in a review and advisory capacity. Prior to the commencement of a TIA, an initial or pre-submission meeting is recommended to review any key parameters and scope of the conduct of study.

2. It shall be the responsibility of the applicant to submit two (2) draft TIA reports. Submittals shall include both hardcopy and electronic (PDF) documents.

3. The City shall review the TIA and provide comments to the applicant. It shall be the responsibility of the applicant to submit two (2) finalized TIA reports and electronic copies once all review comments have been addressed.

TIA Standards

1. Design Level of Service – The minimum acceptable level of service (LOS) shall be defined as LOS "D" in the peak hour for all critical movements and links. All development impacts on both thoroughfare and intersection operations must be measured against this standard.

2. Trip Generation Resources – The City's standard for trip generation rates for various land use categories shall be those found in the latest edition of *Trip Generation* published by the Institute of Transportation Engineers (ITE) or other published or recognized sources applicable to the region. Alternate trip generation rates may be accepted on a case-by-case basis if the applicant can provide current supporting data substantiating that their development significantly differs from the ITE rates. The City must approve alternative trip generation rates in writing in advance of the TIA submission.

3. Trip Reductions – Trip reductions for passer-by trips and mixed-use developments will be permitted, subject to analytical support provided by the applicant and approval by the City on a case-by-case basis. Assumptions relative to automobile occupancy, transit mode share, or percentage of daily traffic to occur in the peak hour must be documented and will be considered subject to analytical support provided by the applicant.

4. Study Horizon Years – The TIA must evaluate the impact of the proposed development on both existing traffic conditions and future traffic conditions for the horizon year(s) of; opening date of the project, an intermediate year of a multi-phased project, and build-out year of the site. The "intermediate year" should coincide with a major development stage of the site and/or key improvements to major area roadway improvements. The "build-out" year of the site will consider full completion of the site or 20 years, whichever is the least.

5. Study Area – The study area shall include all thoroughfare, intersections, freeway ramps and driveways serving the site within one (1) mile of the site.

TIA Methodology

1. Site Location/Study Area – A brief description of the size, general features, and location of the site, including a map of the site in relation to the study area and surrounding vicinity.

2. Existing Zoning – A description of the existing zoning for the site and adjacent property, including land area by zoning classification and density by FAR, square footage, number of hotel rooms, and dwelling units (as appropriate);

3. Existing Development – A description of any existing development on the site and adjacent to the site and how it would be affected by the development proposal;

4. Proposed Zoning / Site Development – A description of the proposed zoning/development for the site, including land area by zoning classification and density by FAR, square footage, number of hotel rooms, and dwelling units (as appropriate); identify other adjacent land uses that have similar peaking characteristics as the proposed land use; identify recently approved or pending land uses within the area;

5. Thoroughfare System – A description and map of existing planned or proposed thoroughfares and traffic signals for horizon year(s) within the study area;

6. Existing Traffic Volumes – Recent traffic counts for existing thoroughfares and major intersections within the study area;

7. Projected Traffic Volumes – Background traffic projections for the planned thoroughfare system within the study area for the horizon year(s);

8. Density of Development – A table displaying the amount of development assumed for existing zoning and/or the proposed development (using gross floor area, as required by the trip generation methodology);

9. Existing Site Trip Generation – A table displaying trip generation rates and total trips generated by land use category for the AM and PM peak hours and on a daily basis, assuming full development and occupancy based on existing zoning (if applicable), and including all appropriate trip reductions (as approved by the Director of Engineering Services);

10. Proposed Site Trip Generation – A table displaying trip generation rates and total trips generated by land use category for the AM and PM peak hours and on a daily basis, assuming full development and occupancy for the proposed development, and including all appropriate trip reductions (as approved by the City);

11. Net Change in Trip Generation (for rezoning cases) – Proposed trip generation minus existing trip generation (if applicable); the net increase in trips to be added to base volumes for the design year;

12. Trip Distribution and Traffic Assignment – Tables and figures of trips generated by the proposed development (or net change in trips, if applicable) added to the existing and projected volumes, as appropriate, with distribution and assignment assumptions, unless computer modeling has been performed;

13. Level of Service Evaluations – Capacity analyses for weekday AM and PM peak hours of the roadway and peak hour of the site, if different from the roadway, for both existing conditions and horizon year projections for intersections, thoroughfare links, median openings and turn lanes associated with the site, as applicable;

14. Traffic Signal Evaluations – The need for new traffic signals based on warrants and their impact on the performance of the transportation system;

15. Evaluation of Proposed/Necessary Mitigation – Capacity analyses for weekday AM and PM peak hours of the roadway and peak hour of the site, if different from the roadway, for intersections, thoroughfare links, median openings and turn lanes associated with the site under proposed/necessary traffic mitigation measures;

16. Conclusions – Identification of all thoroughfares, driveways, intersections, and individual movements that exceed LOS D or degrade by one or more LOS, the percentage of roadway volume change produced by the proposed development, and any operational problems likely to occur;

17. Recommendations – Proposed impact mitigation measures.

TIA Report Format

The TIA report must be prepared on 8½" x 11" sheets of paper. However, it may contain figures on larger sheets, provided they are folded to this size. All text and map products shall be computer-based and provided in both published format and computer file format (PDF). In addition, all electronic files used as part of the traffic analysis (i.e., Synchro, HCS, Passer II/III, CORSIM, VISSIM, etc.) shall be provided.

The sections of the TIA report should be categorized according to the outline shown below:

Executive Summary

I. Introduction

- A. Purpose
- B. Methodology

II. Existing And Proposed Land Use

- A. Site Location/Study Area
- B. Existing Zoning
- C. Existing Development
- D. Proposed Development

III. Existing And Proposed Transportation System

- A. Thoroughfare System
- B. Existing Traffic Volumes
- C. Projected Traffic Volumes

IV. Site Traffic Characteristics

- A. Existing Site Trip Generation (if applicable)
- B. Proposed Site Trip Generation
- C. Net Change in Trip Generation (if applicable)

D. Trip Distribution and Traffic Assignment

V. Traffic Analysis

A. Level of Service Evaluations

B. Traffic Signal Evaluations

VI. Mitigation

VII. Conclusions

VIII. Recommendations

Appendices

Traffic Impact Mitigation

1. Mitigation of traffic impacts shall be required if the proposed development would cause a facility or traffic movement to exceed LOS D, or where it already exceeds LOS D and the development would contribute five percent (5%) or more of the total traffic during any projected horizon year. If mitigation is required, the applicant must only mitigate the impact of the proposed development, and would not be responsible for alleviating any deficiencies in the thoroughfare system that may occur without the proposed development.

2. Acceptable mitigation measures shall include:

   a. Staging of development in order to relate site development to the construction of the required thoroughfare system;

   b. Staging of development so that the site contributes less than five percent (5%) of the total traffic to the affected facility or traffic movement during the projected horizon year;

   c. Off-site improvements, including the provision of right-of-way and/or the participation in funding for needed thoroughfare and intersection improvement projects (including, but not limited to, through lanes, turn lanes or traffic signals); and

   d. On-site improvements, including access controls and site circulation adjustments.

3. Mitigation is not required if it can be shown that the traffic impacts of the project are fully mitigated ten (10) years after the final opening with any improvements that are already programmed to be implemented within five (5) years of the initial opening.

Administration of the TIA – Based on the results of the TIA and actions recommended by the City Engineer, the Planning & Zoning Commission and/or the City Council, as appropriate, shall take one or more of the following actions:

1. Approve the zoning or development request, if the project has been determined to have no significant impact or where the impacts can be adequately mitigated;
2. Approve the development request, subject to a phasing plan;
3. Recommend study of the City Thoroughfare Plan to determine amendments required to increase capacity;
4. Deny the zoning or development request, where the impacts cannot be adequately mitigated.