

CITY OF KILLEEN THOROUGHFARE PLAN



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Prepared for the City of Killeen



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INTRODUCTION

Purpose, Planning Process, and Goals

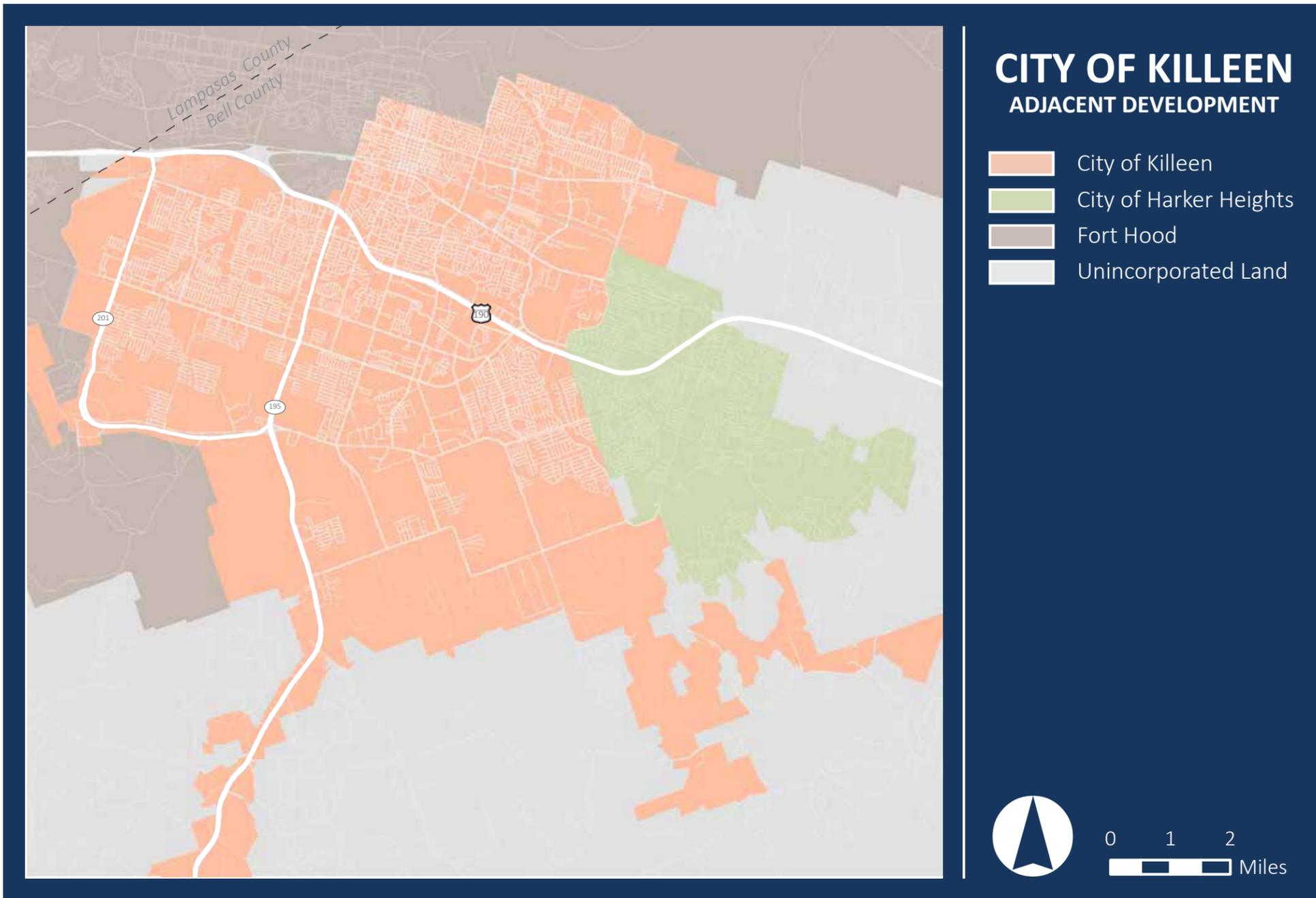


Figure 1: Existing development adjacent to the City of Killeen boundaries will force the majority of future development to the southern portion of the city and its extra territorial jurisdiction (ETJ).

PURPOSE

A thoroughfare plan is a long-range planning document used to guide the development of a community’s roadway system. The purpose of the plan is to ensure the future transportation network meets the travel needs of the growing region for all modes of travel, including walking, bicycling, driving, and public transportation. A thoroughfare plan does not represent a short-term list of construction projects, nor are the precise alignments of proposed roadways intended to be fixed. Instead, the plan serves as a general guidance document intended to help city officials plan ahead for the future of the transportation system, while weighing a variety of other factors, many of which may evolve over time. It is recommended that the City of Killeen periodically review and

update the plan to ensure it reflects the most up-to-date information regarding growth and development trends, as well as community goals.

STUDY AREA

The City of Killeen Thoroughfare Plan focuses on roadways within the existing city limits and the city’s extraterritorial jurisdiction (ETJ). As shown in **Figure 1**, growth outside of the city limits is constrained by adjacent developments, including Fort Hood to the north and to the west, and the City of Harker Heights to the east. The majority of future development, therefore, is anticipated to occur in the southern portion of the city and its ETJ.

PLANNING PROCESS

The planning process to update the City of Killeen Thoroughfare Plan builds upon previous planning efforts in the region, technical analyses, and feedback from the public and local stakeholders. The 2015 Thoroughfare Plan network closely reflects the community’s vision for the region as articulated through meetings with key stakeholders and members of the public.

Existing Thoroughfare Plan

The 2015 Thoroughfare Plan takes into consideration and builds off of the lessons learned from the 2010 Thoroughfare Plan. While many of the proposed roadways from the 2010 Thoroughfare Plan were retained in the update to the plan, the update included a high level review of many of the alignments in the existing thoroughfare plan to ensure viability, in terms of topography and the location of new construction since the development of the 2010 Thoroughfare Plan. Instead of focusing solely on maximizing vehicle throughput, the 2015 Thoroughfare Plan emphasizes the importance of context sensitive solutions that take into account a variety of factors affecting quality of life in determining the appropriateness of transportation facilities.

Other Planning Documents

The 2015 Thoroughfare Plan exists in tandem with a number of other local and regional planning documents. These documents were reviewed to ensure the 2015 Thoroughfare Plan supports and augments the goals and objectives of these other guidance documents. Plans consulted in the development of the 2015 Thoroughfare Plan include:

- Mobility 2040 (Killeen Temple Metropolitan Planning Organization - KTMPO);
- Fiscal Year 2015- 2018 Transportation Improvement Program (KTMPO);
- Regional Thoroughfare and Pedestrian/ Bicycle Plan (KTMPO);
- Comprehensive Plan (City of Killeen);
- Downtown Plan (City of Killeen); and
- Installation Development Plan Volume II for Fort Hood (Fort Hood).

Public Participation

Local stakeholders and residents were consulted throughout the planning process via a series of meetings and workshops aimed at collecting and incorporating local knowledge and expertise into the plan. These meetings were designed to allow City staff, policy makers, local stakeholders, and the public to cooperatively identify transportation issues, prioritize goals, and comment on the proposed thoroughfare plan. The final plan incorporates the feedback received from the public and key stakeholders throughout the planning process.

Thoroughfare Plan Kick Off Meeting

The initial kickoff meeting for the update to the thoroughfare plan was held in June 2014. During the kick off meeting, the project team discussed previous plans and studies, local goals and objectives, projects that are currently underway in the City of Killeen, and data needs with city officials. A plan for additional stakeholder engagement was also developed. The kickoff meeting laid the groundwork for developing the update to the thoroughfare plan.

Steering Committee

A steering committee was established by the project team, in conjunction with city staff, to oversee and guide the development of the 2015 Thoroughfare Plan. The committee included representatives from key stakeholder groups with specific interests related to transportation in the City of Killeen, including the City of Killeen Police Department, the City of Killeen Fire Department, the City of Killeen Planning and Development Services Department, the City of Killeen Transportation Division, the Killeen Independent School District, the Hill Country Transit District, and Fort Hood. The steering committee assumed a leadership role in the development of the thoroughfare plan by providing feedback based on their professional expertise and personal experience, and by providing information regarding their agency's planning efforts, which may have implications for the thoroughfare plan.

The first steering committee meeting took place on November 13, 2014, and focused on defining and prioritizing goals for the thoroughfare plan. The steering committee reviewed the technical analyses completed to-date and provided insight on transportation issues facing the City of Killeen. Steering committee members emphasized the importance of improving mobility and reducing congestion, followed by goals related to economic development, safety, and supporting land use goals.

The second steering committee meeting took place on January 22, 2015. The steering committee was asked to score projects from the draft thoroughfare plan according to how well each project addresses the thoroughfare plan goals. A project selection matrix was created and weights were assigned to each of the goals according to feedback from the steering committee. A final score was assigned to each of the projects, and projects were ranked accordingly. Members were given an opportunity to comment on the resulting prioritized list of projects.

Public Meeting

A public meeting was conducted on December 11, 2014 at the Killeen Civic and Conference Center. The public meeting offered local residents and key stakeholders the opportunity to review the technical analyses that went into developing the draft thoroughfare plan and comment on the draft plan. The format of the meeting was an open house, where participants could come and go at their own leisure and browse several large presentation boards and a rolling slide show.



Figure 2: Participants at the public meeting review and provide feedback on the draft Thoroughfare Plan.

Upon arrival, participants were greeted by the project team, and asked to denote where they live and where they work on a large map. The information provided a better understanding of the issues faced by residents and employees in different parts of the city. Meeting participants were then given a brief presentation covering the purpose, key elements, and benefits of a thoroughfare plan, an overview of the thoroughfare planning process, a list of the parties involved, a project timeline, and the purpose of the public meeting. Participants were then invited to review a series of meeting exhibits.

The presentation boards displayed background information on the following:

- Thoroughfare planning process;
- Existing land use in the City of Killeen,
- Locations of crashes involving both motorists;
- Locations of crashes involving bicyclists and pedestrians;
- Alignment of transit routes and the location of transit stops; and
- System deficiencies analysis results

Each presentation board included a comment card, and participants were encouraged to provide input. Additionally, members of the project team were on hand to answer questions and record comments. Comments received at the public meeting are summarized in **Appendix A**.

Complete Streets

The 2015 Thoroughfare Plan goes above and beyond the existing plan and emphasizes the consideration of “complete streets” principles and context sensitive solutions in the development of the future roadway network. Historically, engineers designed roadways primarily to move motorists through the network as quickly and efficiently as possible. As a result, many existing roadways do not address the needs of other modes and users, and therefore, are underutilized. “Complete streets” principles encourage planners and engineers to consider all transportation modes and users of a roadway when designing streets, including bicyclists, transit riders, pedestrians, motorists, the young, the elderly, the disabled, and the able-bodied.

Polls completed by the National Complete Streets Coalition indicate that 73 percent of Americans feel they have no option but to drive to their intended destination, and 66 percent of Americans desire more transportation options for their community. Moreover, the poll found that a quarter of pedestrian trips are made along roadways where at least part of the route does not contain sidewalks or shoulders, and only 5 percent of bike trips are made in dedicated bike lanes. Designing infrastructure that makes alternative forms of travel more convenient, attractive, and safe for Killeen's residents is essential to maintaining a strong, livable community.

It is important to note that a “complete streets” approach to roadway design also takes into consideration the appropriateness of various modes and users based on roadway function and context. For example, pedestrian sidewalks and bike lanes may not be appropriate along urban principal arterials, given



Figure 3: Smaller roadway widths, parallel parking that acts as a buffer between pedestrians and traffic, and wide sidewalks are examples of context sensitive design standards appropriate for urban activity centers. (Source: Jeffrey Beal; Wikimedia Commons)¹

¹ <http://creativecommons.org/licenses/by-sa/3.0/legalcode>

their intended function of serving long range regional trips and accommodating motor vehicles at high volumes and speeds. However, consideration should still be given to the appropriateness of parallel facilities for accommodating other modes and users. Moreover, while an urban principal arterial may not be an appropriate context for bicycle or pedestrian facilities, a rural highway may offer opportunities to accommodate these modes, as traffic volumes are often lower. “Complete streets” principles emphasize the importance of flexibility in applying design standards and guidelines.

In addition to “complete streets” considerations, the 2015 Thoroughfare Plan incorporates a context sensitive approach to thoroughfare planning and design that encourages the integration of aesthetic, historical, and environmental considerations along with safety and mobility goals. In essence, context sensitive solutions go beyond only serving transportation mobility objectives and work towards achieving a variety of community goals that influence quality of life.

Common standards for context sensitive thoroughfare design from the Institute for Transportation Engineers (ITE) include:

- A balance between safety, mobility, community, and environmental goals in all projects;
- Involvement of the public and stakeholders early in the process and throughout planning and project development phases;
- The use of a multidisciplinary team tailored to project needs;
- The inclusion of all modes of travel including pedestrians, transit/paratransit, bicycles, private motor vehicles, and freight;
- The accommodation of all types of travelers including young, old, and disabled, as well as able bodied adults safely, conveniently, and comfortably on all thoroughfares;
- The application of flexibility inherent in design guidelines and standards; and
- The incorporation of aesthetics as an integral part of good design.

THOROUGHFARE PLAN GOALS

Setting clear goals provides a strong foundation for any successful planning effort. The goals for the 2015 Thoroughfare Plan were developed after reviewing other local and regional planning documents, and gathering input from the steering committee and the public. The final set of goals was reviewed and approved by city staff and the steering committee.

Goal 1: Reduce congestion and decrease travel times

Reducing congestion and decreasing travel times contributes to a more mobile community, where people and goods can reach their destinations quickly and with ease.

Goal 2: Provide safe and convenient travel options

Providing safe and convenient travel options means prioritizing improvements that will reduce the number and/ or rate of vehicular and/ or pedestrian/ bicycle crashes.

Goal 3: Promote transportation options that improve the local economy

The transportation system contributes to economic development by increasing or improving access to employment and/ or shipping centers, retail and entertainment opportunities, and other destinations, or by making a place more attractive to potential employers and the workforce they wish to hire.

Goal 4: Prioritize shovel-ready and cost-effective transportation projects

“Shovel-ready” projects are those that have progressed significantly in the project development process or those that do not require the purchase of land in order to build the road (otherwise known as right-of-way, or ROW). Purchasing ROW can be expensive and time-consuming, and may contribute to delays in construction. “Cost-effective” projects include those that have additional financial support from other sources, such as state or federal programs or a local developer.



Figure 4: Roundabouts are a relatively low-cost improvement that increase safety by reducing traffic conflicts that are frequent causes of crashes at traditional intersections. (Source: Wikimedia Commons)

Goal 5: Support surrounding land use goals

Transportation projects that support land use goals take into account where growth is expected to occur, and what types of land uses (residential, commercial, industrial, etc.) are anticipated in certain areas.

Goal 6: Prioritize low-cost improvements to the existing transportation system

Building new roads can be expensive. However, there are many low-cost improvements that can dramatically improve the flow of traffic on existing roadways without the need for costly new construction.

Goal 7: Increase multi-modal options

Increasing multi-modal options means providing people with more options on how to reach their destinations.

THOROUGHFARE PLAN GOALS AT A GLANCE

- ① Reduce **Congestion**
- ② Provide **Safe** Travel Options
- ③ Improve the **Local Economy**
- ④ Prioritize **Cost-Effective** Improvements
- ⑤ Support **Land Use** Goals
- ⑥ Prioritize **Low-Cost** Improvements
- ⑦ Increase **Multi-Modal** Options
- ⑧ Protect the **Environment**
- ⑨ Improve **Reliability** of Travel Times
- ⑩ Increase **Connectivity**

Goal 8: Protect the environment and historical/ cultural resources

Transportation projects can have significant impacts on the natural environment, as well as historical and/ or cultural resources. Protecting the environment means prioritizing projects that do not adversely impact natural resources, historical sites, and/ or certain neighborhoods, such as low-income or minority neighborhoods.

Goal 9: Improve the reliability of travel times.

Travel time reliability is the consistency or dependability of travel times. A reliable travel time means a trip that will take a half-hour today, will take a half-hour tomorrow, and so on. Improving the reliability of travel times means reducing unexpected delays.

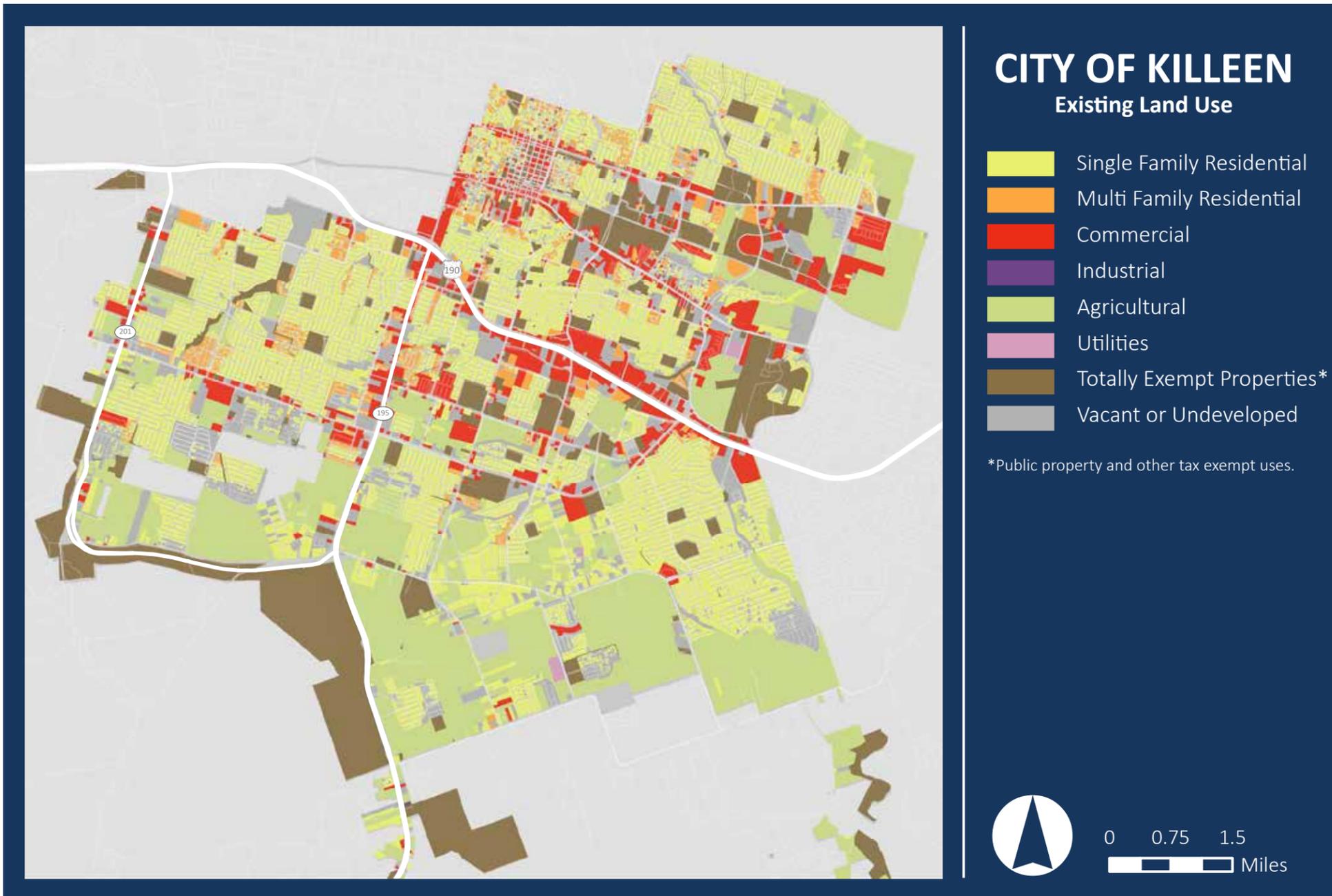
Goal 10: Increase Connectivity

Connectivity refers to the density of connections in path or road network and the directness of links. As connectivity increases, travel distances decrease and route options increase, allowing more direct travel between destinations.

2

EXISTING CONDITIONS

Land Use and Transportation Facilities



CITY OF KILLEEN Existing Land Use

- Single Family Residential
- Multi Family Residential
- Commercial
- Industrial
- Agricultural
- Utilities
- Totally Exempt Properties*
- Vacant or Undeveloped

*Public property and other tax exempt uses.



Figure 5: Land use in the City of Killeen is characterized by a very large employment center (Fort Hood), with considerable proportions of the city dedicated to residential development. Concentrations of commercial development are located downtown and along key corridors. (Data Source: City of Killeen Comprehensive Plan)

LAND USE

In order to lay the groundwork for the update to the thoroughfare plan, development of the 2015 Thoroughfare Plan started with a review of existing conditions. Land use data and information on the existing transportation system were analyzed to better understand how transportation presently interacts with land use, and identify any transportation issues.

The City of Killeen began as a railroad outpost off the Gulf, Colorado, and Santa Fe Railway in 1882. The city remained a shipping point for agricultural products for most of its early life until the establishment of Camp Hood in 1942. Camp Hood transitioned to Fort Hood and became a permanent U.S. Army installation in 1950. Since then, the city's population has exploded along with development.

Development patterns in the City of Killeen are similar to those of other communities with a dominant employment generator. The city is characterized by a large employment center (Fort Hood), considerable residential development, and a general segregation of land uses. As shown in **Figure 5**, concentrations of commercial development generally fall along major thoroughfares, including Central Texas Expressway (U.S. 190), Veterans Memorial Boulevard (Business U.S. 190), Stan Schlueter Loop (F.M. 3470), and Fort Hood Street (S.H. 195).

The most significant concentration of commercial development is located along Central Texas Expressway (U.S. 190) between Trimmier Road and Stan Schlueter Loop (F.M. 3470). As evidenced by comments received from the public and other stakeholders, this concentration of commercial development has resulted in increasing traffic congestion on adjacent roadways, and longer travel times for residents.

Similarly, Fort Hood generates a significant amount of traffic on City of Killeen roadways, particularly those providing direct access to Fort Hood. The locations of access control points (ACPs), as well as other factors such as the arrival and departure times of those employed at Fort Hood, have significant implications for traffic on City of Killeen roadways.

TRANSPORTATION

Transportation infrastructure in the City of Killeen includes roadways, public transit services, sidewalks, bike lanes, and trails. A majority of residents and visitors to Killeen rely on a private automobile for transportation. The Hill Country Transit District, locally known as the HOP, provides fixed route and paratransit bus services. The city is also making a concerted effort to improve pedestrian and bicycle facilities.

Roadways

The existing roadway network in the City of Killeen consists of one main east-west expressway, Central Texas Expressway (U.S. 190); a north-south highway Fort Hood Street (S.H. 195); an outer route along the southwestern corner of the city, Clear Creek Road (S.H. 201); and a range of arterials, collector roadways, and local streets that provide access from residential areas to these main thoroughfares.

Generally, residents and visitors to the City of Killeen have a variety of options for traveling east-west. However, north-south connectivity is presently insufficient to meet growing demand. Only a few arterials provide connections between the northern and southern portions of the city, and some do so only partially, including:

- Clear Creek Road (S.H. 201);
- Fort Hood Street (S.H. 195);
- Trimmier Road; and
- W. S. Young Drive.

With future growth projected to occur primarily in the south, improvements are necessary to ensure connectivity throughout the city and reduce congestion along existing north-south corridors.



Figure 6: Major stops for the HOP are located at large employment and commercial centers. (Source: The HOP website)

Transit

The City of Killeen is served by the Hill Country Transit District (HCTD) which operates the HOP, a regional public transit system. The HOP began operations in the 1960's and now serves a nine-county area covering over 9,000 square miles. The City of Killeen is serviced by the Killeen Urban Division of The HOP which provides transit services to the cities of Copperas Cove, Harker Heights, and Killeen. The system currently operates Monday through Saturday with eight fixed routes in the Killeen area and on-call paratransit service. **Figure 7** shows the existing HOP transit routes in the City of Killeen.

During the public meeting, participants discussed ways that the HOP could improve the accessibility of its fixed route service, including providing greater connections to medical facilities and ensuring all stops are ADA (Americans with Disabilities Act) compliant. Participants also noted the importance of the quality of the pedestrian facilities providing access to transit stops and destinations. In the absence of pedestrian facilities, many individuals using wheel chairs, especially those with self-propelled scooters, simply travel in the traffic lane.

While the 2015 Thoroughfare Plan does not explicitly address transit operations, the plan takes into account the locations of transit routes and stops, as well as the needs of transit and transit users, in order to help ensure the proposed thoroughfare network facilitates the use of public transportation in the City of Killeen, rather than acts as a barrier.

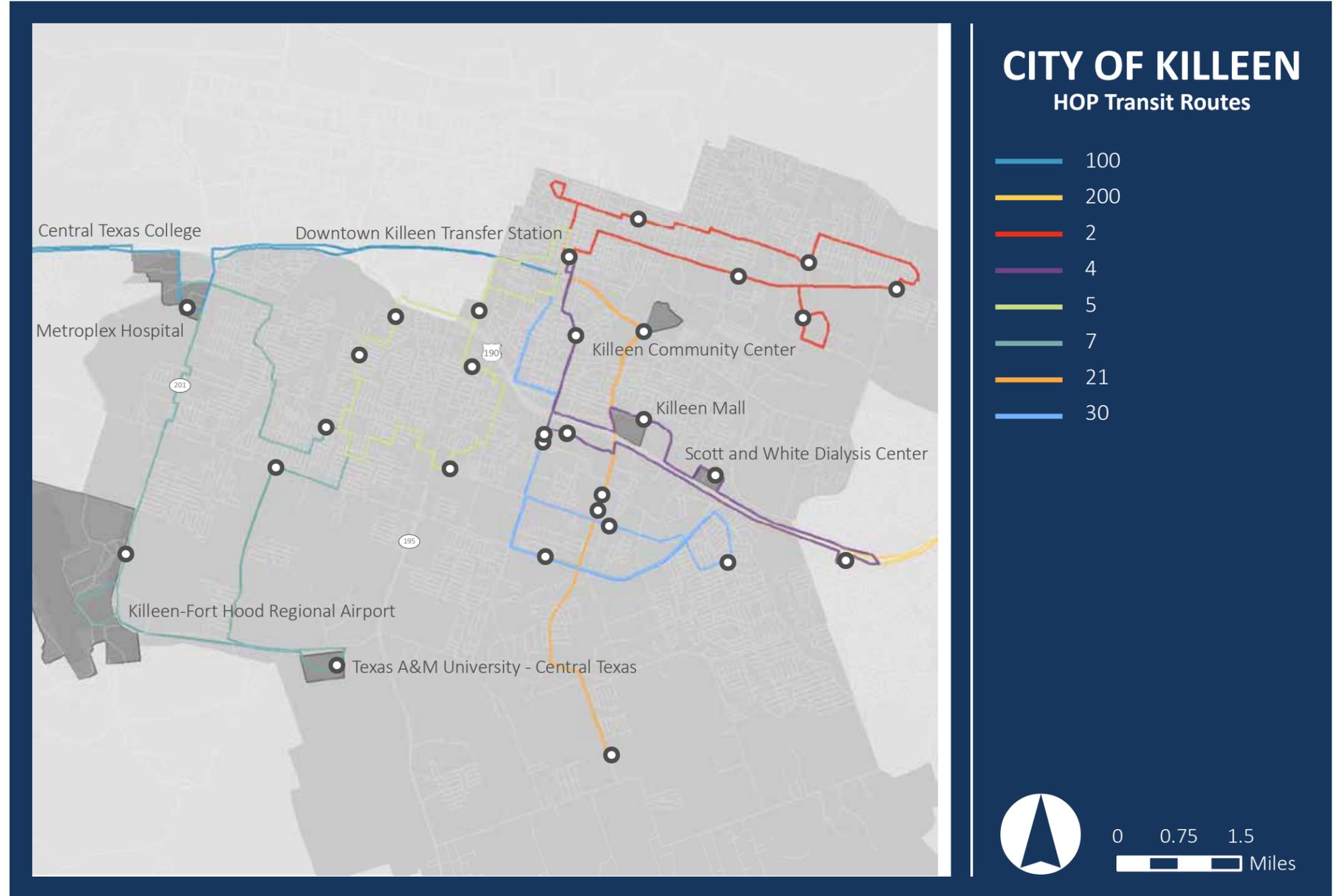


Figure 7: The HOP transit routes reflect a hub and spoke system with a transit center located in downtown Killeen for transfers between routes. (Data Source: The HOP website)

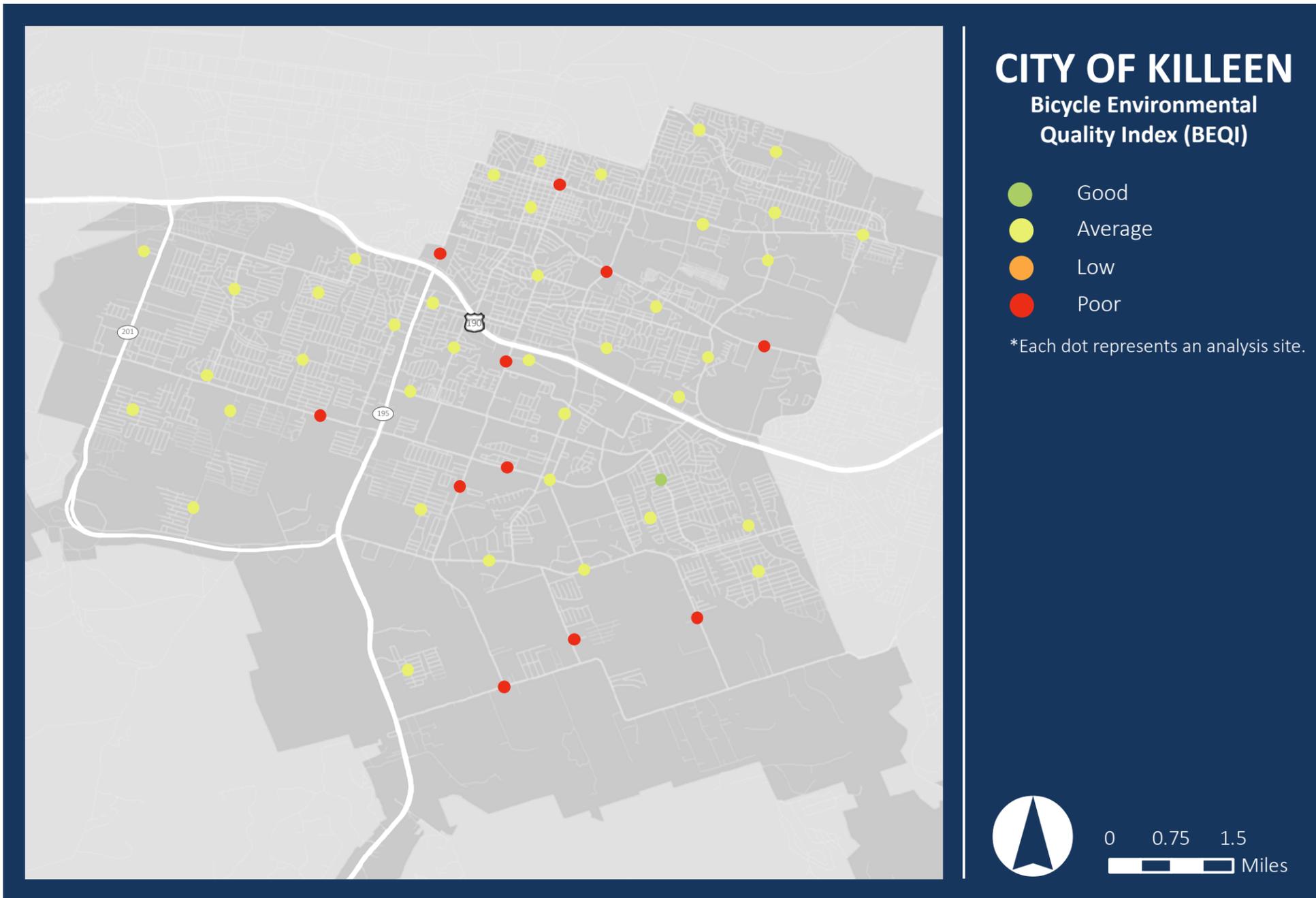


Figure 8: Bicycling conditions in the City of Killeen are rated as average to below average due primarily to a lack of bike lanes or other dedicated facilities, high posted speed limits, and a lack of bicycle parking at major destinations, including transit stops.

Bicycle and Pedestrian

A key goal of the Killeen transportation system is to provide safe and efficient travel options for all modes of transportation, including active transportation options such as bicycling and walking. In order to enhance active transportation options in Killeen, it is important to first have a clear understanding of current bicycle and pedestrian conditions in the city. To this end, an assessment of Killeen’s bicycling and pedestrian environment was undertaken for this study by evaluating 50 locations throughout the city representing diverse area types (urban, suburban, rural, etc.) and a wide range of street types (major arterials,

local streets, etc.). Locations near transit stops were also evaluated in order to understand how connections between transit and biking/walking might be enhanced in the future. The results of the bicycle and pedestrian assessments are described below.

Bicycle Assessment

Bicycling conditions were assessed using evaluation criteria adopted from the Bicycle Environmental Quality Index (BEQI), a planning tool developed by the San Francisco Department of Public Health that allows planners to assign

CITY OF KILLEEN Bicycle Environmental Quality Index (BEQI)

- Good
- Average
- Low
- Poor

*Each dot represents an analysis site.



0 0.75 1.5
Miles



Figure 9: While most bicycle facilities involve sharing travel lanes with motorized vehicles, several roadways in the City of Killeen have their own dedicated bicycle lanes, as shown here along Chantz Drive in southeast Killeen. (Source: Google Earth)

scores to locations on the street network based on environmental variables that either enhance or detract from favorable bicycling conditions. The BEQI utilizes a combination of qualitative and quantitative indicators related to street and intersection design, safety, vehicle traffic, and adjacent land use to assign an overall BEQI score to the chosen locations. These locations are then categorized by their relative suitability for bicycling as either best, good, average, low, or poor. **Figure 8** shows the results of the BEQI assessment for the 50 chosen locations.

Results from the BEQI assessment suggest that the Killeen transportation network provides average to below average bicycling conditions, with 38 of the 50 locations sampled (76 percent) returning an “Average” BEQI rating. “Average”, according to the BEQI methodology, is defined as, “bicycle conditions present but room for improvement.” In addition, 11 (22 percent) of the locations received a “Poor” rating, signaling that there were “minimal bicycle conditions” present. Frequently observed conditions that detract from Killeen’s bicycling environment include a lack of bike lanes or other dedicated facilities, high posted speed limits, and a lack of bicycle parking at major destinations, including transit stops. Observed conditions that promote bicycling include the Killeen street network’s relatively smooth pavement conditions and lack of significant elevation changes. While this assessment includes a relatively small sample size of roads in the city, the results suggest that there are opportunities to improve the bicycling environment in Killeen. Projects such as the Andy K. Wells Hike and Bike Trail and the planned Killeen-Fort Hood Regional Trail will contribute to the long-term vision of creating an environment supportive of safe and efficient travel by bicycle.

Pedestrian Assessment

Pedestrian conditions were assessed using evaluation criteria adopted from the Pedestrian Environmental Quality Index (PEQI), which was also developed by the San Francisco Department of Public Health. Similar to the BEQI, the PEQI utilizes a combination of qualitative and quantitative indicators to assign an overall score representing the walkability of individual locations. **Figure 11** shows the results of the PEQI assessment for the 50 chosen locations.

Results from the PEQI assessment suggest that the Killeen transportation network provides average to below average conditions for pedestrians, as 30 of the 50 (60 percent) observed locations returned a rating of “Average”, defined as, “pedestrian conditions present but room for improvement,” by the PEQI methodology. In addition, 17 (34 percent) of the locations received a “Low” rating, signaling that there were “minimal (pedestrian) conditions” present. Conditions frequently observed that detract from Killeen’s pedestrian environment include an incomplete or missing sidewalk network, a lack of traffic calming features or crosswalks, and little shade due to sparse tree coverage. While this assessment includes a relatively small sample size of roads in the city, the results suggest that there are opportunities to improve the pedestrian environment in Killeen.



Figure 10: Many of the roadways in previously undeveloped/ rural areas are lacking sidewalks altogether, as well as shoulders that may also be used by pedestrians and cyclists. With growth expected to continue in these regions, especially in southern Killeen, pictured above, many roadways may need to be upgraded to provide safer, higher quality pedestrian facilities.. (Source: Google Earth)

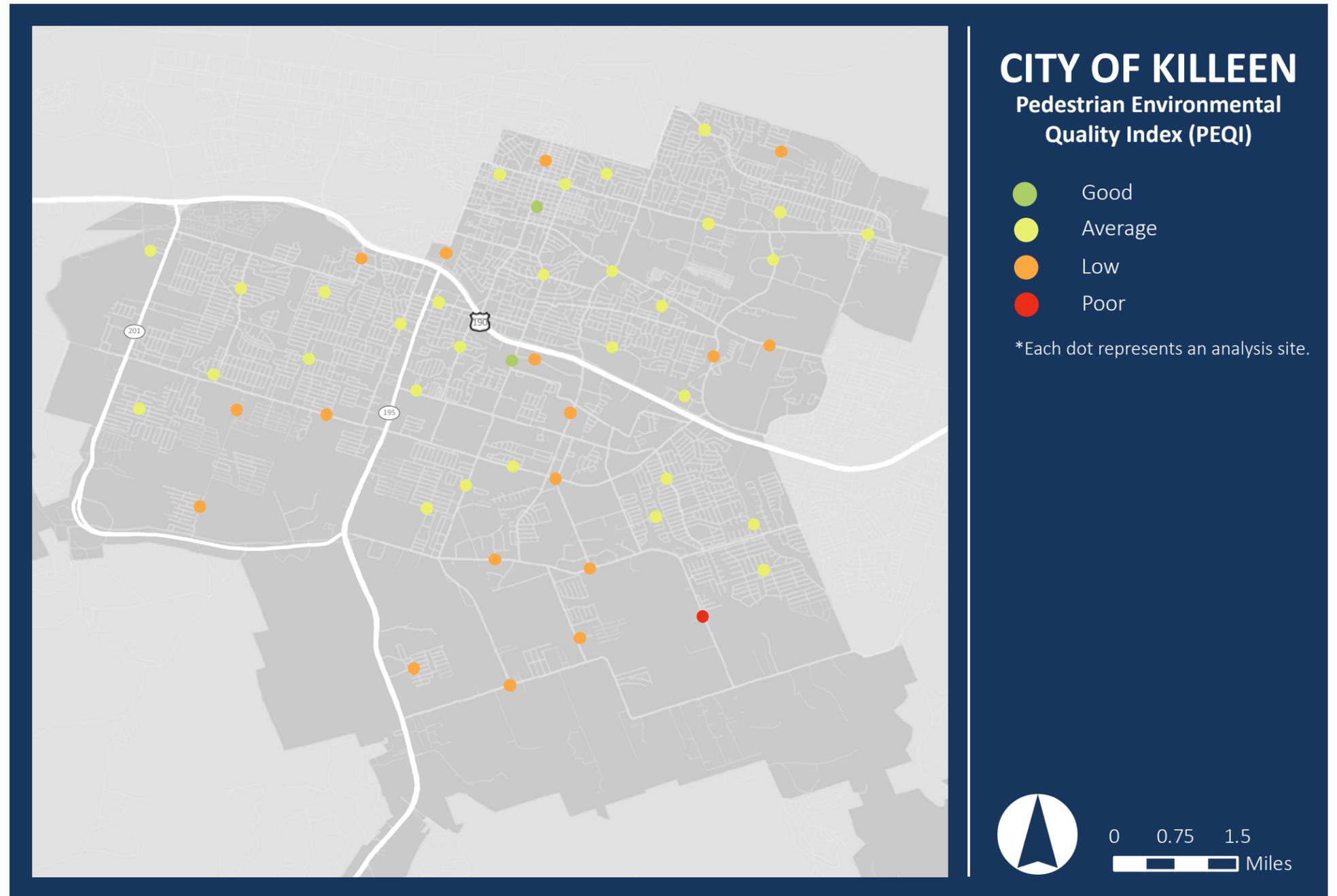


Figure 11: Pedestrian conditions in the City of Killeen are rated as average to below average due primarily to an incomplete or missing sidewalk network, a lack of traffic calming features or crosswalks, and little shade due to sparse tree coverage.

CRASH DATA

Crash data obtained from TxDOT’s Crash Records Information System (CRIS) were reviewed as part of the existing conditions analysis. In particular, the locations of severe accidents, defined as those resulting in an incapacitating injury or fatality, as well as all accidents involving a pedestrian or bicyclist were examined as part of the thoroughfare plan development process. TxDOT defines incapacitating injury as, “any injury, other than a fatal injury, which prevents

the injured person from walking, driving, or normally continuing the activities he/she was capable of performing before the injury occurred.” **Figure 12** shows the location of all severe crashes in the City of Killeen between 2010 to 2014.¹

¹ Data are from January 1, 2010 to October 9, 2014, the latest date for which data were available at the time of the request.

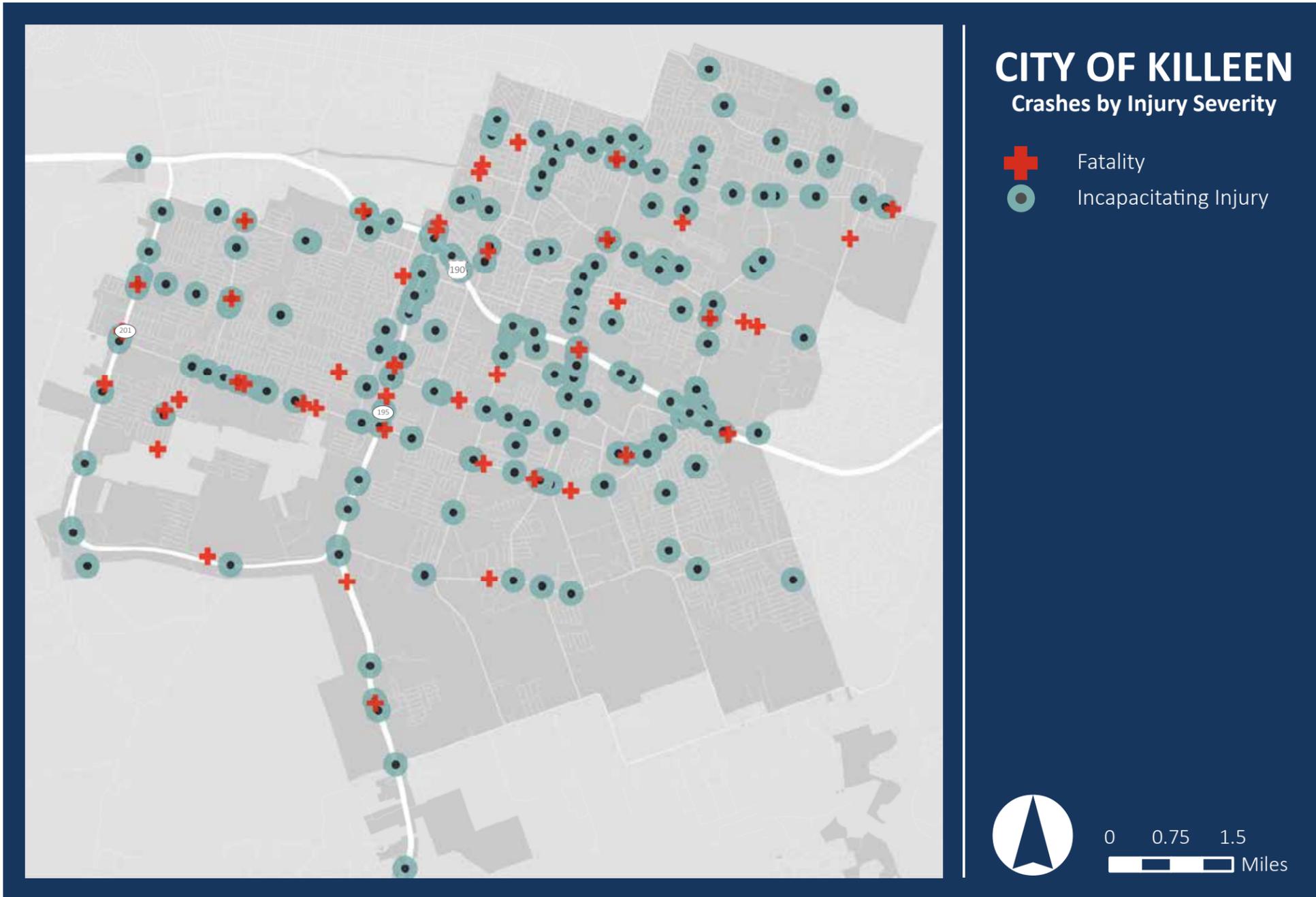


Figure 12: Incapacitating injury and fatality crashes in the City of Killeen from 2010-2014. (Data Source: TxDOT CRIS)

From 2010 to 2014, there were a total of 47 crash incidents in the City of Killeen in which at least one fatality was reported. There were also 324 separate incidents in which at least one incapacitating injury was reported in this same time period. These incidents were spread out over the entire study area, but were concentrated along some of the higher traffic corridors such as Stan Schlueter Loop (F.M. 3470) (8 fatalities), Veterans Memorial Boulevard (Business U.S. 190) (4 fatalities), and Fort Hood Street (S.H. 195) (4 fatalities).

Half (23) of all fatal crash incidents occurred at intersections in the Killeen study area.² However, no one intersection experienced more than two fatal crash incidents since 2010. Incapacitating injuries, on the other hand, occurred more frequently at certain intersections, particularly the intersection of Fort Hood Street (S.H. 195) and Elms Road, Fort Hood Street (S.H. 195) and Jasper Drive, and Stan Schlueter Loop (F.M. 3470) and Elms Road.

² Incidents were identified as having occurred at an intersection if they were within a 150 foot buffer of an intersection.

CITY OF KILLEEN Crashes by Injury Severity

- + Fatality
- Incapacitating Injury



From 2010 to 2014, there were a total of 224 bicycle and pedestrian crash incidents, 164 involving pedestrians and 60 involving bicyclists. Of these incidents, eight crashes involved a pedestrian fatality, and one crash involved a bicyclist fatality.

Bicycle and pedestrian crash incidents occurred more frequently in a handful of locations, including the area near the intersection of Central Texas Expressway (U.S. 190) and Fort Hood Street (S.H. 195), and the downtown area, especially along Rancier Avenue (F.M. 439) and south along W. Trimmer Road. Fort Hood Street (S.H. 195) was the deadliest stretch of road for pedestrians (3 fatalities). In general, bicycle and pedestrian crash incidents were much more common along major roadways, where traffic volumes and speeds are higher.

Approximately half of all bicycle and pedestrian incidents occurred within a half mile of a major public transportation stop. 29 of the 60 (48.3 percent) bicycle crash incidents occurred within a half mile of a public transportation stop. The public transportation stops with the most bicycle related incidents (3) occurring within a half mile of the stop were located at Roadrunner Drive and Bluebonnet Drive, Jasper Drive and Jennifer Drive, and Elms Road and Hitchcock Drive.

82 of the 164 pedestrian crash incidents occurred within a half mile of a public transportation stop. The public transportation stops with the most pedestrian related incidents occurring within a half mile of the stop were located at WalMart (multiple transit stops) and HEB and Trimmer Road (7), Fort Hood Street (S.H. 195) and 440 Plaza/ Kmart (5), and Hereford Lane and Elms Road (4).

FINDINGS

The existing conditions analysis reveals several key transportation issues facing the City of Killeen, including:

- Several large concentrations of commercial land uses along major corridors, and a large employment center (Fort Hood), which contribute to increasing congestion along adjacent roadways;
- Inadequate north-south connectivity;
- Average to below average pedestrian and bicycle facilities;
- Opportunities to improve safety and access to transit stops; and
- Opportunities to improve safety for motorists along several key corridors and at several intersections.

The identified issues were important considerations in the development of the 2015 Thoroughfare Plan and the associated Capital Improvements Program. The Capital Improvements Program identifies five prioritized safety projects, as well as several studies to further explore these issues and develop appropriate solutions.

GROWTH PATTERNS

Demographic Projections and Planned Growth

In addition to addressing existing issues, a thoroughfare plan should also provide direction and guidance for accommodating future growth in the region. Where will people live in 20 years? Where will they work? Answering these questions is a difficult, but important, task as the answers have significant implications for the use of the future transportation system. The following sections cover the population and employment projections for the City of Killeen, and expected growth patterns used in the development of the 2015 Thoroughfare Plan.

POPULATION AND EMPLOYMENT

The Killeen area has been experiencing rapid population growth since 1980, and that growth is projected to continue into the future. **Figure 13** shows the tremendous growth Killeen has experienced since Fort Hood became a permanent U.S. Army installation in 1950. The dashed line represent projected population growth over the next 25 years, between 2015 and 2040. The majority of this future growth is projected to occur in the southern portion of Killeen, due to development constraints presented by Fort Hood and Harker Heights.

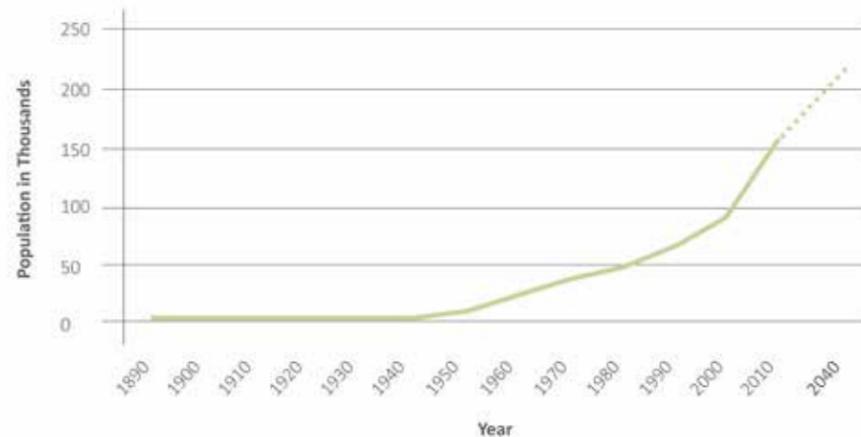


Figure 13: Population growth trends for the City of Killeen. (Data Source: U.S. Census Bureau; KTMPO TDM)

Population projections from the Killeen-Temple Metropolitan Planning Organization’s (KTMPO) Travel Demand Model (TDM), which was used to evaluate system deficiencies and potential transportation improvements in the development of the Thoroughfare Plan, were reviewed for compatibility with local plans and projections. The City of Killeen Comprehensive Plan projects future population in the City of Killeen to remain a set proportion of the Bell County population over time. This places the city’s 2040 population projections anywhere between 174,704 and 213,852 (based on various migration scenarios), for an average annual growth rate of 1.54 percent to 2.59 percent. For the purposes of long term planning, the Comprehensive Plan thus assumes that Killeen’s 2040 population will fall within a forecast range of 175,000 to 225,000 persons.

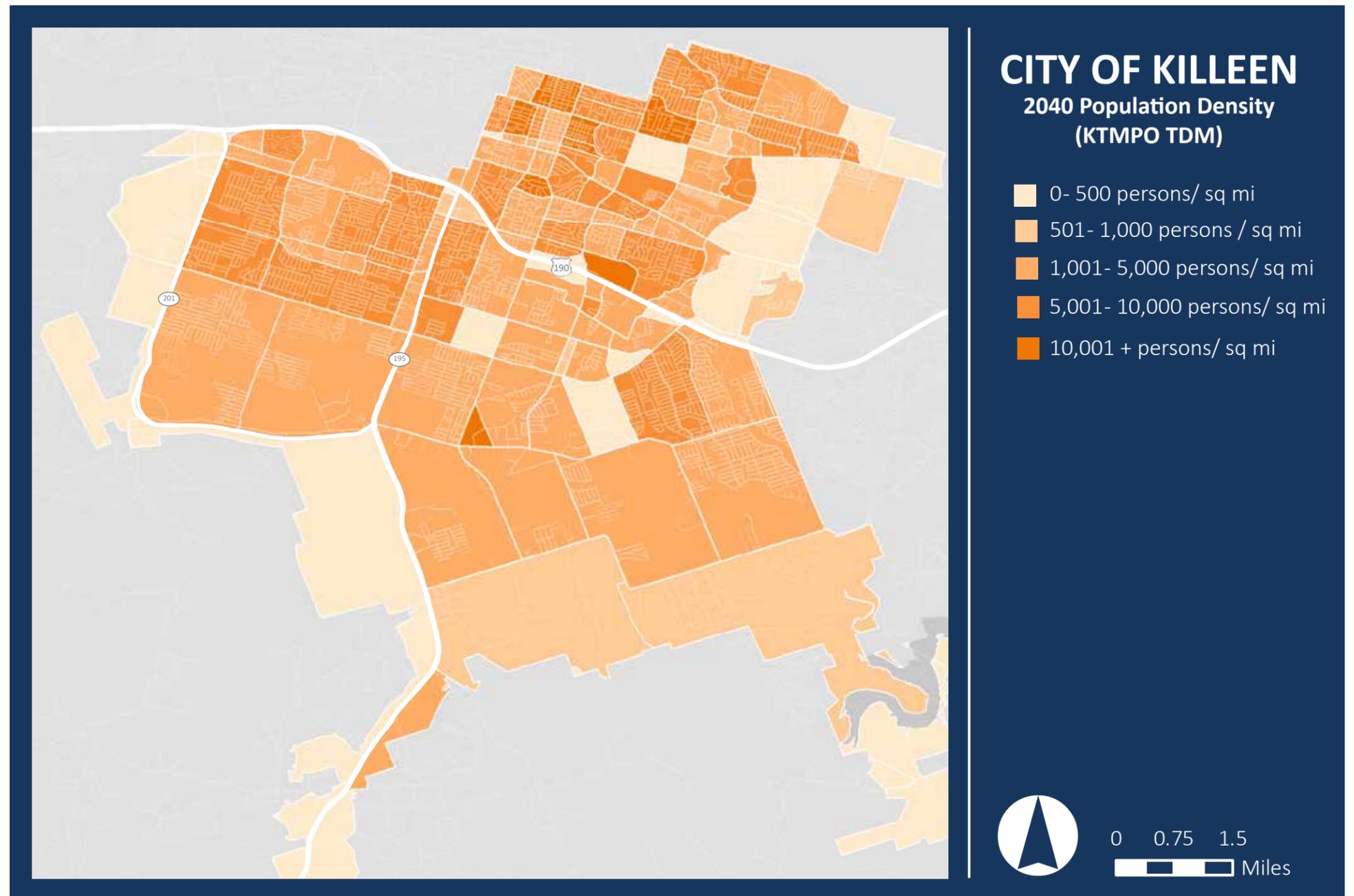


Figure 14: The 2015 Thoroughfare Plan was developed under the assumption that the majority of future population growth will occur primarily in the southern portion of the city. (Data Source: KTMPO TDM)

The demographic inputs to the KTMPO TDM place the City of Killeen’s 2040 population at approximately 205,000 persons, midpoint between the forecast range adopted in the city’s Comprehensive Plan. Furthermore, the 2040 population used by the TDM to simulate future traffic patterns, reflects development assumptions in the Comprehensive Plan that the majority of future growth will occur in the southern portion of Killeen. **Figure 14** shows the future population density of the City of Killeen based on the demographic inputs to the KTMPO TDM. While these projections represent the best guess at how the land will develop in the future, actual density levels and land use will depend heavily on market conditions, underscoring the importance of periodically reviewing the plan and revising if assumptions, including those regarding future land development, change over the horizon of the plan.

The Comprehensive Plan for the City of Killeen does not include projections for employment. However, employment projections used in the KTMPO were compared to other sources, including historical data from the *Bureau of Labor Statistics Quarterly Census of Employment and Wages* and proprietary data from *Woods and Poole Complete Economic and Demographic Data Source*. Data are not available at the city level, however, historical trends and employment projections were examined for Bell County, and the distribution of employment was reviewed for consistency with the Comprehensive Plan.

Demographic inputs to the KTMPO TDM project employment will increase to approximately 67,000 jobs. It is important to note that the TDM uses the number of persons working at establishments in the study area, rather than the number of people living in the study area that are currently employed. The locations of employment in the study area represent trip attractors that determine how people use the transportation system. **Figure 16** shows future employment density as used by the KTMPO TDM.

The most significant growth in new employment is projected to occur in the southern portion of the city, along Fort Hood Street (S.H. 195), adjacent to the Texas A&M University-Central Texas campus. This distribution of future employment is in line with the City’s Comprehensive Plan, which projects the Texas A&M University-Central Texas campus to contribute to complementary development in the area and make the Fort Hood Street (S.H. 195)/ Clear Creek Road (S.H. 201) intersection a “high-profile gateway into the community.”

The remainder of the projected growth in employment is expected to occur at Fort Hood, and along existing commercial corridors, including Central Texas Expressway (U.S. 190), Veterans Memorial Boulevard (U.S. Business 190), and Rancier Avenue (F.M. 439).



Figure 15: New commercial development is expected adjacent to the Texas A&M University-Central Texas campus along Fort Hood Street (S.H. 195) and Clear Creek Road (S.H. 201). (Source: Google Earth)

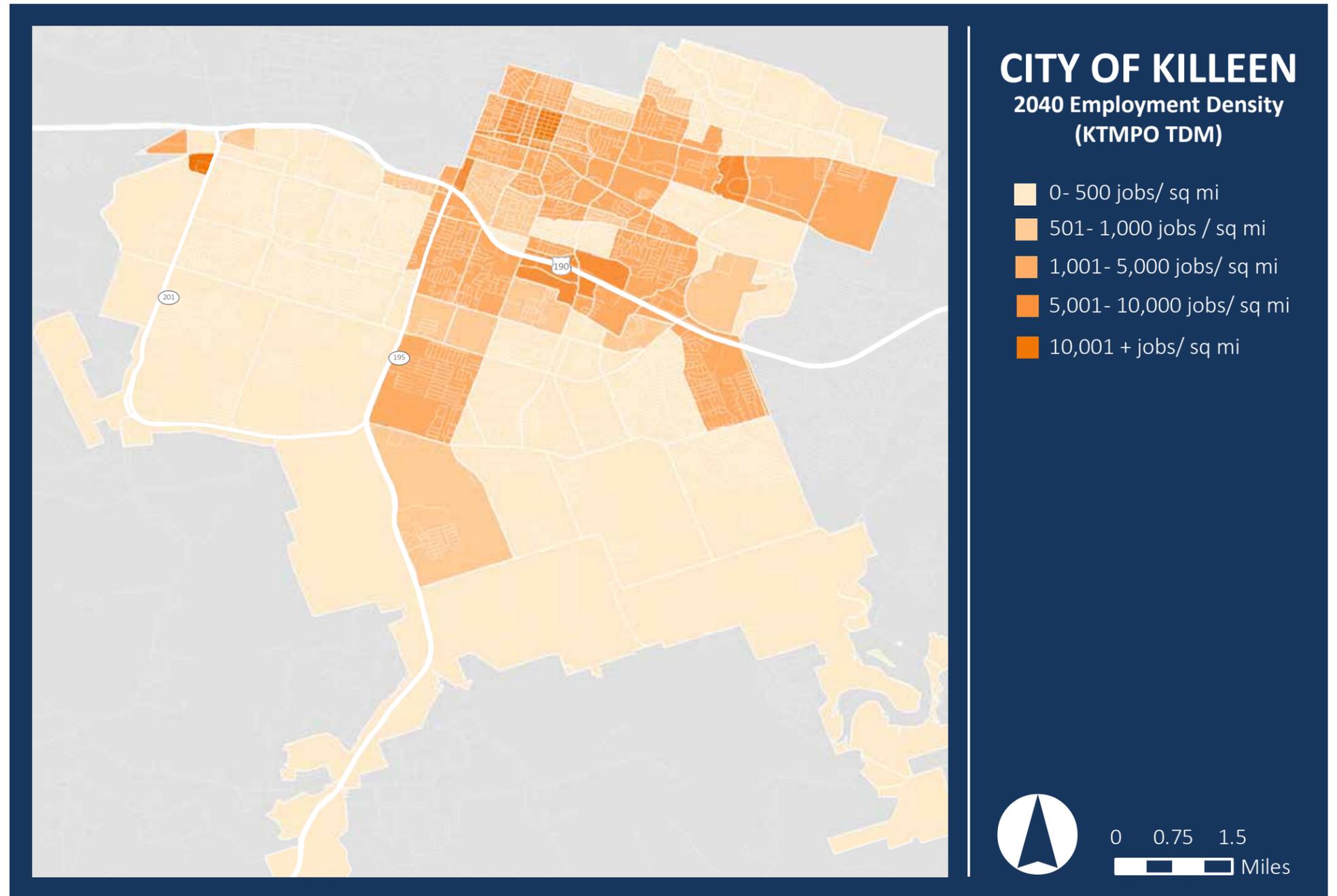


Figure 16: Commercial development patterns in the City of Killeen are expected to continue, with commercial development concentrated primarily along major thoroughfares. (Data Source: KTMPO TDM)

PLANNED TRANSPORTATION FACILITIES

Population growth in the City of Killeen has spurred several roadway improvement projects to add capacity and address existing transportation concerns. Recently completed roadway construction and planned facilities were inventoried for consideration in the development of the 2015 Thoroughfare Plan. The following sections describe recently completed and planned facilities for the City of Killeen.

Texas Department of Transportation (TxDOT)

The Texas Department of Transportation (TxDOT) is responsible for the construction and maintenance of the Interstate, U.S. and State highways located in the study area. Since 2009, TxDOT has approved more than \$130 million in state funded local road projects. These projects are discussed in the sections below.

Central Texas Expressway (U.S. 190)

TxDOT is currently in the construction phase of a project to widen Central Texas Expressway (U.S. 190) to three lanes in each direction, reconstruct major intersections, and relocate most entrance and exit ramps. The total length of the project extends from Spur 172 to F.M. 2410.

The U.S. 190 project also includes the construction of the Rosewood Drive Overpass, which will raise U.S. 190 over its intersection with Rosewood Drive, and extend Rosewood Drive south to Fawn Drive. The extensions of Rosewood Drive will include a new hike and bike trail along the length of the project. Additionally, the U.S. 190 project will include the widening of Martin Luther King Jr. Boulevard (F.M. 2410) to five lanes from Stan Schlueter Loop (F.M. 3470) to Roy Reynolds Drive. The project is estimated to be completed by the summer of 2015.

Clear Creek Road (S.H. 201) Extension

In 2007, TxDOT held a scoping meeting with area residents to discuss a potential S.H. 201 extension to I-35. The proposed highway extension is a regionally significant, unfunded project included in the KTMPO's Metropolitan Transportation Plan (MTP). TxDOT is in the process of conducting a feasibility study for the S.H. 201 extension, with the explicit goals of:

- Identifying corridor constraints;
- Identifying the best option based on environmental, engineering, mobility, and community input;
- Achieving consensus on a preferred option; and
- Other goals based on public input.

At the time of the update to the thoroughfare plan, TxDOT was nearing the completion of its needs assessment. The project represents a long term transportation improvement not likely to be implemented within the planning horizon of the 2015 Thoroughfare Plan. However, for the purposes of planning for the long term future of the transportation system, consideration of the project was included in the development of the thoroughfare plan.

City of Killeen

In 2010, the Killeen City Council prioritized six roadway construction projects for funding through its Transportation Capital Improvements Program. A copy of the memorandum approving the list of prioritized projects and the intent to issue Certificates of Obligation to fund the identified transportation improvement projects is included in **Appendix B**.

The prioritized projects include improving Stagecoach Road from Fort Hood Street (S.H. 195) to the Harker Heights city limits on the east; widening Bunny Trail from Stan Schlueter Loop (F.M. 3470) to Clear Creek Road (S.H. 201); extending Elms Road from Carpet Lane to Fort Hood Street (S.H. 195); widening Cunningham Road from Stan Schlueter Loop (F.M. 3470) to Stagecoach Road; extending Lowes Boulevard from Trimmier Road to Florence Road; and extending Rosewood Drive from Stagecoach Road to Chaparral Road.

The widening of Cunningham Road from Stan Schlueter Loop (F.M. 3470) to Stagecoach Road was completed in 2012, and the widening of Bunny Trail was completed in 2014. The remaining projects in the Transportation Capital Improvements Program are discussed in detail below.

Stagecoach Road

The project scope is to widen Stagecoach Road from Fort Hood Street (S.H. 195), east to the city limits. The first phase of construction, which included the widening of Stagecoach Road to three lanes from East Trimmier Road to the Harker Heights city limit, was completed in 2013. The second phase of construction, which involves widening Stagecoach Road to five lanes with a continuous center-turn lane from Fort Hood Street (S.H. 195) to East Trimmier Road, is projected to be completed in June 2016.

Elms Road

The project scope includes the completion of a 0.75 mile extension of Elms Road between Carpet Lane and Fort Hood Street (S.H. 195). The new roadway will be two lanes in each direction, with a continuous center turn lane, as well as shoulders. Construction began in late 2014, and is expected to be complete in late 2015.

Trimmier Road/ Lowes Boulevard

The project scope is to expand Trimmier Road to include a continuous center turn lane between Jasper Drive and Elms Road, and the installation of a traffic signal at the intersection of Weiss Drive and Trimmier Road. The Trimmier Road project also includes adding a center-turn lane on W.S. Young Drive from Little Nolan Road to Bacon Ranch Road, and the extension of Lowes Boulevard from Trimmier Road to Florence Road. The city approved a \$6.8 million contract for the construction of the Trimmier Road project and related improvements in September. A construction start date on Trimmier Road has not been set, but the project is expected to take two years to complete.

Rosewood Drive Extension

As part of the U.S. 190/ Rosewood Drive Overpass Project, which is estimated to be complete in August 2015, the city is looking to extend Rosewood Drive to the south from Stagecoach Road to Chaparral Road. The new roadway will be four lanes in each direction, with a continuous center turn lane. The project is estimated to be complete in August 2015.

In June 2014, the Killeen City Council adopted a resolution amending the city's thoroughfare plan to include designating Featherline Road as a minor arterial and designating a continuous flow configuration (roundabouts) for Stagecoach Road at its intersections with W.S. Young Drive and Featherline Road. The resolution is attached as **Appendix C**.

Killeen-Temple Metropolitan Planning Organization (KTMPO)

The Killeen-Temple Metropolitan Planning Organization (KTMPO) is responsible for coordinating comprehensive transportation planning efforts for all of Bell County, as well as portions of southern Coryell County and eastern Lampasas County. KTMPO is comprised of a Policy Board and Technical Committee whose members include elected officials and local stakeholders. Using input from the public, the expertise of local stakeholders, and special studies, the MPO identifies transportation issues and prioritizes short term and long term transportation improvements according to regional goals and objectives. The resulting plans, the Metropolitan Transportation Plan (MTP) and the Transportation Improvement Program (TIP), identify transportation projects within the KTMPO planning area prioritized for federal funding over the next 25 years, and the next 4 years, respectively.

The KTMPO TIP includes one project in the City of Killeen - the widening of Trimmier Road from Jasper Drive to Elms Road, and the construction of a continuous left turn lane. According to the plan, construction is expected to begin in 2015 and conclude in 2017.

The KTMPO MTP includes several projects in the City of Killeen for implementation over the next 25 years. While the subsequent sections only discuss short-term and long-term funded projects, the MTP also includes several “regionally significant, unfunded” projects which were considered in the development of the 2015 Thoroughfare Plan. Furthermore, projects included in the City of Killeen Transportation Capital Improvements Program already discussed above are excluded from the discussion below.

Short Range Funded (2014 - 2023)

Chaparral Road

The scope of this project includes the widening and reconstruction of existing portions of Chaparral Rd from the intersection with Fort Hood Street (S.H. 195) on the west to the planned intersection with Rosewood Drive on the east. The existing road is two lanes and would be widened to four lanes with space for a median, turn lanes, and curbs and gutters.

Cunningham Road

There are two projects related to Cunningham Road that will eventually connect to one another. The scope of the first project provides for completing a new section of Cunningham Road between Central Texas Expressway (U.S. 190) and Little Nolan Road. The improvement is designed to provide a more efficient, safe mode for north-south movement. The project is projected to relieve traffic along Stan Schlueter Loop (F.M. 3470), W.S. Young Drive, and Elms Road.

The second project is related to the southern section of Cunningham Road. This project involves the extension of Cunningham Road from Stagecoach Road to Chaparral Road. The project was initially developed to provide additional north-

Table 1: KTMPO FY 2015-2018 Transportation Improvement Program (TIP) Projects in the City of Killeen

FY 2015							
KTMPO ID	Project Name	Full Extents	Description	PE* Cost	ROW Cost	CON Cost	Total Cost
K35-03	W Trimmier Rd	Jasper Dr to Elms Rd	Reconstruct and widen to add continuous left turn lanes	\$-	\$-	\$8,214,573	\$8,214,573

Table 2: KTMPO 2040 Metropolitan Transportation Plan (MTP) Projects in the City of Killeen

SHORT RANGE FUNDED (2014-2023) USING PRIOR ALLOCATED FUNDING							
KTMPO ID	Project Name	Full Extents	Description	PE Cost	ROW Cost	CON Cost	Total Cost
K35-05	W Trimmier Rd	Jasper Dr to Elms Rd	Reconstruct and widen to six lanes, access drive improvements, install signals and turn lanes	\$-	\$-	\$8,214,573	\$8,214,573
SHORT RANGE FUNDED (2014-2023)							
KTMPO ID	Project Name	Full Extents	Description	PE Cost	ROW Cost	CON Cost	Total Cost
K40-07	WS Young	Bacon Ranch Rd to Little Nolan Rd	Add turn lane and traffic signal	\$50,000	\$100,000	\$850,000	\$1,000,000
K30-13	Chaparral Rd	SH 195 to FM 3481	PE Phase: Widen from 2 to 4 lane roadway with center turn lane, curb, and gutter	\$1,500,000	\$3,000,000	\$25,500,000	\$30,000,000
K30-24	Cunningham Rd	Little Nolan Rd to US 190	PE Phase: Construct 4 lane with median, curb and gutter	\$41,792	\$83,584	\$710,465	\$835,841
K25-01	Cunningham Rd	Little Nolan Rd to Stagecoach Rd	PE Phase: Widen from 2 to 4 lane with shoulder	\$185,053	\$370,106	\$3,145,899	\$3,701,058
LONG RANGE FUNDED (2024-2040)							
KTMPO ID	Project Name	Full Extents	Description	PE Cost	ROW Cost	CON Cost	Total Cost
K40-11	WS Young	Mall Dr to AJ Hall Blvd	Add turn lane and relocate traffic signal at Mall Dr to AJ Hall Blvd; control of access management improvements	\$250,000	\$500,000	\$4,250,000	\$4,889,545
K40-16	East Trimmier Road Improvements	Stagecoach Rd to Chaparral Rd	PE Phase: Widen fro 2 to 4 lane roadway with center turn lane, curb, and gutter	\$300,000	\$600,000	\$5,100,000	\$6,000,000
K40-17	Trimmier Road Improvements	Stagecoach Rd to Chaparral Rd	PE Phase: Widen fro 2 to 4 lane roadway with center turn lane, curb, and gutter	\$250,000	\$500,000	\$4,250,000	\$5,000,000

*PE = Preliminary Engineering; ROW = Right of Way Acquisition; CON = Construction

south capacity in the newly developing southeastern region of the city, which is experiencing traffic congestion and safety conflict points at Cunningham Road, Stan Schlueter Loop (F.M. 3470), and W.S. Young Drive.

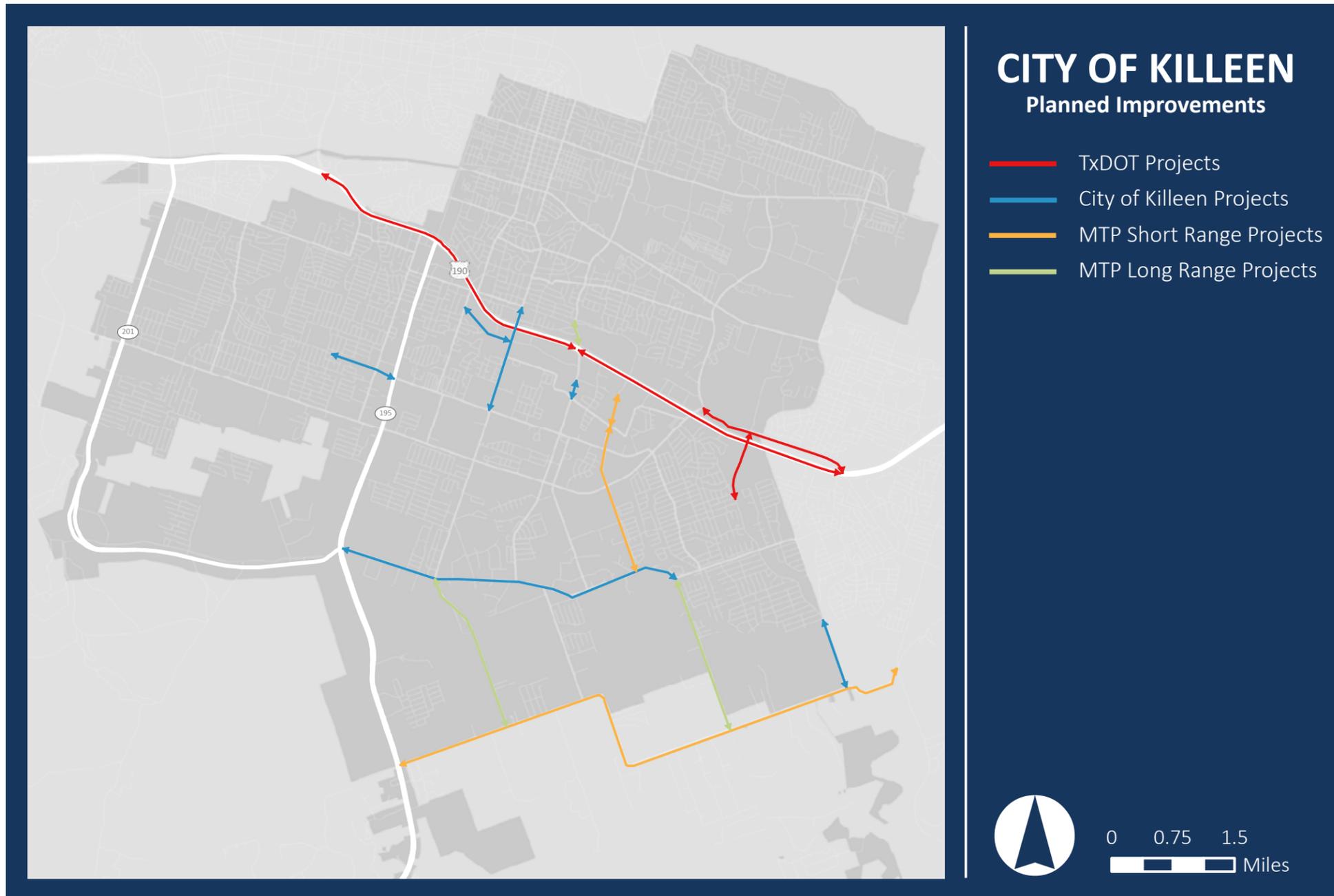


Figure 17: Improvements currently under construction and planned for the City of Killeen are concentrated in the southern portion of the city, where growth is expected to occur.

Long Range Funded (2024 - 2040)

East Trimmier Road

The scope of this project widens East Trimmier Road from Stagecoach Road to Chaparral Road from a two to four-lane roadway with curb and gutter, sidewalks, and bike lanes to incorporate multimodal transportation options.

West Trimmier Road

The scope of this project widens West Trimmier Road from Stagecoach Road to Chaparral Road from a two to four-lane roadway with curb and gutter, sidewalks, and bike lanes to incorporate multimodal transportation options.

W.S. Young Drive

The scope of this project includes the addition of a turn lane and the relocation of the traffic signal at Mall Drive to AJ Hall Boulevard. The project also includes access management improvements to W.S. Young Drive between Mall Drive and AJ Hall Boulevard.

Figure 17 shows the location of all ongoing and planned transportation improvements in the City of Killeen and its ETJ.

4

SCENARIO ANALYSIS

System Deficiencies and Program of Projects

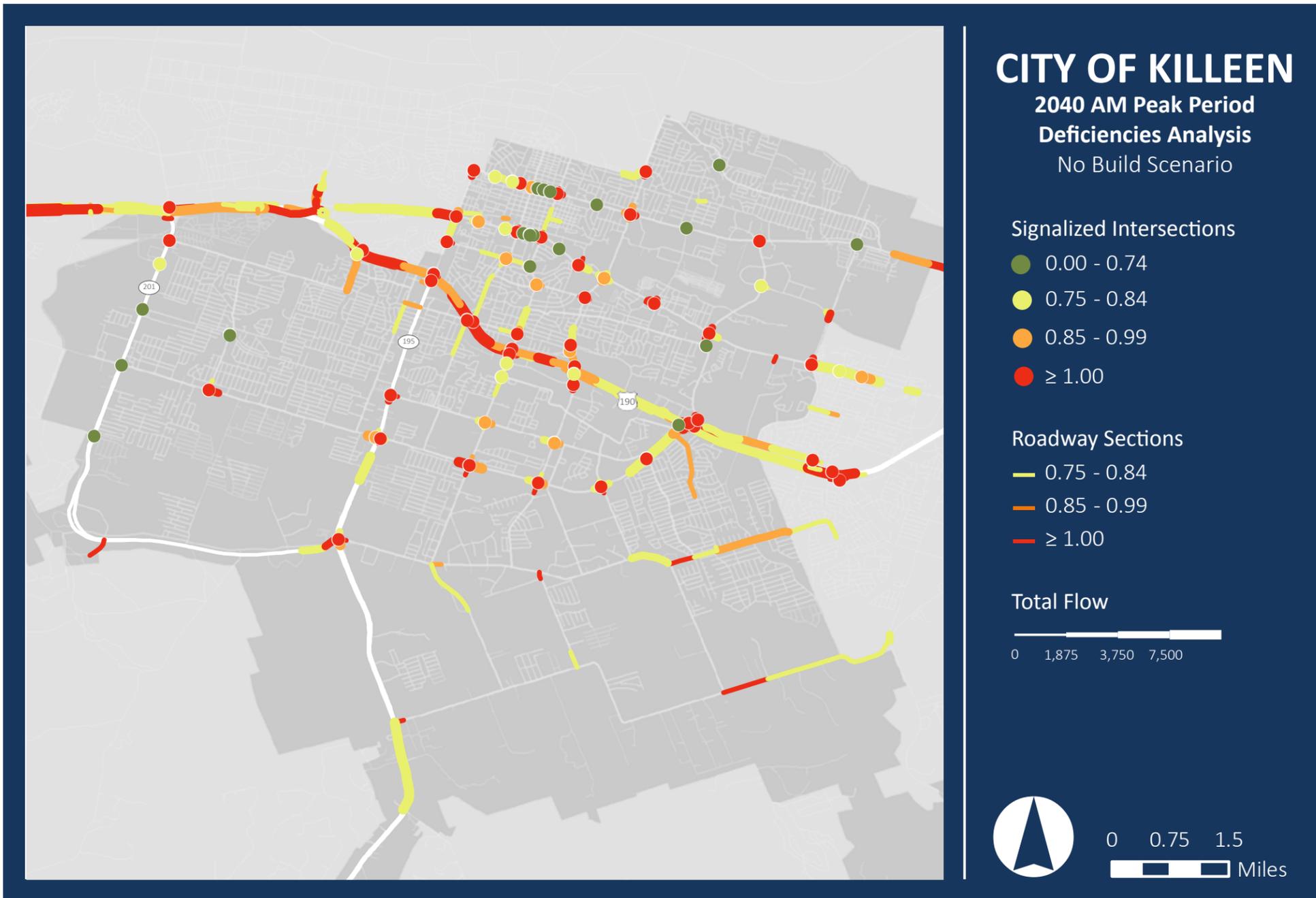


Figure 18: The AM peak deficiencies analysis shows signalized intersections and links likely to be congested in the future if population continues to grow and no improvements are made to the transportation system. (Data Source: KTMPO TDM)

Travel demand modeling is an important tool for forecasting future year traffic conditions. Utilizing demographic forecasts and land use data, as well as information on the transportation network, Travel Demand Models (TDMs) simulate future regional traffic patterns. Inputs such as total population, average household size, median household income, and number of jobs, among other inputs, are assigned to geographic units known as Traffic Analysis Zones (TAZs). Trips are then distributed across the transportation network based on the number of people estimated to be traveling between TAZs.

Typically, as a first step, a “no build” scenario, also referred to as a system deficiencies analysis, is performed. This analysis examines future traffic conditions if no improvements are made to the existing transportation network as the area grows. The system deficiencies analysis is useful for determining roadways and intersections that may not be congested today, but are likely to become congested over time. Once anticipated deficiencies are identified, proposed modifications to the existing transportation network can be tested and the travel outcomes compared to the “no build” scenario to better understand how proposed transportation improvements impact future mobility.

CITY OF KILLEEN

2040 AM Peak Period Deficiencies Analysis No Build Scenario

Signalized Intersections

- 0.00 - 0.74
- 0.75 - 0.84
- 0.85 - 0.99
- ≥ 1.00

Roadway Sections

- 0.75 - 0.84
- 0.85 - 0.99
- ≥ 1.00

Total Flow



The 2015 Thoroughfare Plan was developed utilizing the KTMPO TDM. The KTMPO TDM covers the entire planning area for the MPO, which encompasses all of Bell County, and parts of Coryell, and Lampasas counties. The KTMPO TDM analyzes vehicular traffic, and does not estimate trips by other modes. The TAZ structure, transportation network, and demographic inputs to the KTMPO TDM were carefully examined to ensure the TDM incorporated enough detail for the purposes of developing the thoroughfare plan.

SYSTEM DEFICIENCIES

Using projected population and employment for the year 2040 and the existing transportation system, the KTMPO TDM was used to perform a deficiencies analysis. The analysis of area roadways and intersections was limited to their performance during the AM and PM peak hours of travel. Due to traffic patterns unique to Fort Hood, the AM peak period was defined as between the hours of 7 AM and 8 AM, and the PM peak period was defined as between the hours of 2:30 PM and 6:30 PM.

Volume to Capacity Ratio

In order to quantify future congestion if no improvements are made to the transportation network, a no-build volume-to-capacity (V/C) ratio was calculated for area roadways. A V/C ratio of 1.00 indicates a roadway is carrying the maximum number of vehicles it was designed to carry. If a road has a V/C ratio higher than 1.00, it indicates a deficiency in which there is more volume trying to use the road than the capacity of the road can handle. The V/C ratios in this study were assigned a letter grade between A and F, known as Level-of-Service (LOS). LOS A represents full free flow, while LOS F is characterized by stop-and-go congestion.

For this study, the V/C ratios were broken into four categories which are shown in **Table 3**.

Table 3: Level of Service and V/C Ratios

LOS	V/C Ratio
A- C	0.00- 0.74
D	0.75- 0.84
E	0.85- 0.99
F	≥ 1.00

Figures 18 and 19 show areas that will be congested in 2040 during the AM and PM peak hours if no improvements are made to the roadway network. Overall, the AM peak shows a much greater deficiency in overall roadway capacity than

the PM peak.

AM Peak

A large portion of the surge in the AM peak can be attributed to the time-of-day patterns. The noticeably short peak spike during the AM results in a large number of vehicles converging on the same roadways at around the same time. This dramatic spike can be seen along Central Texas Expressway (U.S. 190) between Willow Springs Road and W.S. Young Drive, where volume is well over capacity.

Most of the congestion in the AM peak is intersection related. There are few segments in the middle of the roadway that exhibit congestion conditions. However, there is some non intersection-related congestion along Stagecoach Road, east of Cunningham Road.

Besides Stagecoach Road, most roadway segments exhibiting V/C ratios of 0.74 or higher are approaching intersections. During the AM peak, signalized intersection deficiencies can be seen along many of the major roads such as: Trimmier Road, Fort Hood Street (S.H. 195), Rancier Avenue (F.M. 439), Veterans Memorial Boulevard (Business 190), W.S. Young Drive, Martin Luther King Jr. Boulevard (F.M. 2410), and Stan Schlueter Loop (F.M. 3470).

PM Peak

In the PM peak period, the number of signalized intersections and links with a LOS of D or higher drops significantly. However, similar to the AM peak period, most traffic congestion, aside from congestion along Central Texas Expressway (U.S. 190), is intersection related. There are several links along both Stagecoach Road and Chaparral with a V/C ratio exceeding 0.75. Additionally, there are several intersections that remain at LOS F in the PM peak as well as the AM peak.

These intersections include:

- Elms Drive @ SH 195;
- FM 2410 @ Business 190 & FM 2410 @ Stan Schlueter Loop;
- Stagecoach Rd @ E. Trimmier Rd; and
- Trimmier Rd @ Business 190.

In order to prioritize projects for inclusion in the 2015 Thoroughfare Plan, a list of potential roadway improvements was developed and tested using the TDM. The following sections discuss the results of the scenario analysis.

QUALITATIVE PERFORMANCE MEASURES

In addition to the mobility measures from the KTMPO model, the participants at the public meeting and the steering committee members were asked to select and rank a set of qualitative performance measures that could be used in selecting and prioritizing transportation projects. These qualitative measures were designed to reinforce the thoroughfare plan goals and objectives. These measures include: safety, economic development, cost-effectiveness, consistency with land use goals, opportunities for cost sharing, and ease of implementation. Each of the qualitative measures was assigned a weighting factor based upon the ranking it received from the steering committee and respond-

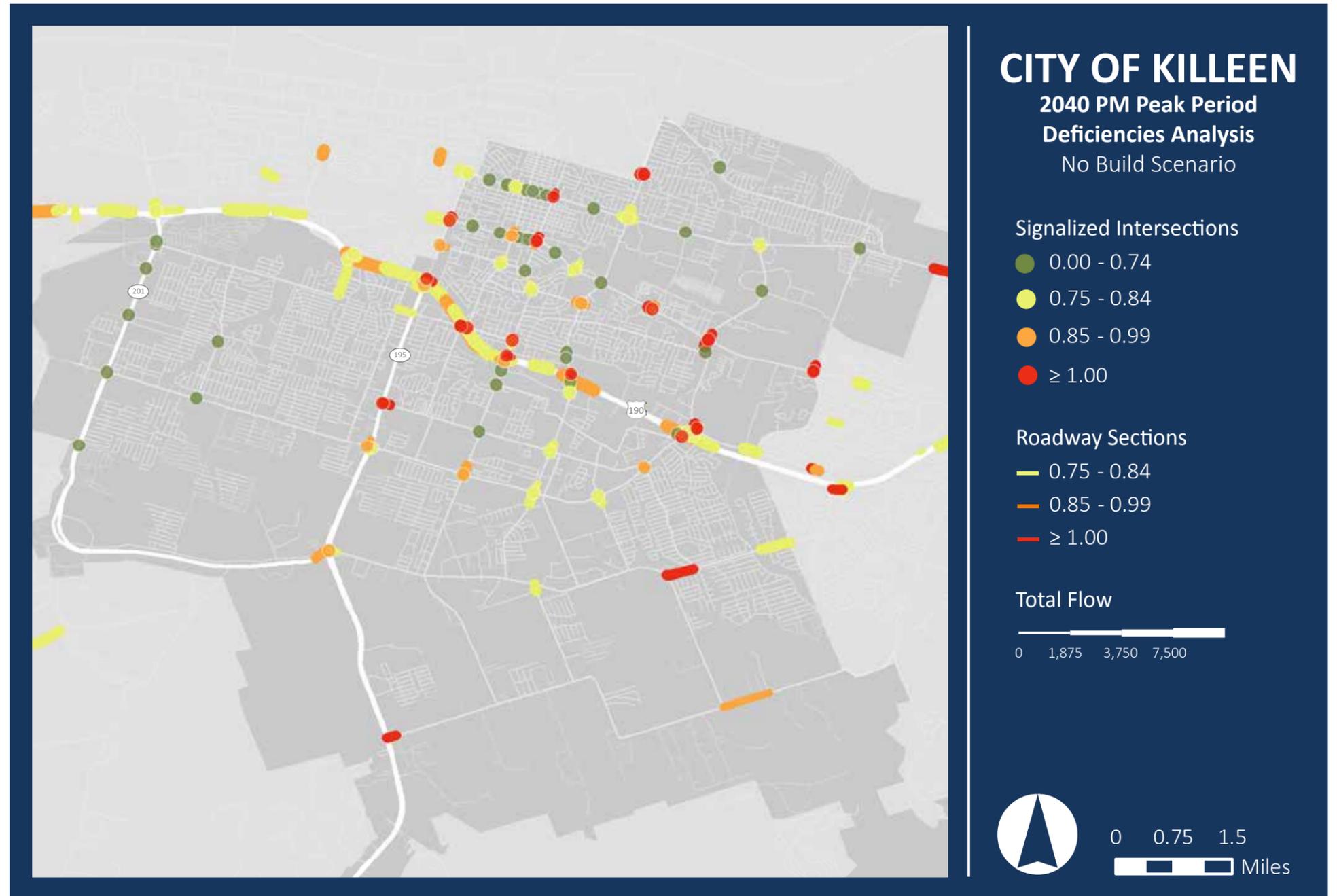


Figure 19: Due to a longer peak period, future traffic congestion in the PM peak period is not as severe as in the AM. (Data Source: KTMPO TDM)

ing public.

The combination of the quantitative mobility goals and qualitative goals provided the framework for incorporating the complete streets concepts of selecting context sensitive projects that provide effective safe and convenient travel while supporting economic vitality and quality of place.

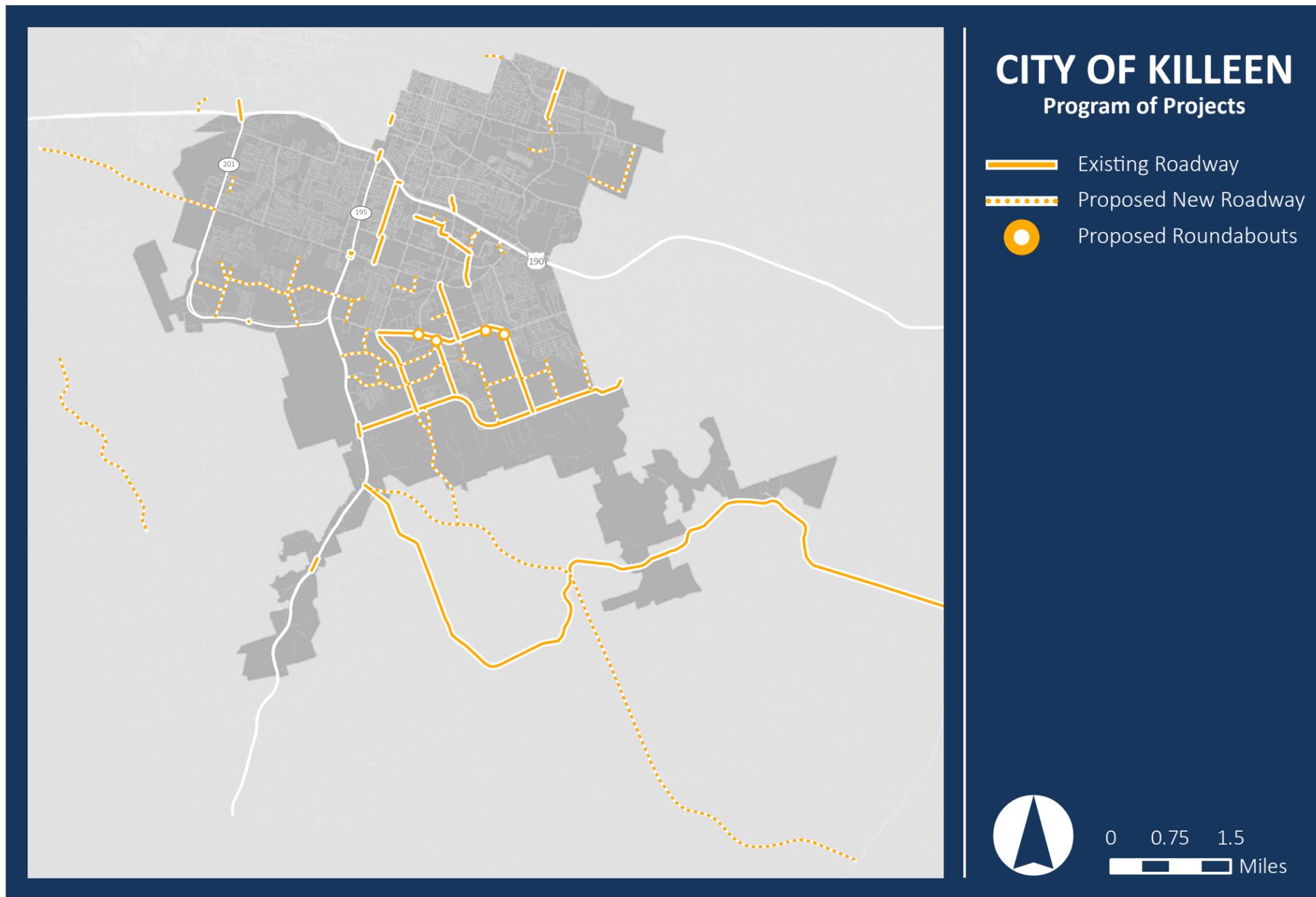


Figure 20: The preliminary program of projects includes projects from the previous thoroughfare plan, the KTMPO MTP, and input from the steering committee and other stakeholders. The preliminary program of projects was further refined using the travel demand model, a project scoring process, and conversations with local stakeholders. The final program of projects is pictured above.

SCENARIO ANALYSIS

Based on the results of the KTMPO TDM, candidate transportation projects were developed to address the identified deficiencies. These projects constituted the preliminary program of projects, or the initial list of potential roadway improvements, which would be further narrowed using the TDM and feedback from the steering committee and other stakeholders. Sources for the candidate projects included existing plans such as the KTMPO MTP and the existing thoroughfare plan, as well as input given by the steering committee and other local stakeholders. **Figure 20** shows the preliminary program of projects, and **Appendix E** provides a detailed description of the proposed improvements.

To perform the scenario analysis, this preliminary program of projects was coded into the existing transportation network, and evaluated using the KTMPO TDM. Each project was assigned a mobility score based on future volumes and V/C ratio. Then, each of the candidate projects was evaluated by the steering committee using the mobility measures from the KTMPO TDM combined with the qualitative performance measures defined by the committee. The projects were assigned a priority ranking based upon this evaluation.

The prioritized list of projects was then used to update the existing thoroughfare plan and develop the Capital Improvements Program (CIP). **Appendix F** includes the final list of projects, as prioritized based on feedback from the steering committee and results of the TDM.

THOROUGHFARE PLAN

Thoroughfare Network, Functional Classification, and Cross-Sections

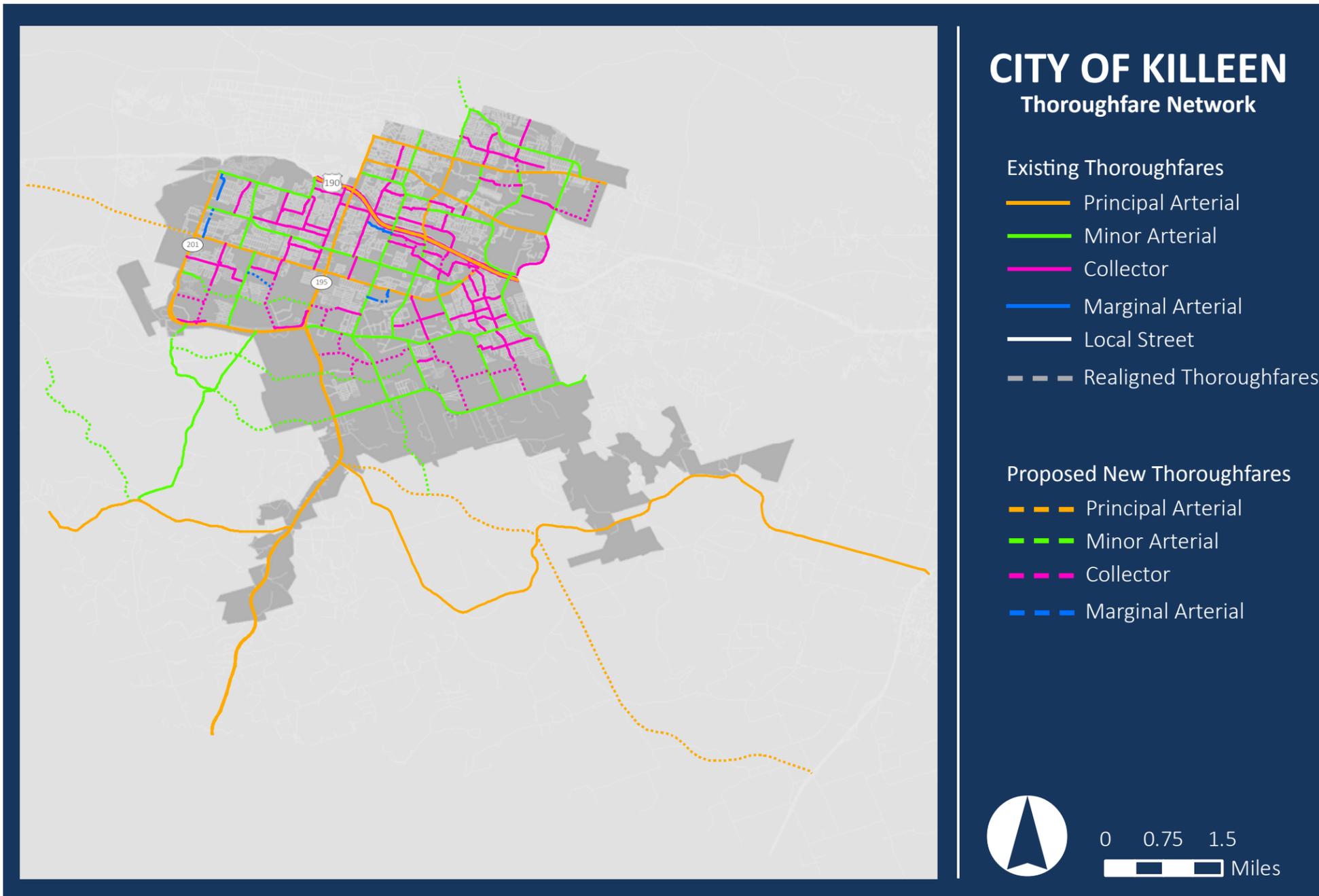


Figure 21: 2015 Thoroughfare Plan Roadway Network

Development of the 2015 Thoroughfare Plan builds on the activities described in previous sections, including the analysis of existing conditions, future development patterns, projected travel needs and system performance, and community goals. The plan proposes a network of existing, upgraded, and proposed roadways intended to meet the long-term needs of the community as it grows and changes over time. The primary products of the thoroughfare planning effort are a thoroughfare network, a functional classification system, and typical cross-sections by functional class.

The thoroughfare plan will guide future investments in the roadway network, including projects funded by the public sector through the Capital Improvements Program (CIP), as well as the private sector through the land development process. The thoroughfare plan is intended to be used as a framework for future growth, not a blueprint for development. As conditions change over time, the thoroughfare plan should be revisited and revised. Specific roadway alignments and implementation timelines should reflect the most up-to-date information regarding development potential, environmental constraints, project readiness, and opportunities for cost sharing.

THOROUGHFARE NETWORK

The thoroughfare network, shown in **Figure 21**, was developed using the 2010 network as a base line and updating the plan to include new roadway segments and major improvements identified in local and regional plans. Changes to the existing network included omitting several proposed roadways that were either no longer feasible due to the development of the surrounding land, or were no longer desirable based on development trends and feedback from the public and local stakeholders. Alignments of several of the roadways were adjusted to account for environmental constraints that had not been factored into the previous plan. Additionally, projects from the updated KTMPO MTP, Mobility 2040, were incorporated into the thoroughfare network.

Constraints Analysis

A high level constraints analysis was performed to identify any obvious potential environmental constraints to proposed new roadways and ensure that in developed areas, roadways are sensitive to the context of adjacent neighborhoods and in undeveloped areas, roadways are consistent with and support future land use plans.

Water features, topography, built features, and parcel boundaries were examined in relationship to the proposed thoroughfare network, and adjustments were made accordingly. However, the analysis was performed at a high level, and more detailed studies may be necessary to refine the alignments as growth patterns become more certain. Project implementation, development of subdivision plats or site plans that include the thoroughfares in this plan should be done in collaboration with and under the review of the City Engineer.

Several roadways for which further study is necessary are of particular note. In the southwest portion of the City's ETJ, south of the S.H. 201 and west of S.H. 195, there are topographical challenges related to the terrain and abundance of creeks. Of particular note are the proposed future east-west arterial from Ivy Mountain Road to S.H. 195, and Mayberry Park Road from Ivy Mountain Road to S.H. 195. Both alignments will require a route study to determine how the roadway will traverse the terrain. In particular, it is recommended that both segments be further evaluated for horizontal radii compliant with design speed requirements. Furthermore, attention should be given to how each roadway will intersect with Maxdale Road, given challenges related to proximity of Reese Creek, terrain features that will likely reduce approach tangent sections, and sight distance due to the need for potentially significant cut requirements.

Similarly, the extension of West Trimmer Road, south of Chaparral Road, and the proposed alignment of S.H. 201 will require further analysis to assess connectivity to F.M. 2484. The alignment of S.H. 201 south of the Lampasas River will require further evaluation of the terrain, floodplains, and any environmental and/or utility issues, and should be modified as necessary.

FUNCTIONAL CLASSIFICATION

In addition to defining a thoroughfare network, a classification system was assigned to area roadways based on thoroughfare type. Functional classification is the process by which local and regional roadways are grouped into hierarchical categories according to the transportation objectives they are intended to provide. This process identifies the role each roadway serves in the context of the larger transportation system, and facilitates planning for logical and efficient routing of traffic through the roadway network. Functional classification was mandated by the Federal-Aid Highway Act of 1973 and remains in effect today.

Purpose

Transportation systems are designed to serve a diverse range of travel needs, from long-distance travel between cities to local trips between home and the grocery store. Assigning a functional class to each roadway in the system helps ensure that the transportation system can serve the diverse travel needs of users in a logical and efficient manner. Functional classifications provide a basis for selecting appropriate speed and geometric design criteria for a given roadway. However, this does not mean that the functional classification for a given roadway prescribes specific design criteria. Instead, the actual configuration of roadways is subject to review and adjustment to ensure facility design is coordinated with adjacent development, and takes into account other community goals and objectives.

A context sensitive approach that takes into account the compatibility of thoroughfare types with surrounding land uses, in addition to the efficient movement of traffic, was used for designating functional classifications for the City of Killeen Thoroughfare Plan. The proposed functional classifications were determined by weighing mobility versus access needs, the surrounding land uses, and the facility characteristics of existing roadways.

Mobility versus Access

The two primary travel needs served by roadways are mobility, or the ability to move people or goods efficiently between locations, and access, or the ability to reach numerous desired destinations. While all roadways serve these two needs to at least some degree, by design certain types of roadways serve one need better than the other. Highways, for example, provide a high degree of mobility, facilitating long-distance travel between destinations by providing minimal traffic conflicts and few opportunities to enter/exit the roadway. Such roadways are classified as Principal Arterials under the Killeen functional classification system (described in more detail in the next section). Neighborhood streets, on the other hand, provide a high degree of access (to homes, shopping centers, etc.), but offer lower mobility due to the presence traffic signals, lower speeds and other design characteristics. These roadways are classified as Local streets under the Killeen functional classification system.

PRINCIPAL ARTERIAL



Example: Stan Schlueter Loop (FM 3470) (Source: Google Earth)

MINOR ARTERIAL



Example: W Trimmier Road (Source: Google Earth)

COLLECTOR



Example: Chantz Drive (Source: Google Earth)

MARGINAL ACCESS



Example: Lions Park Road (Source: Google Earth)

LOCAL STREET



Example: Aquamarine Drive (Source: Google Earth)



Facility Characteristics

The physical characteristics of the roadway also determine its functional classification. High posted speed limits and a limited number of access points, for example, typically characterize principal arterials. Local streets, on the other hand, are characterized by the presence of driveways, crosswalks and intersecting streets, and therefore have lower speed limits than Arterials.

Surrounding Land Uses

The type and degree of development surrounding each roadway influences the functional class of that roadway. Local streets and collector roadways, which are generally characterized by smaller roadway widths, lower design speeds, and the presence of driveways and crosswalks, are appropriate for residential land uses, and are intended to provide access to and from residential areas to more intense land uses. Local streets maximize safety in areas where residents may be walking, children may be playing, and where noise pollution from traffic should be reduced to protect neighborhood character.

Minor arterials typically serve civic land uses, smaller retail and commercial developments, and both light and heavy industrial land uses, whereas principal arterials provide access to regional destinations such as shopping malls, large-scale employers, and special event facilities. As such, arterials are typically characterized by wider roadway widths, a greater number of travel lanes, higher design speeds, and fewer driveways and crosswalks.

City of Killeen Functional Classifications

The functional classification system outlined by the previous Thoroughfare Plan map categorized roadways into five (5) different functional classes. This update to the Thoroughfare Plan uses these same classifications, which are defined below. Note that in the context of the mobility versus access continuum, higher functional classes (e.g. principal arterials) serve mobility while lower classes (local streets) prioritize access.

Principal Arterials

Principal arterials provide a high degree of mobility by serving travel between major destinations or activity centers, as well as long-distance traffic that goes through or bypasses an area. They are designed to minimize travel time by providing high posted speed limits, offering physical separation from other roadways (e.g. few at-grade intersections) and providing a limited number of access/egress points (e.g. on- and off- ramps).

Minor Arterials

Minor arterials are intended to connect traffic into and between the principal Arterial system. They can serve trips of moderate length by connecting smaller geographic areas. While minor arterials provide slightly less mobility benefit than principal arterials, overall they are characterized by relatively high travel speeds and low interference from cross traffic.

Collectors

Collectors provide a balance between mobility and access, primarily serving to “collect” traffic from local streets and provide connections to arterials. In urban areas, collectors provide traffic circulation in residential areas or commercial districts, while in rural areas they primarily serve travel within the county (i.e. trips shorter than those served by arterials). Due to the large number of collector roadways and the diversity of adjacent land uses, appropriate context subcategories were defined for collector roadways. These categories include residential, commercial, and mixed-use collectors.

Marginal Access

Marginal access roads balance land access and traffic circulation by providing access to abutting properties, particularly commercial developments, that otherwise may result in traffic congestion along arterials and long queues at intersections. Marginal access roads are characterized by lower speeds and few intersections.

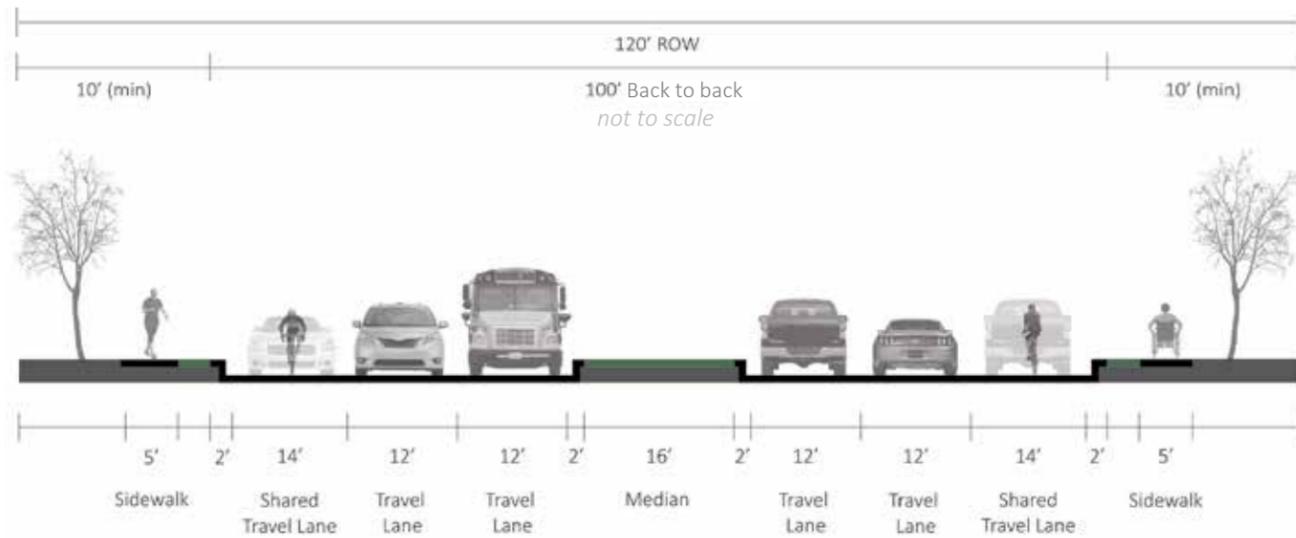
Local Streets

Local streets offer lower mobility than other functional classes but provide the highest degree of access to adjacent land. They discourage through traffic with low posted speed limits and the use of traffic calming features. Local streets make up the bulk of the transportation system in terms of mileage.

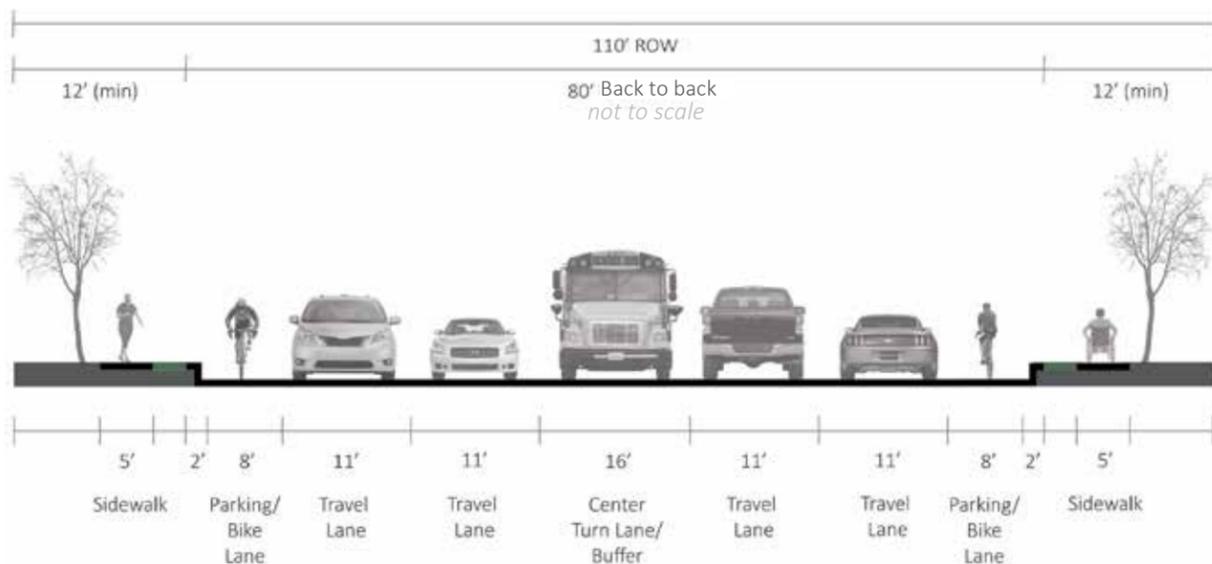
TYPICAL ROADWAY CROSS SECTIONS

As a general guideline for roadway design, typical roadway cross sections are defined for each functional classification, including standard right-of-way widths, number of lanes, medians, and bicycle and pedestrian facilities. The conceptual diagrams below take into account standards identified in the City of Killeen Infrastructure Design and Development Standards Manual, as well as cross sections adopted in the KTMO Regional Thoroughfare Plan. As noted in the design manual, lane widths are approximate, and variances are allowed only as approved by the City of Killeen Department of Public Works. The actual configuration of roadways is subject to review and adjustment by the city engineer to ensure facility design is coordinated with adjacent development and existing roadways.

Principal Arterial

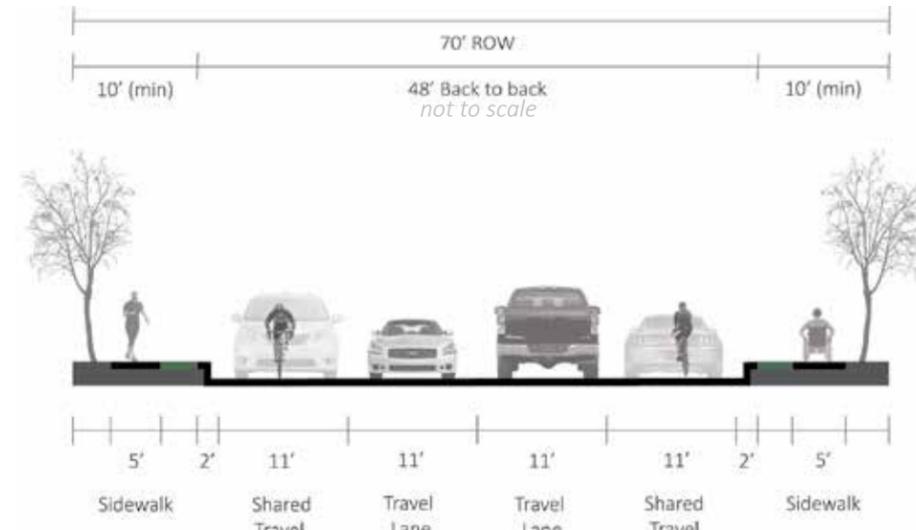


Minor Arterial

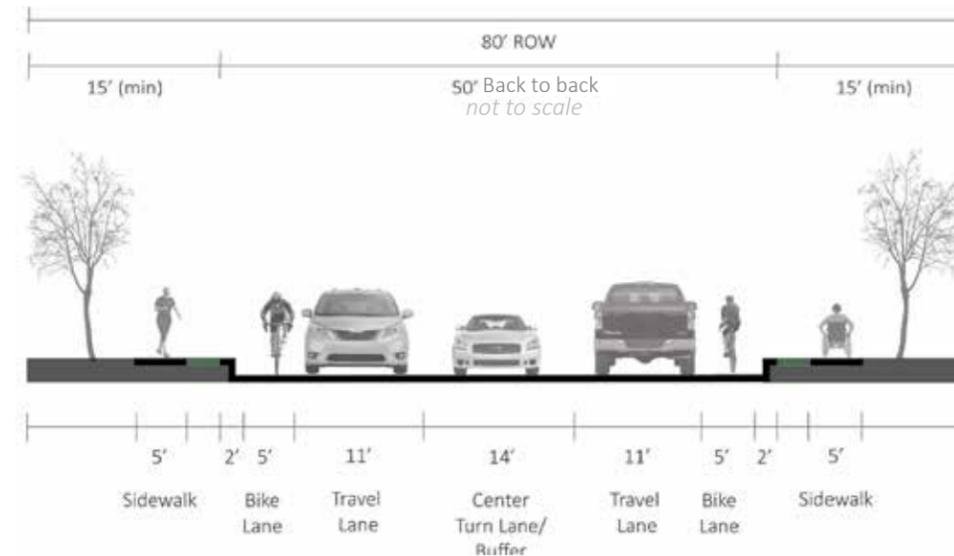


Collectors

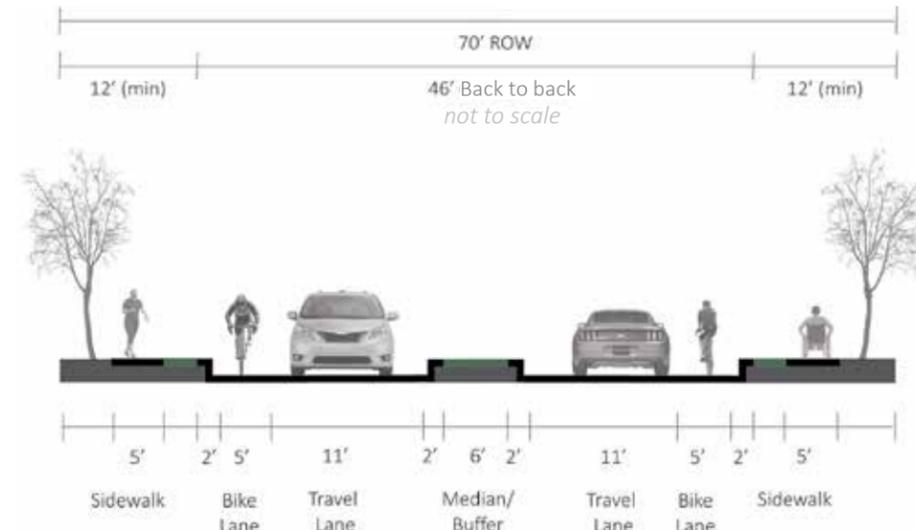
Commercial Collector



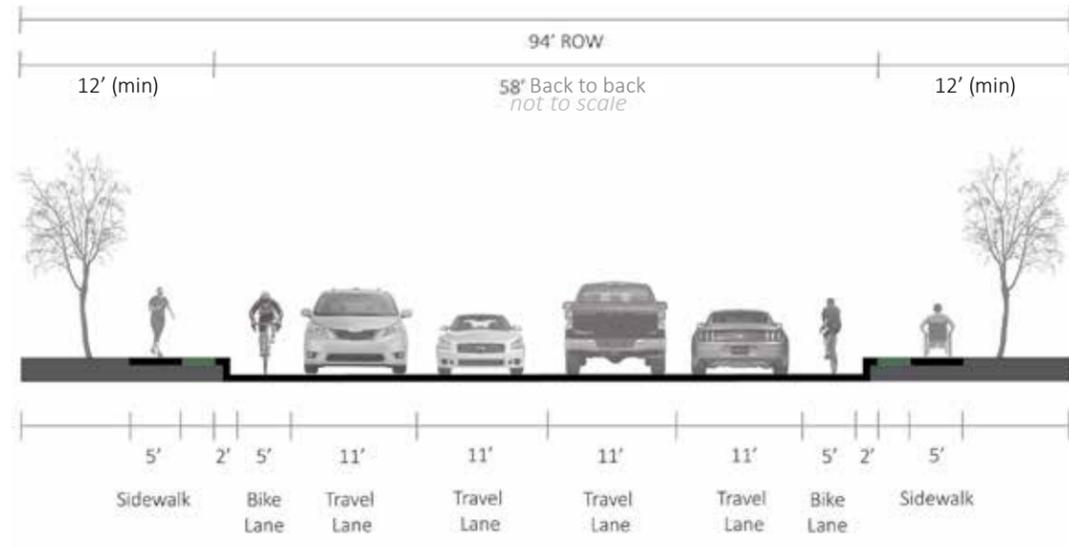
Mixed Use Collector



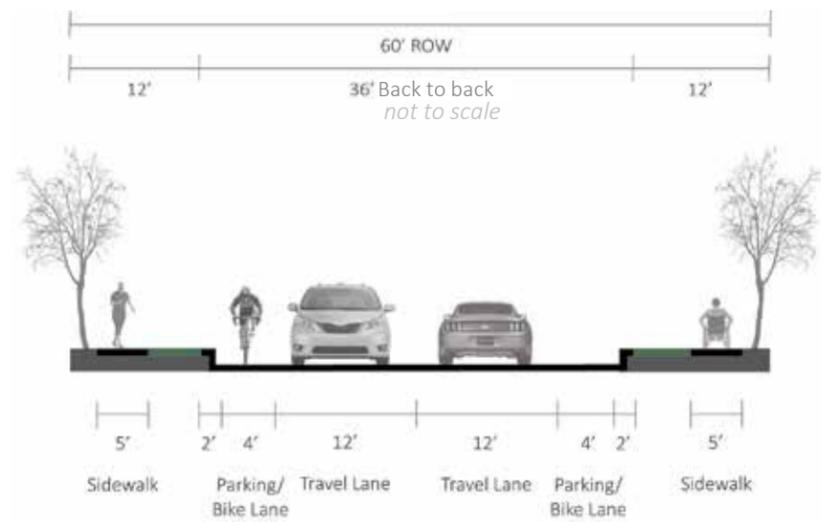
Residential Collector



Marginal Access



Local Streets



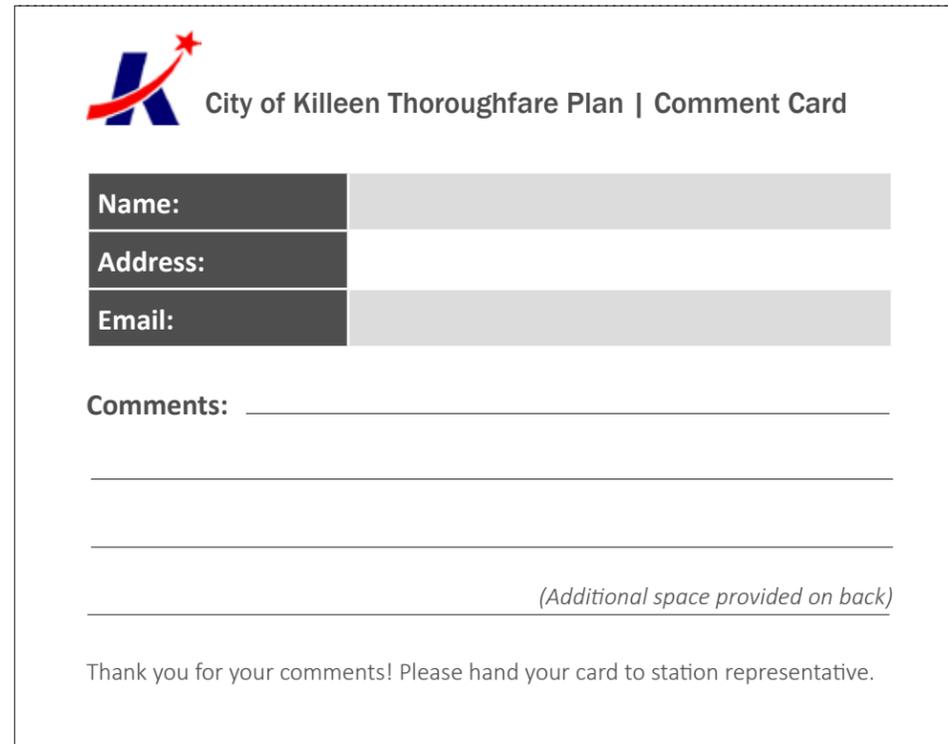
APPENDIX A

Public Comments

PUBLIC COMMENTS

Members of the public were invited to provide feedback on the draft Thoroughfare Plan on December 11, 2014 at an open house at the Killeen Civic and Conference Center. **Figure 23** shows the comment cards available for participants to provide feedback. Additionally, all meeting materials were made available online, and individuals were able to submit comments by email. Comments received are listed below.

- Convert 10th at Hallmark through Rancier to one way north.
- Turn Gray street to one way south from Rancier to Hallmark.
- Propose connecting extension of north Twin Creek Drive to 60th St. @ Lake Rd.
- Request protected left turn on North Gilmer from VMB (190 Bus).
- Place a no left turn on Dimple from intersection of VMB and Gilmer. Shared centerlane is too short and causes traffic congestion and wrecks.
- Request traffic count study for Gilmer from Rancier to VMB. Traffic congestion caused by train, school buses, and because people use Gilmer as a short cut.
- Gilmer has no stop signs or stop lights.
- Consider designating Gilmer as a collector.
- Intersection Business 190 and 38th Street and intersection of 195 and Elms dangerous for people walking.
- Need to address north and south bound traffic on Trimmier and WS Young as it feeds/crosses Hwy 190. Area adjacent to mall is especially bad with the many traffic lights.
- Look into widening 10th St. from Hallmark to Rancier. Or make one way northbound from Hallmark to Rancier and one way southbound on Gray Street Infrastructure is already there.
- City of Killeen needs a User Fee or Impact Fees in order to sustain future development.
- Protected left turn @ WVMB/ Gilmer. No left turn onto Dimple from WVMB.
- Proposed North Twin Creek @ Rancier should create an “S” curve rather than an offset.
- Traveling South on Roy Reynolds to 2410, please consider having one of the following:
 - (1) A dedicated right hand turn lane onto 2410 and a dedicated left hand turn lane onto 2410;
 - (2) 4 way stop;
 - (3) traffic light



The image shows a comment card for the City of Killeen Thoroughfare Plan. It features the city's logo (a stylized 'K' with a red star) and the title 'City of Killeen Thoroughfare Plan | Comment Card'. Below the title are three input fields: 'Name:', 'Address:', and 'Email:'. Each field has a dark gray label and a light gray input area. Below these fields is a 'Comments:' section with a horizontal line and two more lines below it. A note in italics says '(Additional space provided on back)'. At the bottom, there is a thank you message: 'Thank you for your comments! Please hand your card to station representative.'

Figure22: Comment cards available at the December 11, 2014 public meeting.

APPENDIX B

City Council Memorandum |
Approve Prioritized Proposed Street Improvement Projects and Related
Issuance of Certificates of Obligation

REG 8-24-10
ITEM # CA-8
CCM/R 10-095R

CITY COUNCIL MEMORANDUM

AGENDA ITEM **APPROVE PRIORITIZED PROPOSED STREET
IMPROVEMENT PROJECTS AND RELATED
ISSUANCE OF CERTIFICATES OF OBLIGATION**

ORIGINATING **PUBLIC WORKS/PLANNING AND DEVELOPMENT
DEPARTMENT** **SERVICES**

BACKGROUND

On October 13, 2009, the City Council passed a resolution prioritizing fourteen projects to be included in a future bond package. On August 17, 2010, the Transportation Committee conducted a special meeting at which time the following projects were identified as the highest priority projects to be funded through the issuance of Certificates of Obligation:

1. Stagecoach Road – From State Highway 195 on the west to the Harker Heights city limits on the east;
2. Bunny Trail – From Stan Schlueter Loop (FM 3470) on the north to Clear Creek Road (SH 201) on the south;
3. Elms Road – From Carpet Lane on the west to SH 195 on the east;
4. Cunningham Road – From Stan Schlueter Loop (FM 3470) on the north to Stagecoach Road on the south;
5. Lowe’s Boulevard Extension – From Florence Road on the west to Trimmier Road on the east; and
6. Rosewood - From Stagecoach Road on the north to Chaparral Road on the south.

On August 17, 2010, the City Council reviewed the recommendations of the Transportation Committee and discussed a recommendation that projects 1- 4 be funded through the issuance of Certificates of Obligation in the amount of \$30 million. City Council members further discussed and agreed that, upon completion of projects 1-4, any bond funds remaining should be utilized to complete projects 5 and 6.

DISCUSSION/CONCLUSION

All projects identified for funding have been previously identified in the Transportation Capital Improvement Plan. Furthermore, projects 1-4 have been identified and ranked as transportation funding priorities by the City Council in Resolution 09-156-R. Preliminary construction estimates suggest that projects 1-4 can be designed and constructed with the anticipated bond proceeds. It is further anticipated that, through the use of City-Owner agreements, in accordance with Resolution number 06-214R, some opportunities for combining city funding with private funding may be available, maximizing the extent to which all projects can be successfully funded and completed.

FISCAL IMPACT

The Certificate of Obligations would be paid back by property tax revenues. The tax supported obligations on the FY 2010-2011 Interest and Sinking Tax Rate is approximately 4.78 cents for an anticipated issuance of \$30 million dollars of Certificate of obligation.

RECOMMENDATION

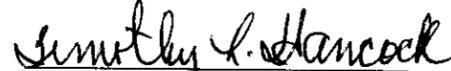
Recommend that the City Council approve the list of prioritized projects and the intent to issue of Certificates of Obligation in the amount of \$30 million to fund the identified transportation improvement projects.

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF KILLEEN:

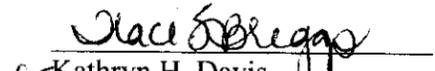
That the above-stated recommendation is hereby approved and authorized.

PASSED AND APPROVED at a regular meeting of the City Council of the City of Killeen, Texas this 24th day of August, 2010, at which meeting a quorum was present, held in accordance with the provisions of V.T.C.A., Government Code, § 551.001 *et seq.*

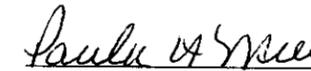
APPROVED


Timothy L. Hancock
MAYOR

APPROVED AS TO FORM:


Kathryn H. Davis
CITY ATTORNEY

ATTEST:


Paula A. Miller
CITY SECRETARY



APPENDIX C

City Council Memorandum for Resolution |
Resolution Amending the City's Thoroughfare Plan to Include Designating
Featherline Road as a Minor Arterial and Designating a Continuous Flow
Configuration for Stagecoach Road at its Intersections with W.S. Young Drive
and Featherline Road to Preserve North-South Mobility, and Expressing
Intent to Prioritize Featherline Road as Part of a Future Community
Improvement Project Within the Next Five Years, Subject to
Identification of Funding for the Same.

Regular 06-10-14
Item # CA-14-076
CCM/R 14-076R

CITY COUNCIL MEMORANDUM FOR RESOLUTION

AGENDA ITEM

RESOLUTION AMENDING THE CITY'S THOROUGHFARE PLAN TO INCLUDE DESIGNATING FEATHERLINE ROAD AS A MINOR ARTERIAL AND DESIGNATING A CONTINUOUS FLOW CONFIGURATION FOR STAGECOACH ROAD AT ITS INTERSECTIONS WITH W.S. YOUNG DRIVE AND FEATHERLINE ROAD TO PRESERVE NORTH-SOUTH MOBILITY, AND EXPRESSING INTENT TO PRIORITIZE IMPROVEMENTS TO FEATHERLINE ROAD AS PART OF A FUTURE COMMUNITY IMPROVEMENT PROJECT WITHIN THE NEXT FIVE YEARS, SUBJECT TO IDENTIFICATION OF FUNDING FOR THE SAME

ORIGINATING DEPARTMENT

PUBLIC WORKS/TRANSPORTATION DIVISION

BACKGROUND INFORMATION

The City's Thoroughfare Plan establishes the transportation network for the City of Killeen and establishes a framework for the orderly development of roadways to include their alignments, connections, and transportation linkages. As the City grows, it becomes necessary to amend or revise the Thoroughfare Plan accordingly.

The City of Killeen is bordered by Fort Hood to the north and west, Copperas Cove to the west and Harker Heights to the east. Therefore, the City can only grow to the south. This places critical importance on preserving and enhancing the functionality of north-south arterials.

According to the City's Thoroughfare Plan, the three major arterial streets spanning the City limits north to south are:

- State Highway 195, the principal arterial for the City of Killeen with its limits being the north City limits and south City limits.
- Trimmier Road, a minor arterial with its limits being Rancier Avenue to the north and Chaparral Road to the south.
- W.S. Young Drive, a minor arterial with its limits being Westcliff Road to the north and Stagecoach Road to the south.

A minor arterial street is primarily used for higher speed and higher volume traffic. Routes for such streets are primarily used to facilitate cross-town circulation and through-town

movements. W.S. Young Drive currently terminates at Stagecoach Road and does not continue south to the City limits. The nearest street for traffic traveling south from the terminus of W.S. Young Drive at Stagecoach Road is Featherline Road, a collector street. A collector street's primary function is to carry traffic from minor streets to major streets. This offset poses a significant functionality issue due to the lack of alternate routes located in this area. Additionally, the residential development to the north and south of the W.S. Young Drive/Stagecoach Road intersection, and constraints from neighboring cities, limit the ability to connect the W.S. Young Drive and Featherline arterials. Anticipating that development and population will continue to push south, City staff predicts that the traffic at these intersections will become severely congested and inefficient in the coming years.

DISCUSSION/CONCLUSION

Since the alignment of W.S. Young Drive and Featherline Road are not contiguous, City staff believes the most economical, practical and prudent solution is to tie these intersections together in continuous flow configurations. The feasibility of this solution is predicated on preserving and protecting the right-of-way from development on the corners of these intersections, as the footprint required for a continuous flow through both intersections would require additional right-of-way than that needed by the conventional intersections currently scoped into the Stagecoach, Phase II project.

City staff has been involved in negotiations with Mr. Bruce Whitis to secure right-of-way needed for the Stagecoach, Phase II project that is currently underway. As part of those negotiations, Mr. Whitis, who is the primary owner of the needed right-of-way and the additional right-of-way at both intersections on Stagecoach Road, has verbally committed to donating the needed right-of-way and the additional right-of-way for the continuous flow configuration if the City will commit to preserving the right-of-way and express intent to prioritize improvements to Featherline Road as a future community improvement project, including constructing the continuous flow configurations within the future improvement of Featherline Road. If accepted, this donation would allow the City to acquire an estimated \$434,727 in currently needed right-of-way and right-of-way needed for the contemplated future project at no cost, which would preserve the additional right-of-way for the future improvements and allow Stagecoach, Phase II construction to proceed without the necessity of a potential condemnation action.

As additional information, on September 21, 2010, City Council passed Resolution (10-106R) authorizing a professional services agreement with Walker Partners, L.L.C. to design improvements on Stagecoach Road and Cunningham Road. Improvements to Cunningham Road and Stagecoach Road, Phase I, have been completed. Stagecoach, Phase II improvements are currently under construction. As part of the existing design, right-of-way must be acquired from Mr. Whitis for the standard intersections designed for Stagecoach, Phase II at this time.

As part of the Stagecoach Road design, Walker Partners has analyzed the W.S. Young Drive/Stagecoach Road and Featherline Road/Stagecoach Road intersections. Based on Walker Partners' transportation engineering expertise, they are endorsing the continuous flow configurations as a viable solution to future traffic concerns in this area. Walker Partners' recommendation is rooted in the ability to remove the dominance of any one movement through an intersection; thereby creating continuity in traffic routes. The continuous flow

configuration would reduce traffic delays, improve safety and aesthetics, and reduce operation and maintenance costs.

As mentioned, the continuous flow configurations would require the acquisition of additional right-of-way consisting of approximately eight to ten parcels surrounding these intersections, of which 3 are owned by Mr. Whitis and would be donated. The exact right-of-way needed cannot be determined without additional surveying and engineering, which is proposed to be completed by Walker Partners as additional services to the existing design contract. The acquisition requirements at the intersections discussed above will be determined once additional surveying and engineering is performed by Walker Partners.

FISCAL IMPACT

The amendment to the Walker Partners' professional services agreement to secure additional surveys and engineering would be \$49,000, which is within the City Manager's statutory authorization to approve, with funds available in Account #343-3490-800.58-36, Certificate of Obligation 2011 Stagecoach Road Improvements Project.

RECOMMENDATION

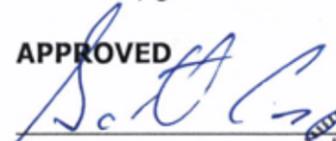
Staff recommends that the City Council modify the City's Thoroughfare Plan designating Featherline Road as a minor arterial and designating continuous flow configurations for Stagecoach Road at its intersections with W.S. Young Drive and Featherline Road, to be included within the future improvement of Featherline Road, and securing additional right-of-way in order to preserve future north-south mobility in this area, and expressing intent to prioritize improvements to Featherline Road as part of a future community improvement project within the next five years, subject to identification of funding for the same.

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF KILLEEN:

That the above stated recommendation is hereby approved and authorized.

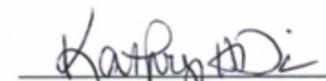
PASSED AND APPROVED at a regular meeting of the City Council of the City of Killeen, Texas, this the 10th day of June, 2014, at which meeting a quorum was present, held in accordance with the provisions of V.T.C.A., Government Code, § 551.001 *et seq.*

APPROVED

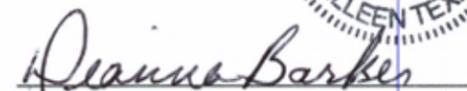

Scott Cospers
MAYOR



APPROVED AS TO FORM:


Kathryn H. Davis
CITY ATTORNEY

ATTEST:


Dianna Barker
CITY SECRETARY

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APPENDIX D

City Council Memorandum |
Approval of City/ Owner Agreement Funding Policy

Special 10-31-06
Item # SP-4
CCM/R 06-214R

CITY COUNCIL MEMORANDUM

AGENDA ITEM **APPROVAL OF CITY/OWNER AGREEMENT FUNDING POLICY**

ORIGINATING DEPARTMENT **FINANCE**

BACKGROUND INFORMATION

The City of Killeen may sometimes require new development to construct street infrastructure that is "over-sized," if analyses of the future needs in the area of the development show a need for over-sizing. An "over-sized" public improvement is one that is built larger (or with greater capacity) than the minimum size necessary to serve the particular development. If over-sizing is warranted and is required by the minimum standards established in the Thoroughfare Plan, the City may choose to participate in the cost of the over-sizing. When cost sharing of an extension or over-sizing project is proposed, the Owner/Developer will be required to obtain and submit itemized engineer's estimates and construction bids based upon development project requirements and extended or oversized requirements. The City Engineer is responsible for evaluating the information provided and making recommendation to the City Council for any cost sharing for extensions or over-sizing by the City. The City may not enter an agreement to participate in a City /Owner Agreement to share costs without identification of an available funding source.

DISCUSSION/CONCLUSION

The Finance Director and the City Manager have briefed the City Council on the need to establish a policy to fund city/owner agreements as they come before the City Council for consideration. In the past, the City has issued debt instruments, to include general obligation bonds and certificate of obligations, to fund city/owner agreements. This process has allowed the City to participate in cost-sharing for infrastructure improvements to meet the guidelines in the Thoroughfare Plan and to meet the needs of future growth. At the October 17, 2006 City Council workshop, the City Council directed staff to prepare a policy statement to clarify future funding for city/owner agreements.

POLICY STATEMENT:

City/Owner Agreements may be funded through the issuance of certificates of obligation with an amortization period not to exceed ten (10) years, as deemed necessary and approved by a majority of the City Council.

RECOMMENDATION

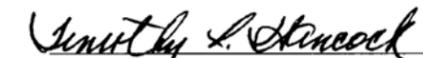
The staff recommends that the City Council adopt the City/Owner Agreement Funding Policy Statement.

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF KILLEEN:

That the above stated staff recommendation is hereby approved and authorized;

^{special}~~regular~~
PASSED AND APPROVED at a ~~regular~~ meeting of the City Council of the City of Killeen, Texas this 31st day of October, 2006, at which meeting a quorum was present, held in accordance with the provisions of V.T.C.A. Government Code, Section 551.001 et. seq.

APPROVED


Timothy L. Hancock, MAYOR

ATTEST:


Paula A. Miller
CITY SECRETARY



APPROVED AS TO FORM


Kathy Davis
CITY ATTORNEY

APPENDIX E

Initial Program of Projects

INITIAL PROGRAM OF PROJECTS

Roadway Name	Roadway Before Project	Roadway After Project
60th Street -- Hilliard Avenue to Northcrest Drive	2 lanes	2 lanes & center turn lane
60th Street -- Lake Road to Hilliard Avenue	2 lanes	2 lanes & center turn lane
Atkinson Drive Extension -- North 52nd Street to Alan Circle	2 lanes	2 lanes & center turn lane
Atlas Avenue -- S.H. 195 to Existing Atlas Avenue	None	4 lanes
Bacon Ranch Road -- W.S. Young Drive to Cunningham Road	None	2 lanes & center turn lane
Bacon Ranch Road Exit -- U.S. Hwy 190 Access Road to F.M. 3470 (Stan Schlueter Loop) at Greenlee Drive	None	2 lanes from U.S. Hwy 190 Access Road to Bacon Ranch Road, 4 lanes from Bacon Ranch Road to Stan Schlueter Loop at Greenlee Drive
Bacon Ranch Road/ Little Nolan Road -- West Trimmier Road to W.S. Young Drive	2 lanes	2 lanes & center turn lane
Barrington Trail -- W Elms Road to Jim Avenue	None	4 lanes
Bell Tower Drive -- Bell Tower Drive to U.S. Hwy 190	None	2 lanes & median
Black Orchid Drive -- Watercrest Road to Autumn Valley Drive	None	4 lanes
Bridgewood Drive Extension -- Bridgewood Drive to S.H. 201	None	4 lanes
Bunny Trail Signals -- At Clear Creek Road (SH 201)	None	Installation of one traffic signal
C.R. 2670 -- C.R. 2670 to S.H. 195	2 lanes	Construct overpass at C.R. 2670 and S.H. 195
Chaparral Road -- S.H. 195 to F.M. 3481	2 lanes	4 lanes & median
Christie Drive -- Bacon Ranch Road to Julie Jacqueline Drive	None	4 lanes
Clear Creek/ Main Gate Interchanges -- Clear Creek Road to Main Gate, Fort Hood	None	Construct interchanges at Clear Creek Road and Main Gate, Fort Hood
Cotton Patch Drive -- Blaney Drive to N/S Collector	None	4 lanes
Cunningham Road -- F.M. 3470 (Stan Schlueter Loop) to U.S. Hwy 190	None	2 lanes & center turn lane
E/W Collector -- Littlerock Drive to S.H. 195	None	4 lanes
East Trimmier Road --Stagecoach Road to Chaparral Road	2 lanes	4 lanes & center turn lane
East-West Collector -- East Trimmier road to Platinum Drive Extension	None	4 lanes & median
F.M 2484 -- S.H. 195 to I.H. 35	2 lanes	4 lanes
F.M. 3470 (Stan Schlueter Loop) -- S.H. 201 to U.S. 190 Bypass	None	4 lanes & center turn lane
Featherline Drive -- Stagecoach Road to Chaparral Road	2 lanes	4 lanes & center turn lane
Florence Road -- Jasper Drive to Elms Road	2 lanes & center turn lane	4 lanes & center turn lane
Future E/W and N/S Collector -- Roy J. Smith to East Rancier Avenue	None	4 lanes & center turn lane
Future E/W Arterial -- F.M. 116 to F.M. 2670	None	4 lanes & median
Future E/W Collector -- Onion Road to East Trimmier Road	None	4 lanes
Future E/W Collector -- S.H. 195 to West Trimmier Road	None	4 lanes
Future E/W Collector -- S.H. 201 to Bridgewood Drive	None	4 lanes
Future E/W Collector (Tower Hill Lane) -- Tower Hill Lane to West Trimmier	None	4 lanes & center turn lane
Future N/S Collector -- John Helen Drive to S.H. 201	None	4 lanes
Future N/S Collector -- Stagecoach Road to Chaparral Road	None	4 lanes
Future N/S Marginal Access Road -- Mohawk Drive to Mitchell Place Road	None	2 lanes
Gemini Lane/ John Helen Drive --Gemini Lane to John Helen Drive	None	2 lanes & center turn lane
Hercules Avenue -- Atlas Avenue to Stagecoach Road	None	4 lanes
Jack Barnes Avenue -- Existing Jack Barnes to Bunny Trail	None	4 lanes
Jasper Drive Overpass	4 lanes	8 lanes
Lions Club Park Road - West Trimmier Road to Stan Schlueter Loop (F.M. 3470)	None	2 lanes
Little Nolan Road -- W.S. Young Drive to Cunningham Road	2 lanes	2 lanes & center turn lane
Love Road -- Horne Drive to Onion Road	None	2 lanes & center turn lane
Lowes Boulevard/ Bacon Ranch Road Collector -- Lowes Boulevard to Bacon Ranch Road -- Between Hastings and Walmart	None	2 lanes

INITIAL PROGRAM OF PROJECTS

Roadway Name	Roadway Before Project	Roadway After Project
Lowes Boulevard/ Bacon Ranch Road Collector -- Lowes Boulevard to Bacon Ranch Road -- Between Lowe's Home Improvement Store and Office Max	None	2 lanes
Major E/W Arterial -- S.H. 195 to I.H. 35	None	4 lanes & median
Future E/W Arterial -- S.H. 195 to Featherline Road	None	4 lanes
Malmaison Road -- Shimla Drive to Onion Road	None	4 lanes
Maxdale Road -- Mohawk to Reese Creek Road	None	4 lanes
Mitchell Place Road -- S.H. 201 to Reese Creek Road	None	4 lanes
Mohawk Drive -- S.H. 201 to S.H. 195	None	4 lanes & center turn lane
North Twin Creek Drive -- Rancier Avenue to Lake Road	None	2 lanes & center turn lane
Old Florence Road -- Elms Road to F.M. 3470 (Stan Schlueter Loop)	2 lanes	2 lanes & center turn lane
Onion Road -- F.M. 3470 (Stan Schlueter Loop) to Stagecoach Road	2 lanes	2 lanes & center turn lane
Onion Road -- Stagecoach Road to Chaparral Road	None	2 lanes & center turn lane
Platinum Drive -- Siltstone Loop to Chaparral Road	None	4 lanes
Rosewood Drive Extension-- Serpentine Drive to Chaparral Road	None	4 lanes & center turn lane
S.H. 195 -- At Business 190	None	Construct grade separation over Business 190 and BNSF RR
S.H. 195 -- At F.M. 3470 northside	None	Construct turn-around on north side
S.H. 195 -- At F.M. 3470 southside	None	Construct turn-around on south side
S.H. 195 Overpass -- At Chaparral Road	4 lanes	4 lanes
S.H. 195 -- Old F.M. 440 Road to Pershing Drive	6 lanes	10 lanes & turn-arounds
Future E/W Collector -- S.H. 195 to Featherline Road	None	2 lanes & center turn lane
Stagecoach Roundabouts -- At West Trimmier Road, at W.S. Young Drive, at Featherline Drive, at Cunningham Road, and at East Trimmier Road	2 lanes	4 lanes
Sulfur Spring Drive -- East Trimmier Road to Rosewood Drive	2 lanes	4 lanes
Trimmier Extension -- Chaparral Road to 0.7 miles north of Live Oak Cemetery Road	None	4 lanes & median
W.S. Young Drive -- U.S. Hwy 190 to Illinois Avenue	4 lanes & center turn lane	4 lanes & median
Walmart Boulevard -- Lowes Boulevard to Bacon Ranch Road	None	2 lanes & center turn lane
West Trimmier Road -- Stagecoach Road to Chaparral Road	2 lanes	4 lanes & center turn lane
Westcliff Road -- Westcliff Road to Fort Hood		4 lanes & center turn lane

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APPENDIX F

Prioritized Program of Projects

HIGH PRIORITY PROJECTS

Rank	Roadway Name
1	West Trimmier Road-- Stagecoach Road to Chaparral Road
2	East Trimmier Road--Stagecoach Road to Chaparral Road
3	W.S. Young Drive-- U.S. Hwy 190 to Illinois Avenue
4	Chaparral Road-- S.H. 195 to F.M. 3481
5	Jasper Drive Overpass
6	Featherline Drive -- Stagecoach Road to Chaparral Road, including roundabouts at: Stagecoach and W.S. Young, and Stagecoach and Featherline
7	Florence Road-- Jasper Drive to Elms Road
8	F.M 2484-- S.H. 195 to I.H. 35
9	Bunny Trail Signals-- At Clear Creek Road (SH 201)
10	Cunningham Road-- F.M. 3470 (Stan Schlueter Loop) to U.S. Hwy 190
11	S.H. 195-- At Business 190
12	S.H. 195-- At F.M. 3470 northside
13	S.H. 195-- At F.M. 3470 southside
14	Rosewood Drive Extension-- Serpentine Drive to Chaparral Road
15	F.M. 3470 (Stan Schlueter Loop)-- S.H. 201 to U.S. 190 Bypass

MEDIUM PRIORITY PROJECTS

Rank	Roadway Name
16	Onion Road-- Stagecoach Road to Chaparral Road
17	Clear Creek/ Main Gate Interchanges-- Clear Creek Road to Main Gate, Fort Hood
18	S.H. 195 Overpass-- At Chaparral Road
19	S.H. 195-- Old F.M. 440 Road to Pershing Drive
20	Little Nolan Road-- W.S. Young Drive to Cunningham Road
21	Old Florence Road-- Elms Road to F.M. 3470 (Stan Schlueter Loop)
22	Platinum Drive-- Siltstone Loop to Chaparral Road
23	Atlas Avenue-- S.H. 195 to Existing Atlas Avenue
24	Future E/W Arterial-- F.M. 116 to F.M. 2670
25	Mohawk Drive-- S.H. 201 to S.H. 195
26	Trimmier Extension-- Chaparral Road to 0.7 miles north of Live Oak Cemetery Road
27	Major E/W Arterial-- S.H. 195 to I.H. 35
28	Stagecoach Roundabouts-- At Cunningham Road and at East Trimmier Road
29	Westcliff Road-- Westcliff Road to Fort Hood
30	C.R. 2670-- C.R. 2670 to S.H. 195
31	Onion Road-- F.M. 3470 (Stan Schlueter Loop) to Stagecoach Road
32	Bacon Ranch Road/ Little Nolan Road-- West Trimmier Road to W.S. Young Drive
33	Bacon Ranch Road Exit-- U.S. Hwy 190 Access Road to F.M. 3470 (Stan Schlueter Loop) at Greenlee Drive or Right Turn Lane at U.S. Hwy 190 Access Road and F.M. 3470 (Stan Schlueter Loop)

ADDITIONAL PROJECTS

Rank	Roadway Name
34	Future E/W Collector-- East Trimmier road to Platinum Drive Extension
35	Future N/S Collector-- Stagecoach Road to Chaparral Road
36	Barrington Trail-- W Elms Road to Jim Avenue
37	Future E/W Arterial -- S.H. 195 to Featherline Road
38	Future E/W and N/S Collector-- Roy J. Smith to East Rancier Avenue
39	Future E/W Collector-- Onion Road to East Trimmier Road
40	Bacon Ranch Road-- W.S. Young Drive to Cunningham Road
41	Malmaison Road-- Shimla Drive to Onion Road
42	Lowes Boulevard/ Bacon Ranch Road Collector-- Lowes Boulevard to Bacon Ranch Road-- Between Lowe's Home Improvement Store and Office Max
43	Future E/W Collector -- S.H. 195 to Featherline Road
44	Future N/S Collector-- John Helen Drive to S.H. 201
45	Future N/S Collector-- Atlas Avenue to Stagecoach Road
46	Bridgewood Drive -- Bridgewood Drive to S.H. 201
47	Lowes Boulevard/ Bacon Ranch Road Collector-- Lowes Boulevard to Bacon Ranch Road-- Between Hastings and Walmart
48	North Twin Creek Drive-- Rancier Avenue to Lake Road
49	60th Street-- Hilliard Avenue to Northcrest Drive
50	Future E/W Collector-- S.H. 201 to Bridgewood Drive
51	Lions Club Park Road- West Trimmier Road to Stan Schlueter Loop (F.M. 3470)
52	Atkinson Drive-- North 52nd Street to Alan Circle
53	60th Street-- Lake Road to Hilliard Avenue
54	Love Road-- Horne Drive to Onion Road
55	Bell Tower Drive-- Bell Tower Drive to U.S. Hwy 190
56	Turland Road-- Bunny Trails to Future N/S Collector
57	Future E/W Arterial-- Mayberry Park Road to S.H. 195
58	Mayberry Park Road-- Maxdale Road to S.H. 195

APPENDIX G

Thoroughfare Development Manual

THOROUGHFARE DEVELOPMENT MANUAL

The purpose of the City's Thoroughfare Development Manual is to guide the expansion and enhancement of the local surface transportation network. The document details street development standards and defines required street features by functional classification. Street design criteria covered by the manual are consistent with the American Association of State Highway Transportation Officials (AASHTO) policy on the Geometric Design of Highways and Streets (more commonly known as the AASHTO Green Manual).

A supporting function of the City's Thoroughfare Development Manual is to guide access management decisions and discipline vehicular access to the surface transportation network through sound engineering practices that protect and enhance public health, safety, and welfare. These engineering practices are also rooted in guidelines established by AASHTO and serve as the benchmark for the City of Killeen's access management standards. Overall transportation planning is addressed in the City's adopted Thoroughfare Development Manual. As properties continue to develop throughout the City, emphasis will continue to be placed on the safe, efficient use of these transportation corridors for pedestrians, motorists, cyclists, and public transit vehicles.

The Thoroughfare Development Manual can be accessed on the City of Killeen's website at <http://www.killeentexas.gov/files/ThoroughfarePlanManual.pdf>.