AREA TRANSPORTATION PLAN

US-40 / West 6th Street and K-10 Interchange

March 2012

Prepared by BG Consultants, Inc. and Wilbur Smith Associates

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TABLE OF CONTENTS

EXECUTIVE SUMMARY ..... 6 pages

CHAPTER 1 – INTRODUCTION

Lawrence/Douglas County Background 1.1
Purpose 1.3

CHAPTER 2 – PUBLIC INVOLVEMENT

Public Involvement Summary 2.1
Stakeholder Agency Coordination 2.2
Land Owner and Developer Coordination 2.3
Public Input 2.4
How has the "PI" been used? 2.7

CHAPTER 3 – LAND USE

Summary and Existing Land Use Data and Plans 3.1
Future Land Use Analysis Methodology and Anticipated Land Use Scenario 3.2
Impact on Traffic 3.3
Population Growth and Market Absorption 3.4
Practical Reserve Capacity and Land Use 3.6

CHAPTER 4 – EXISTING CONDITIONS AND ENVIRONMENTAL RESOURCES

Summary and Existing Transportation Infrastructure 4.1
Storm Water Runoff and US-40 ..... 4.2
Environmental Resources/Constraints 4.3
Future Environmental Requirements and Mitigation 4.5

CHAPTER 5 – TRAFFIC ANALYSIS

Summary and Methodology 5.1
Existing Traffic Operating Conditions 5.2
Crash History 5.5
Traffic Forecasting 5.6
Short Term Traffic Operations 5.7
2040 Long Term Traffic Operations 5.8
Practical Reserve Capacity 5.9

CHAPTER 6 – TRANSPORTATION RECOMMENDATIONS

Summary and Short Term Needs 6.1
Long Term Needs 6.4
Intersections and Access Management 6.7
Practical Reserve Capacity 6.10
Multi-Modal Considerations 6.12
Context Sensitive Solutions 6.16

CHAPTER 7 – IMPLEMENTATION

Summary and Implementation Goals 7.1
Connecting Development & Transportation 7.2
Triggers 7.3
Potential Phasing 7.7
Implementation Tools 7.8
KDOT's Tool Box of Implementation Strategies 7.10

LIST OF FIGURES AND TABLES

Figure 1.1 – Historical Growth of Lawrence, Kansas 1.1
Figure 1.2 – Lawrence Urban Growth Area Map 1.2
Figure 3.1 – Horizon 2020 Population Estimates 3.4
Figure 4.1 – Watershed Map 4.2
Table 5.1 – Level of Service Criteria 5.1
Figure 5.1 – Summary of Daily Traffic Volume and Speed 5.2
Figure 5.2 – Weekday Directional Traffic Flow 5.3
Table 5.2 – Historic and Estimated Future Daily Traffic Volumes 5.6
Figure 5.3 – Short Term Intersection Configuration 5.7
Figure 5.4 – 2040 Long Term Intersection Configuration 5.8
Table 5.3 – Practical Reserve Capacity 5.10
Figure 6.1 – Short Term Needs at US-40 and K-10 Interchange 6.2
Figure 6.2 – Future US-40 west of K-10 ..... 6.4
Figure 6.3 – Long Term Intersections 6.5
Figure 6.4 – Upstream Functional Intersection Area (TRB's *Access Management Manual*) ... 6.8
Figure 6.5 – Tools for US-40/West 6th Street Access Management 6.8
Table 6.1 – Access Management Recommendations 6.9
Figure 6.6 – Possible Relocation of Southbound K-10 Off Ramp 6.10
Figure 6.7 – Possible dual right-turn lanes for westbound US-40 at east ramp terminal 6.11
Figure 6.8 – T2030 Bikeway System Map 6.15
Figure 6.9 – T2030 Gateway Map 6.16
Figure 6.10 – Example US-40 and K-10 Interchange Aesthetic Improvements 6.17
Table 7.1 – Short Term Needs (1-5 years) 7.4
Table 7.2 – Long Term US-40 Roadway Needs (>5 years) 7.5
Table 7.3 – Long Term Multi-Modal and Context Sensitivity Solutions (>5 years) 7.6

LIST OF EXIHIBITS

1.1 – Location Map ..... Chapter 1
2.1 – Property Owners Map ..... Chapter 2
3.1 – Existing Land Use Map ..... Chapter 3
3.2 – Anticipated Future Land Use Scenario ..... Chapter 3
4.1 – Existing Environmental Conditions ..... Chapter 4
5.1 – 2010 Traffic ..... Chapter 5
5.2 – 2010 Level-of-Service ..... Chapter 5
5.3 – Trip Generation ..... Chapter 5
5.4 – Long Term Estimated Traffic ..... Chapter 5
5.5 – Long Term Estimated Level-of-Service ..... Chapter 5
6.1 – Short Term Needs ..... Chapter 6
6.2 – Long Term (2040) Plan & Profile 1 of 4 ..... Chapter 6
6.3 – Long Term (2040) Plan & Profile 2 of 4 ..... Chapter 6
6.4 – Long Term (2040) Plan & Profile 3 of 4 ..... Chapter 6
6.5 – Long Term (2040) Plan & Profile 4 of 4 ..... Chapter 6
6.6 – Functional Area Map 1 of 2 ..... Chapter 6
6.7 – Functional Area Map 2 of 2 ..... Chapter 6

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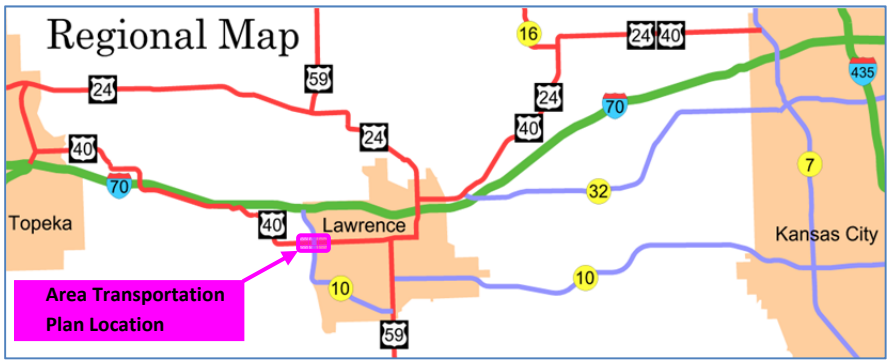
Purpose



The history of Lawrence has shown steady urban growth since World War II. During this 65 to 70 year period, the footprint of the community has expanded nearly 700% from about 3,000 acres to more than 20,800 acres. Most of the urban growth has been westward due to the converging flood plains of the Kansas and Wakarusa Rivers to the east. The location of the US-40 and K-10 Interchange has gone from a location in rural Douglas County 4 miles away from Lawrence to assuming the role as the west City Limits.

Historic development patterns suggest continued urban growth westward. The US-40 and K-10 Interchange is centered on 14,000 acres of land within the Urban Growth Boundary, most of which is currently undeveloped. Utility infrastructure for water and sewer service west of K-10 has been identified, some of which has been constructed to K-10. However, a detailed plan for transportation infrastructure needs has not been developed for this critical 1.5 mile section of the public street network.

Taking a proactive approach, the Kansas Department of Transportation (KDOT), Douglas County, City of Lawrence, and the Lawrence-Douglas County Metropolitan Planning Organization (MPO) partnered to develop this Area Transportation Plan. The Plan estimates future transportation needs and provides recommendations to better handle the future traffic demands and support economic opportunities in this growing area.

Public Involvement

The Project Team engaged stakeholders and the public in a variety of ways to solicit critical and usable input to help shape this Plan. The Public Involvement approach included:

- Focused stakeholder agency meetings
- Meetings with developers and property owners with land holdings in the Planning Area
- Two public open houses
- Plan summary presentations to the Plan Partners
- An on-line presence via the Kansas Transportation On-Line Community (K-TOC) website

A list of the stakeholder agencies the Project Team engaged is shown below.

- Lawrence Bicycle Advisory Committee
- Lawrence Police Department
- Lawrence Transit
- Lawrence Plan Review Committee
- Lawrence/Douglas County Planning Commission
- Lawrence/Douglas County MPO Technical Advisory Committee and Policy Board
- Lawrence/Douglas County Fire & Medical
- Douglas County Sheriff
- USD-497 (Lawrence)
- Kansas Highway Patrol

Environmental Constraints

The Planning Area contains a wide range of natural and artificial features which create a transition from the rolling terrain and scenic countryside of a 2-lane rural road to the 4-lane urban arterial in the Lawrence City Limits. Some of these environmental features could be protected/regulated by federal or state agencies. The Project Team identified environmental constraints in the Planning Area to better understand obstacles or limitations to urban growth and expansion of transportation facilities.

Natural features in the Planning Area include two streams, emergent wetlands, possible habitat for 2 endangered species, and multiple small ponds. There are no existing parks, although two parks are located just east of this area. There are two historic trails and one structure recorded in the Bureau of Land Management's General Land Office records. A protected conservation area exists south of US-40.

Permits, coordination requirements, and/or mitigation of environmental impacts may be needed for public and/or private improvements in the Planning Area. No major environmental impacts are expected from improvement of US-40/West 6th Street. If federal funds are used for construction, a Categorical Exclusion document will most likely be needed.

Land Use

The majority of the land within the Planning Area is currently used for agricultural purposes. There is one existing residential subdivision southeast of the US-40 and K-10 interchange and the First United Methodist Church's west campus is located just west of K-10.

The Anticipated Land Use Scenario in **Chapter 3** is based on a synthesis of existing development plans and discussions with property owners and developers with large, developable land holdings in the Planning Area. A population growth and market absorption analysis was completed to assist in validating the future land use assumptions. The timing of urban growth will likely be driven by improvements in the regional and global economy.

Traffic Analysis and Transportation Recommendations

Analysis of a transportation facility is based on the concept of supply and demand. Understanding the demands of a transportation facility enables policy makers to implement improvements to build transportation infrastructure which will supply capacity sufficient to meet demand. When considering transportation facilities, demand is quantified as traffic flow or traffic volume. Capacity of a transportation facility is generally characterized by the Level-of-Service (LOS) concept. LOS assigns the facility a grade between A (good) and F (poor) depending on capacity and performance.

US-40/West 6th Street supplies adequate capacity for the existing traffic demands with the exception of two locations; the US-40 and K-10 Interchange and the US-40/West 6th Street and George Williams Way intersection. Traffic demands are expected to increase by up to 470% over the next 30 years (6,200 vehicles per day to more than 29,000 vehicles per day in 2040). The existing geometry and lane configuration of US-40 west of K-10 is not conducive to long term urban growth and public access. Major improvements will be necessary to accommodate the anticipated traffic demands.

SHORT TERM US-40/West 6th Street roadway needs to address current traffic demands and future needs anticipated within the next ±5 years:

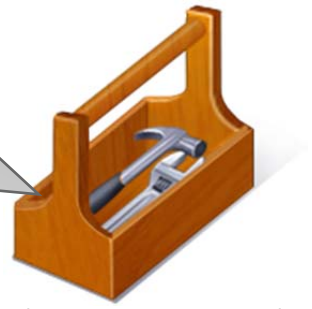
- Capacity Improvements at US-40 and K-10 Interchange to include traffic signals and a second left-turn lane for the off-ramps.
- Capacity Improvements at the US-40/West 6th Street and George Williams Way intersection to include traffic signal and widening the south leg.
- Removal of the E 902 Road access to US-40 by realigning the road through the street network planned for the Mercato development.
- Geometric improvement of US-40 west of K-10, construction of John Wesley Drive, and closure of E 900 Road and First Church driveway.
- Proactive approach to preserve sufficient rights-of-way for long term transportation needs.

LONG TERM US-40/West 6th Street roadway needs to accommodate the 2040 Urban Growth Scenario:

- Construct US-40/West 6th Street to a 4-lane urban arterial west of K-10.
- Reconstruct the vertical profile to provide better sight distance.
- Establish urban intersection spacing along US-40/West 6th Street at ±¼ mile intervals.
- Maintain a clearance of at least 1,320 feet between the western K-10 ramp terminal and the first full access intersection west of K-10.
- West of K-10: Install traffic signals on US-40 when warranted at E 800 Road, E 825 Road, E 850 Road, and John Wesley Drive.
- Coordinate traffic signals along US-40/West 6th Street to provide efficient traffic flow.

Are there "tools" or "policies" recommended to manage the access needs of future development?

Intersections and driveways interrupt the flow of traffic and introduce conflict points into the transportation system. A variety of intersection and access management tools are recommended in this Plan to preserve the safety and efficiency of the transportation system. The Plan documents ways to remove/relocate driveways, recommends policies to maintain appropriate access spacing, and identifies areas surrounding intersections that need to be maintained as "no-access zones".



Does the PLAN have to be revised if urban growth doesn't develop as estimated?

The long term recommended improvements are estimated to provide desirable levels-of-service for the potential land uses identified in Chapter 3. However, if future development intensities are higher than estimated, modifications to the recommendations may be necessary. The Plan identifies Practical Reserve Capacities of the transportation recommendations, allowing the Plan Partners to monitor traffic growth and consider implementing suggestions listed below **if traffic demands exceed estimates**.

- **Intelligent Transportation Systems (ITS)** use technology to provide innovative solutions to "squeeze" as much capacity out of a facility as possible, especially traffic signals, to avoid reconstruction. Installing interconnect cables and pan-tilt-zoom cameras at intersections can enhance coordination between traffic signals and give an agency the ability to monitor and adjust signal timings in real time to meet demands.
- Either the **east or west ramp terminal of the US-40 and K-10 Interchange** may need to be relocated away from K-10 to provide more space between the ramp terminals to store traffic queues.
- The **east ramp terminal of the US-40 and K-10 Interchange** may need to have a second right-turn lane added for westbound US-40/West 6th Street traffic turning right onto K-10.
- **E 800 Road, E 825 Road, Aldersgate Road (E 850 Road), & John Wesley Drive** intersections may need to have access restrictions extended a longer distance from US-40 so traffic queues don't block driveways.

Does the PLAN address the transportation needs for other modes of travel?

The City of Lawrence provides its citizens with opportunities to travel around the community by modes other than personal automobiles. In addition to the City's transit service, The "T", shared use paths, bike lanes, bike routes and sidewalks are common facilities for bicyclists and pedestrians. The "T" does not currently provide service that would reach the Planning Area. The Plan Partners therefore need to take a proactive approach during implementation of the recommendations and during the land development process to enable future transit opportunities in the Planning Area. This Plan also provides suggestions and guidance on potential transit opportunities in the Planning Area.

Shared use paths for bicyclists and pedestrians exist east of K-10. A number of bicycle and pedestrian facility improvements are recommended as a part of this Plan to increase opportunities and to provide increased connectivity of these facilities. Two options are presented to address the unique obstacle of crossing K-10. One option is a shared use path along US-40 using the existing bridge over K-10. A second option is to provide a separate pedestrian/bicycle bridge south of US-40.

Context Sensitive Solutions

Context sensitive solutions consist of design criteria used during the design of infrastructure improvements to balance the need to move traffic efficiently and safely with other desirable outcomes, including historic preservation, environmental sustainability, and the creation of vital public spaces. The Plan identifies two themes to be incorporated into projects to provide context sensitivity.

Theme 1: US-40 and K-10 Interchange is a Major Gateway

T2030 identifies the US-40 and K-10 interchange as the Major Gateway for traffic entering the northwest portion of the community. Theme 1 focuses on landscaping and other aesthetic improvements around the interchange to provide subtle clues to drivers that they are entering the City of Lawrence.

Theme 2: US-40 west of K-10 is a "Rural-to-Urban" Transition

Theme 2 focuses on the use of landscaping and engineering design ideas to maintain the rolling, countryside context of the existing highway.

How much will the recommended improvements cost and who will be responsible for building the projects?

Implementation of this Plan will require a continued, collaborative effort among the four Plan Partners. Estimated costs for short term needs range from small projects of less than $100,000 to larger projects up to approximately $3 million. Estimated costs for long term improvements include smaller phased improvements of $100,000 or less to major infrastructure improvement projects which may cost up to $15 million.

KDOT developed a project implementation toolbox addressing a wide range of regulatory actions and funding mechanisms to implement the recommendations of this Area Transportation Plan. These tools can be found in greater detail in **Chapter 7**.

Key Points of the Area Transportation Plan

The area surrounding the US-40/West 6th Street and K-10 Interchange has significant development potential. With any large-scale development a variety of transportation challenges will eventually come about. KDOT, Douglas County, the City of Lawrence, and the Lawrence-Douglas County MPO have partnered to develop a transportation plan that will recommend improvements to better handle future traffic demands and support economic opportunities in this growing area.

Estimated Future Traffic Demands

- Traffic demands on US-40/West 6th Street are expected to increase over time, particularly as land development takes place along properties fronting US-40 west of K-10.
- Traffic volumes on US-40/West 6th Street may increase up to 310% east of K-10 and up to 470% west of K-10 by the calendar year 2040.

Transportation Recommendations

- Short Term transportation improvements that might be needed within the next 5 years include:
  - Installation of traffic signals and turn lanes at the US-40 and K-10 Ramp Terminals.
  - Installation of a traffic signal at US-40/West 6th Street and George Williams Way.
  - Reconstruction of US-40 near the existing First Church West Campus access to include:
    - Removal of the existing First Church West Campus access and construction of a full access intersection, US-40 and John Wesley Drive, situated to meet the long-term access spacing needs of the transportation system.
    - Addition of right-turn and left-turn lanes on US-40 at John Wesley Drive.
    - Reconstruction of the US-40 vertical profile for approximately 1,500 feet to improve intersection sight distance.
- Long Term transportation improvements that might be needed include:
  - Reconstruction of US-40 west of K-10 with the following features:
    - 4-lanes with a raised, center median.
    - Full access intersections at approximately one-quarter mile intervals.
    - Bicycle and pedestrian facilities such as sidewalks and shared use paths.
    - Transit accommodations such as bus stops and turnouts where appropriate.
  - Reconstruction of the US-40 and K-10 Interchange with the following features:
    - Widened bridge to accommodate additional turn lanes on US-40.
    - Pedestrian and bicycle facilities over K-10 and connected to the shared use path along the east side of K-10.
    - Aesthetic enhancements to create a Major Gateway theme.
  - Incorporation of Intelligent Transportation Systems strategies along US-40 enabling the intersections to operate in a coordinated fashion to best serve traffic demands.

LAWRENCE / DOUGLAS COUNTY BACKGROUND

The history of Lawrence has shown steady urban growth westward since World War II. Historical mapping shows that in 1950, the City of Lawrence covered 3,025 acres. The western most development was near US-40/West 6th Street and Iowa Street. Ten years later development covered over 5,100 acres and had expanded westward along US-40/West 6th Street to Kasold Drive. Pasture land was still plentiful south of US-40/West 6th Street along Kasold Drive.

During the next decade the Alvamar Development Company began amassing and developing a land holding that grew in excess of 3,000 acres. Ten years later, 1970, Lawrence doubled in size to 10,800 acres with most of the new area being added in west Lawrence. By 1970 the first development west of Drag Strip Road (soon to be gentrified and renamed Wakarusa Drive) became a reality.

Today, 40 years later, Lawrence has nearly doubled in size again, covering more than 20,800 acres and abutting the east side of K-10.

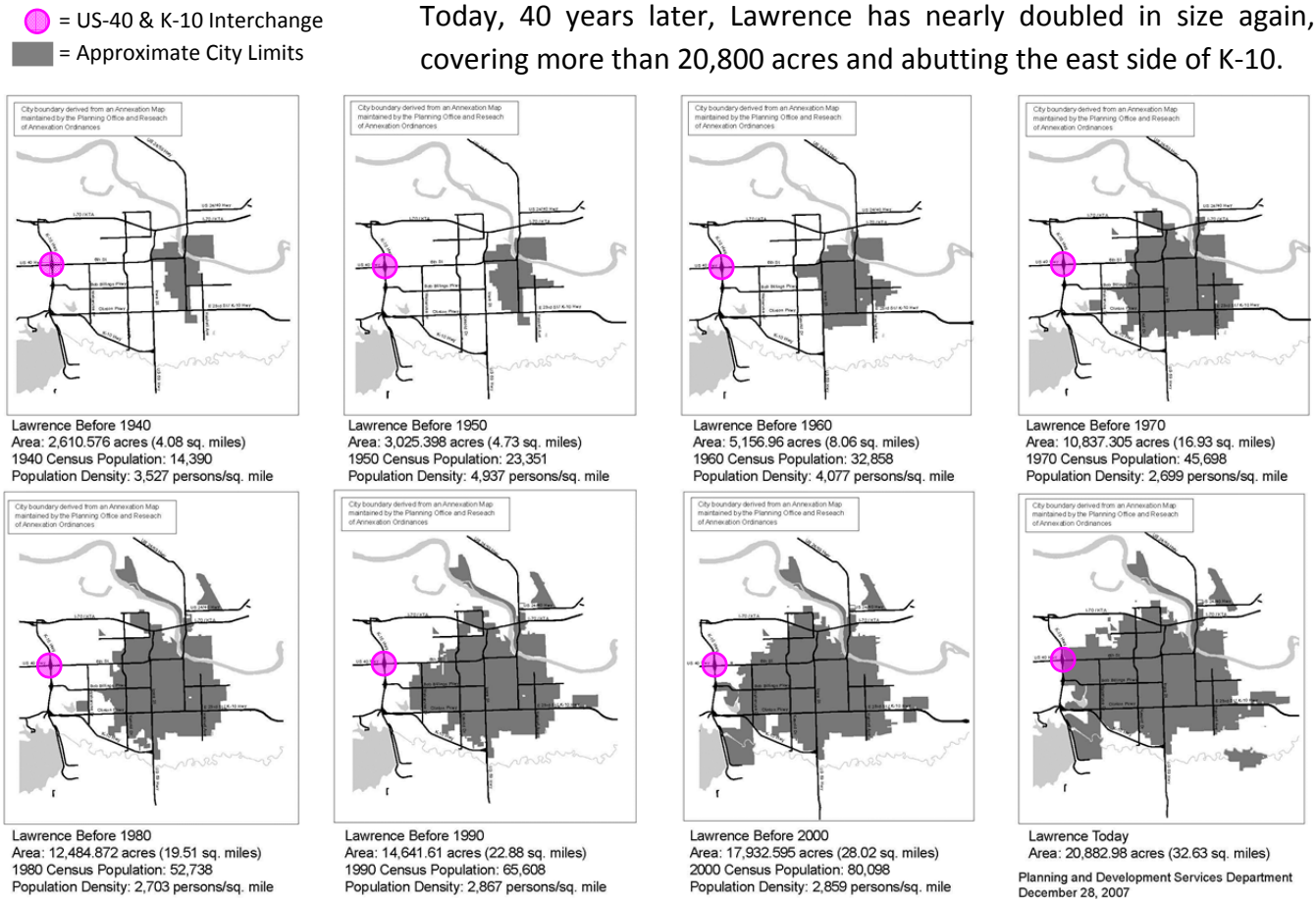
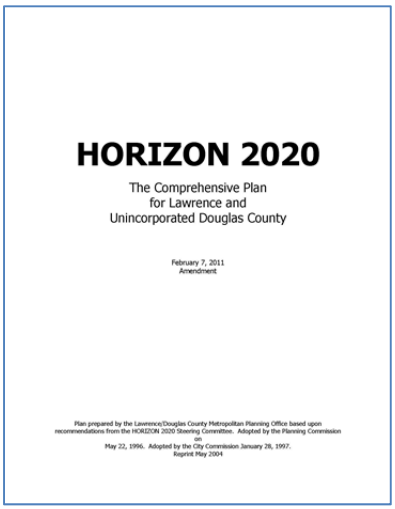


Figure 1.1: Historical Growth of Lawrence, Kansas

Using the past as prologue and anticipating continued growth westward, the western edge of the Lawrence-Douglas County Metropolitan Planning Commission's Urban Growth Boundary is 3.5 miles west of the US-40 and K-10 Interchange. The northern and southern boundaries of the Planning Area are both 2 miles from the interchange. These boundaries place the interchange at the center of 14,000 acres of land that is either developed or is in the planning boundary for urban growth.


HORIZON 2020

The Comprehensive Plan
for Lawrence and
Unincorporated Douglas County

February 7, 2011
Amendment

Plan prepared by the Lawrence/Douglas County Metropolitan Planning Office based upon recommendations from the HORIZON 2020 Steering Committee. Adopted by the Planning Commission on May 22, 1996. Adopted by the City Commission January 28, 1997.
Reprint May 2004

During the next decade the City's population may increase by 10 to 20 thousand. Again, if the past is prologue, a significant amount of the urban development may happen within the 14,000 acres surrounding the US-40 and K-10 Interchange. In time the importance of the US-40 and K-10 Interchange may rival that of any other intersection in the Lawrence community, adding yet another chapter to the history of the development of west Lawrence.

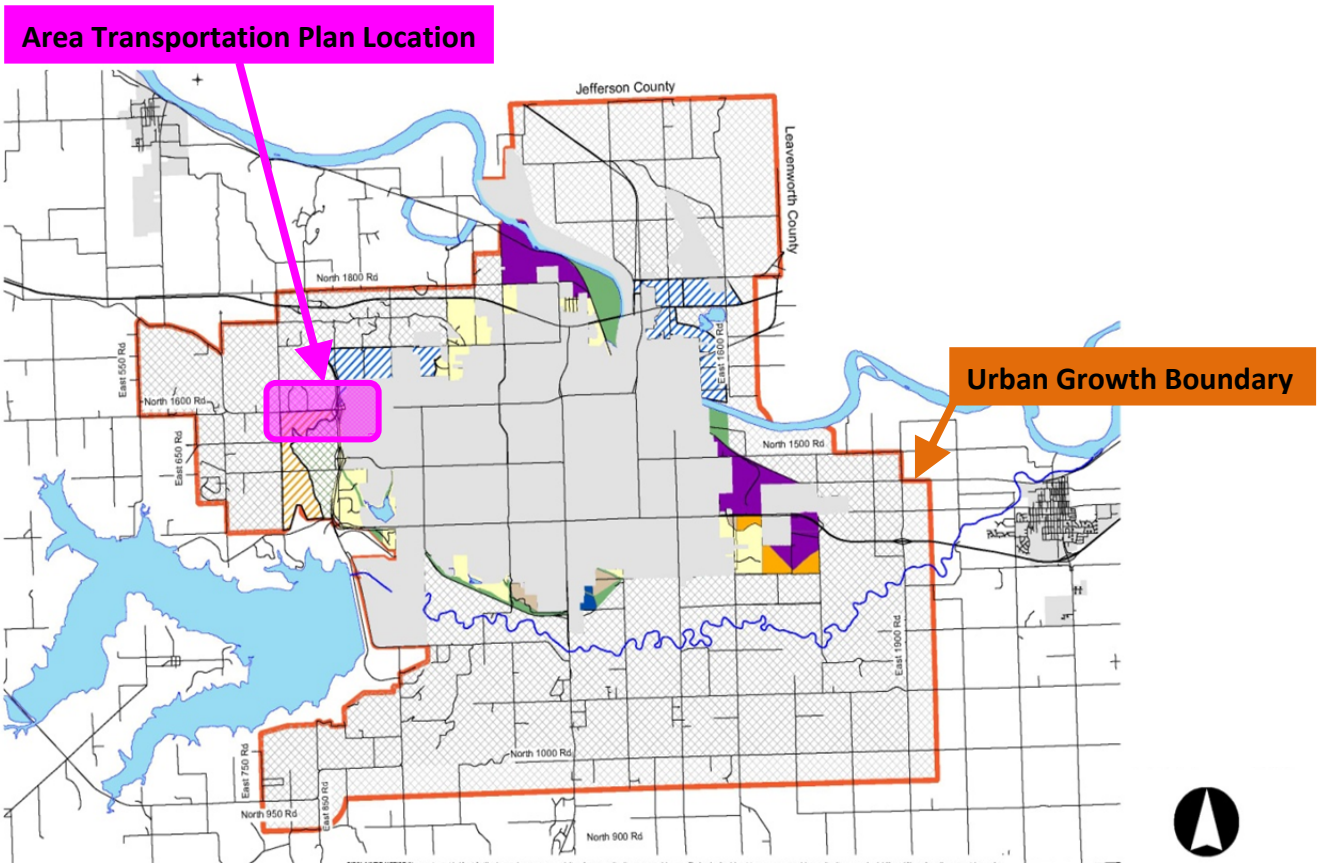


Figure 1.2: Lawrence Urban Growth Area Map

PURPOSE

The Kansas Department of Transportation (KDOT) has partnered with the City of Lawrence, Douglas County and the Lawrence-Douglas County Metropolitan Planning Organization (MPO) to develop this **AREA TRANSPORTATION PLAN**. The four partner agencies recognize the significant development potential at the US-40/West 6th Street and K-10 Interchange. As with any development, a number of transportation challenges will eventually come about, such as safety concerns and traffic congestion. The purpose of this **PLAN** is to provide the four partner agencies with a better understanding of the nature of future development at this location and identify transportation improvements that might be necessary to accommodate growth along US-40/West 6th Street.

The **PLANNING AREA** includes a 1.5 mile segment of US-40/West 6th Street between E 800 Road and George Williams Way in Lawrence, Douglas County, Kansas. The **PLANNING AREA** covers a footprint approximately 0.5 miles on either side of US-40/West 6th Street. **Exhibit 1.1** provides a more detailed image of the Planning Area.

This **PLAN** will present a meaningful, coordinated strategy to preserve safe and efficient movement of people and goods through the Planning Area and support economic opportunities in west Lawrence.

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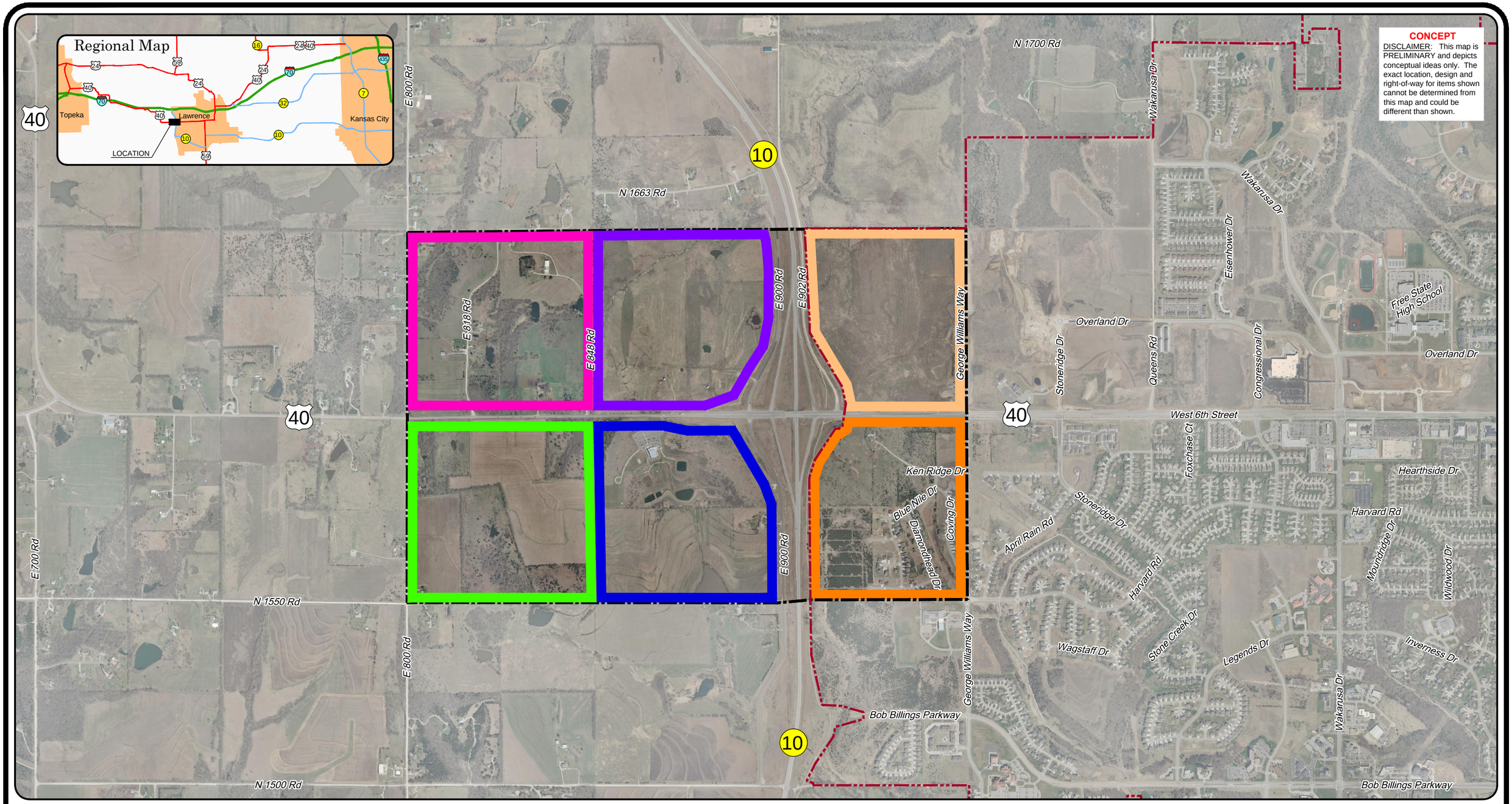

N
W E
S

0.25 0 0.25 0.50

1" = 1/4 mile

Planning Area

City Limits

Northwest Quarter Section

Southwest Quarter Section

North-Central Quarter Section

South-Central Quarter Section

Northeast Quarter Section

Southeast Quarter Section

Exhibit 1.1: Location Map

AREA TRANSPORTATION PLAN

US-40/West 6th Street and K-10 Interchange

Kansas Department of Transportation

City of Lawrence

BG Consultants

WilburSmith Associates

KDOT Project: 40-23 KA-1869-01

Date Prepared: March 2012

PUBLIC INVOLVEMENT SUMMARY

The Project Team engaged stakeholders and the public in a variety of ways to solicit critical and usable input to help shape this Plan. This chapter details the steps taken in the stakeholder and public involvement process and highlights key inputs and how they were used to estimate future needs and recommendations for the area.

KDOT outlined the approach used for the stakeholder, land owner, and public involvement efforts. The approach included:

- Focused agency stakeholder and land owner meetings
- Two public open houses
- Plan summary presentations to Funding Partners
- An on-line presence and discussion via the Kansas Transportation On-Line Community (K-TOC) website.
- Press releases, Media blasts and Twitter

A series of core messages about the Plan were created. These included:

- The area surrounding the US-40/West 6th Street and K-10 Interchange has significant development potential.
- With any large-scale development a variety of transportation challenges will eventually come about.
- KDOT, Douglas County, the City of Lawrence, and the Lawrence-Douglas County Metropolitan Planning Organization (MPO) have partnered to develop a transportation plan that will recommend improvements to better handle future traffic demands and support economic opportunities in this growing area.
- This plan, dubbed an Area Transportation Plan, will gather information about the nature and magnitude of future development and develop a list of transportation improvements and access management guidelines to accommodate future growth.
- The end product of this planning process will present a meaningful, coordinated strategy to preserve safe and efficient movement of people and goods through the Planning Area.

STAKEHOLDER AGENCY COORDINATION

The Project Team discussed this Plan with a wide range of stakeholder agencies. The purpose of these meetings was to inform the stakeholder agencies about the Plan, discuss key issues affecting the service they provide for this area, identify potential area needs, and receive feedback on concept ideas. A list of the stakeholder agencies the Project Team engaged is shown below.

- Lawrence Bicycle Advisory Committee
- Lawrence Police Department
- Lawrence Transit
- Lawrence Plan Review Committee
- Lawrence/Douglas County MPO Technical Advisory Committee and Policy Board
- Lawrence/Douglas County Fire & Medical
- Douglas County Sheriff
- Kansas Highway Patrol
- USD-497 (Lawrence)

Comments received from the stakeholder agency meetings assisted with the analysis of area needs and development of transportation improvements to address those needs. The following list summarizes the key comments:

- General support for the planning process and planning for improvements in the area.
- US-40/West 6th Street to K-10 is a main route for emergency access to I-70 and Northwest Douglas County.
- The Plan should consider the need for adequate emergency access to properties adjacent to US-40/West 6th Street.
- There are no near-term plans to extend transit services into the area.
- The Plan should consider a future transit hub and/or park and ride facility in the area to provide transit opportunities.
- Connectivity of bicycle and pedestrian infrastructure is important. The recommendations of the Plan should connect into existing shared use paths and existing and/or planned bikeways near the Planning Area.

- The Plan should consider improving the sidewalk on the north side of US-40/West 6th Street east of K-10 to a shared-use path for improved opportunities for bicyclists to access the Mercato development at US-40/West 6th Street and George Williams Way.

LAND OWNER AND DEVELOPER COORDINATION

The Project Team actively met with the land owners and developers owning large tracts of land in and adjacent to the Planning Area. The land owners possess a significant quantity of developable land, most of which is currently vacant. Their ideas and plans could strongly influence future transportation needs. **Exhibit 2.1** identifies property owners with undeveloped parcels within the Planning Area.

The purpose of the meetings was to inform the land owners of the development of this Plan and to obtain better and more specific information for the land use analysis, traffic forecasting, and identification of key transportation needs. Land owner meetings or discussions were held with:

- Kentucky Place LC (Mercato)
- Tanglewood LC and Hanover Place LC (Brink)
- Ronald and Carolyn Crawford
- Gateway West Land Holdings
- First United Methodist Church
- Diamond Head
- Karl and Catherine William Trustees/Colliers Real Estate
- Langston Heights, LC (via telephone)
- Janet Jimenez (via telephone)

The following is a synthesis of key comments received from these discussions:

- Several of the land owners, particularly in the western portion of the Planning Area, intend to sell their property and have no specific development plans.
- Several land owners expressed the desire for access to US-40 at various points including right-in/right-out access at 1/8 mile intervals east of K-10.

- Land owners were generally in favor of improvements, particularly at the US-40 and K-10 interchange.
- Development will be economy driven with no specific timetables noted for any developments.
- Some land owners expressed interest in having more commercial development, particularly on properties that are currently planned for other types of land uses.
- The rural section of Douglas County immediately west of the Planning Area consists of larger tracts of rural ground with a mix of pastures and woodlands. Some of the land owners expressed a desire for maintaining the rural, countryside context of the area as drivers enter the Planning Area from the west.

PUBLIC INPUT

The Project Team engaged the public-at-large through open house meetings, updates at other public forums, and use of the K-TOC on-line forum operated by KDOT.

Public Meeting

The Project Team held an open house public meeting on Thursday March 3, 2011 at the Lawrence Indoor Aquatic Center. Letters discussing the Plan and the public meeting were sent to 18 land owners of rural and/or undeveloped land within the Planning Area. 92 postcards were mailed to property owners with developed land within the Planning Area. An additional 570 postcards were mailed to property owners located within one-half mile of the Planning Area. Additional public advertisements included local venues, KDOT's Press Release and the City's Press Release.

Forty-nine attendees signed in at the meeting and 28 of them completed a brief survey. The survey included questions which were intended to help the Project Team better understand the characteristics of the transportation users and demands in the Planning Area. The meeting included exhibits on land use, major transportation thoroughfares, future access ideas west of K-10, and environmental constraints. Participants were invited to draw on the exhibits and discuss their issues and ideas with Project Team

members. The meeting was covered by the Lawrence Journal World with a follow-up and on-line story the following day.

Survey Results

Key findings from the surveys included:

- 25 of 28 respondents rated the traffic flow at the US-40/West 6th Street and K-10 interchange as "C" or worse on an "A" through "F" scale with "A" being good and "F" being poor.
- Three respondents used Lawrence Public Transit and four others indicated that modifications might encourage them to use transit.
- 16 respondents used City of Lawrence parks and/or trails/bike paths for recreation. More than half of respondents rated the quantity, distance, and connections of parks, trails, and bike paths average or better.
- The following types of development were cited by more than one respondent as being desirable in the Planning Area: Lowes/Home Improvement Store (9), Additional Fine Dining (5), Parks (5), Red Lobster (3), Single Family Homes (2), Apartments/Townhomes (2).
- The following types of development were cited by more than one respondent as land uses they would not like to see in the Planning Area: Industrial (5), Apartments/Condos (4), Big Box Stores (where not already designated – 2).
- There were many specific survey comments requesting traffic signals at the US-40 and K-10 interchange and at the US-40/West 6th Street and George Williams Way intersection.
- Several comments requested signs, a median, or enforcement to stop drivers from making indirect left-turns from the southbound K-10 ramp to east-bound US-40, particularly during high traffic periods.
- Several comments requested better timing and coordination of the existing traffic signals just east of the Planning Area.

Additional Public Meeting and Map Comments

In addition to the survey, the Project Team received several numerous comments and ideas about the Planning Area from members of the public. These included:

- Maintain or create a transition feel or gateway coming into Lawrence.
- Lower the speed limit to 45 mph west of the US-40/K-10 interchange to about ¼ mile west of the United Methodist Church.
- E 848 Road should be constructed prior to, or with relocation of E 900 Road.
- Parking at the northeast quadrant of the US-40 and K-10 interchange for recreation users.
- Better access to Clinton Lake.
- Traffic Signal wanted at US-40/West 6th Street and George Williams Way.
- Need left turn lanes all along 6th Street (US-40) east of Wakarusa Drive.
- Need to extend safe bike and walking facilities west of K-10.
- Would like to see median treatments.
- Need more parks, open space, bike paths, and sidewalks in development plan.
- More golf courses.
- People turn on K-10 frontage roads thinking they are ramps to K-10.

HOW HAS THE "P.I." INPUT BEEN USED?

Throughout the development of this Area Transportation Plan, the Project Team made specific use of the input received from the public, stakeholders and land owners. The use of this information can be seen in several chapters. A few specific examples include:

- Confirmation of the desire for traffic signals at the US-40 and K-10 interchange ramp terminals.
- Desire for safe pedestrian and bicycle crossings of US-40 and K-10 led to the discussion of the options presented in the Plan.
- The planning of future access points took into account development needs.
- The Project Team completed sensitivity analyses of the traffic forecasts based on potential changes in future land uses.
- The public involvement ideas for maintaining a context sensitive environment through the Planning Area are incorporated into the recommendations of this Plan.
- A number of local interest groups, developers and citizens expressed interest in the concept of the US-40 and K-10 Interchange serving as a Major Gateway into Lawrence. Several recommendations regarding this concept were included in the Context Sensitive Solutions of this Plan.
- Discussion of a parking facility for trail/park access was included.

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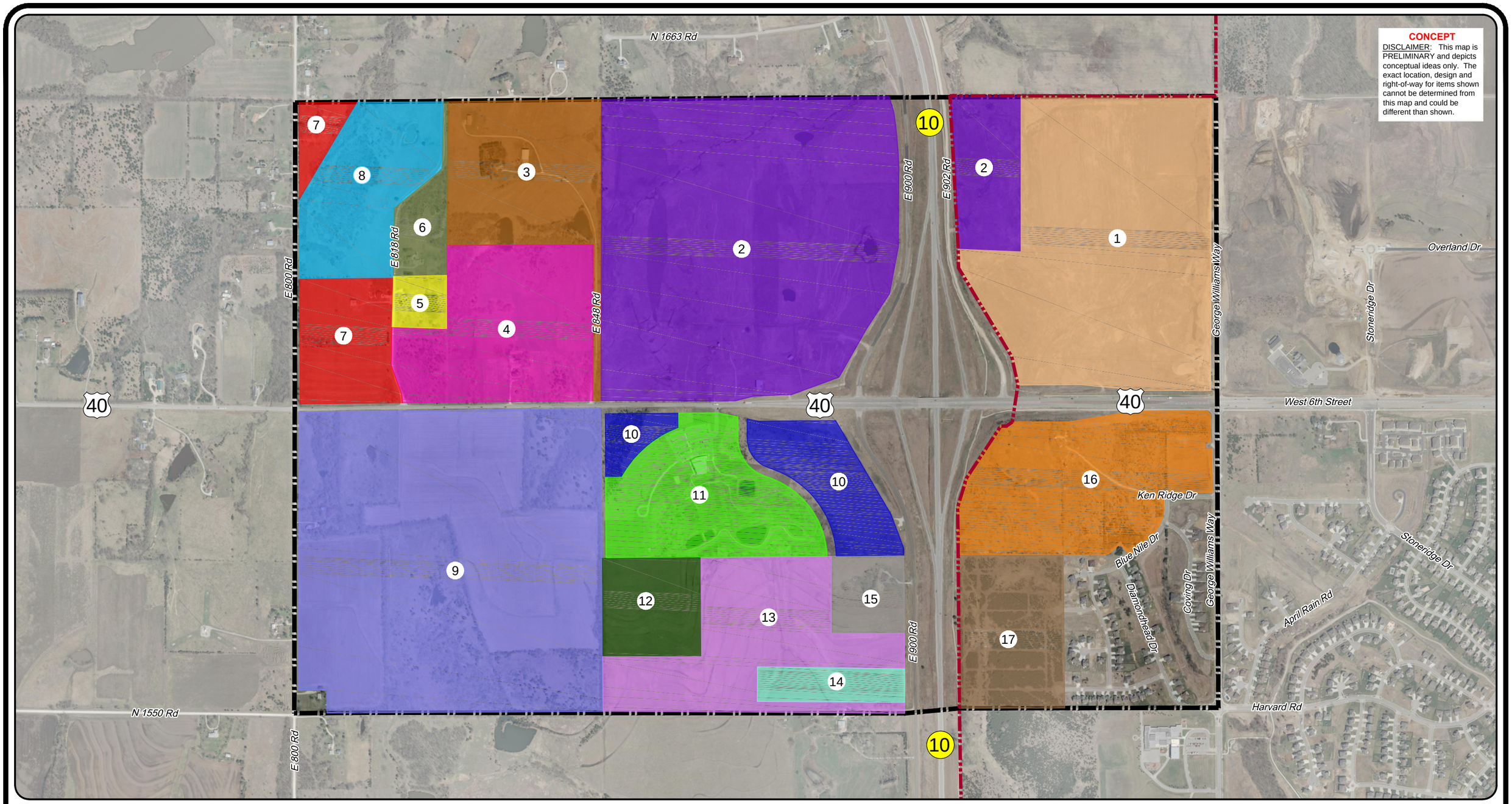

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Planning Area

City Limits

1: Kentucky Place LC (Mercato)
2: Tanglewood LC & Hanover Place LC
3: George & Marlene Leinmiller
4: Ronald & Carolyn Crawford
5: Janine & John Leslie
6: George & Marsha Dean
7: Doug Garber Construction, Inc.
8: Larry & Judith Warren
9: Karl & Catherine Williams, Trustees
10: Gateway West Land Holding
11: First United Methodist Church
12: Sarah McClure
13: Olson Mary Topping, Trustee
14: David McClure
15: Fidel & Janet Jimenez
16: Diamond Head (Kenny Liu)
17: Langston Heights LC

Exhibit 2.1: Property Owners Map

AREA TRANSPORTATION PLAN

US-40/West 6th Street and K-10 Interchange

Kansas Department of Transportation

City of Lawrence KANSAS

BG CONSULTANTS

WilburSmith ASSOCIATES

KDOT Project: 40-23 KA-1869-01

Date Prepared: March 2012

SUMMARY

Analyzing potential future land uses enables the estimation of future transportation and access needs. This chapter summarizes the Project Team's analysis of future land uses anticipated within the Planning Area. Land use analysis and sensitivity considerations were developed in an integrated manner to assess the effects of transportation improvements on land uses and vice versa.

EXISTING LAND USE DATA AND PLANS

The policies outlined in the *West of K-10 Plan*, the *K-10 and Farmers Turnpike Plan*, the *6th and K-10 Nodal Plan*, the *Northwest Plan*, and *Horizon 2020* provided the starting point for the analysis of future land uses within the Planning Area. A "windshield survey" of existing land uses was also conducted to quantify development trends in northwest Lawrence and to prepare an inventory of existing land uses, businesses, and public facilities.

Existing land uses are comprised of mostly rural-agricultural with some single-family and two-family residential in the Southeast Quarter Section of the Planning Area. The First United Methodist Church's West Campus is located in the South-Central Quarter Section. There are no existing commercial or retail land uses within the Planning Area. Existing land uses are shown in **Exhibit 3.1.**

The Mercato Development planned in the Northeast Quarter Section will bring major commercial opportunities with two large commercial buildings and a number of pad sites for development. The pad sites could include gas/convenience store, fast food restaurant, and bank uses. The total estimated space is approximately 511,000 square feet of commercial and retail. This development may become a major commercial center for northwest Lawrence. There are also over 90 residential units planned to be developed in the form of single family homes and townhomes.

FUTURE LAND USE ANALYSIS METHODOLOGY

Analysis of future land uses within the Planning Area followed a 5 step process.

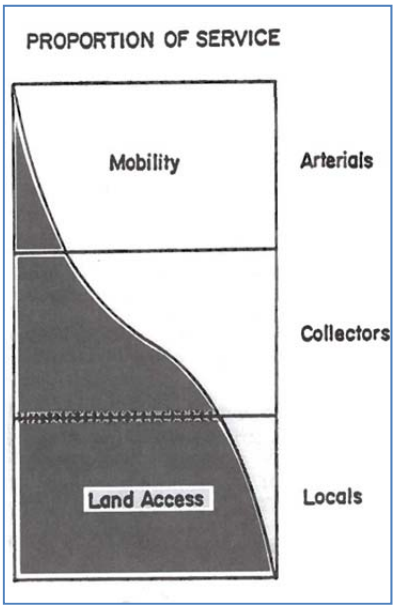
1. *Examination of Existing Land Use Conditions and Inventory.* This procedure included a "windshield survey" and data collection of all existing land uses in the Planning Area. The existing land uses and features were mapped in a GIS database.
2. *Examination of Existing Plans and Intent.* Existing land use plans for the area were collected and examined. Abstracts of how these plans affect US-40/West 6th Street were then developed.
3. *Potential Land Use Scenario.* A potential land use scenario was developed based on a synthesis of existing plans and discussions with major land owners and developers in the Planning Area.
4. *Public and Stakeholder Comment on Potential Land Use Scenario.* The potential land use map was presented at the first public meeting for discussion. Members of the public were encouraged to comment on what they liked or disliked about the land uses identified within the Planning Area. Stakeholders were also surveyed on desired land uses and land use assets currently missing.
5. *Anticipated Land Use Scenario.* Input received during the public involvement phase was applied to the potential land use scenario to develop the Anticipated Land Use Scenario. A concept described as "Practical Reserve Capacity", which will be discussed in greater detail later in this chapter, was introduced into a land use sensitivity analysis to address possible variations in development patterns.

ANTICIPATED LAND USE SCENARIO

The anticipated land use scenario was developed based on policies outlined in the *West of K-10 Plan*, the *K-10 and Farmers Turnpike Plan*, the *6th and K-10 Nodal Plan*, the *Northwest Plan*, and *Horizon 2020*, as well as discussions with the major land owners and developers in the Planning Area. The land uses included are listed below by quarter-section.

- Northeast Quarter Section – Commercial, Multi-Family Residential, and Single-Family Residential.

- Southeast Quarter Section – Multi-Family Residential, Two-Family Residential, and Single-Family Residential.
- North-Central Quarter Section – Light Industrial and Office.
- South-Central Quarter Section – Commercial, Office, Public/Quasi-Public, and Open Space.
- Northwest Quarter Section – Multi-Family Residential and Single-Family Residential.
- Southwest Quarter Section – Multi-Family Residential and Single-Family Residential.



The anticipated land use scenario is shown in **Exhibit 3.2**.

IMPACT ON TRAFFIC

People travel between home, work, school, shopping centers, and entertainment. As residential, commercial, and office growth occurs in or near the Planning Area, the area will experience an increase in traffic on the public roadways. The major roadways in the area, specifically US-40 and K-10, are expected to experience the highest traffic demands. A balance must be considered between the need for access for land uses and the need for traffic mobility along the major roadways.

Quantifying the traffic demands from future land uses is accomplished by correlating the anticipated land use to the traffic demands generated by existing sites of similar size and use. The correlation is typically based on the type, size, and intensity of the land use. Traffic forecasting and analysis of traffic impacts on the existing transportation infrastructure are discussed in greater detail in **Chapter 5**.

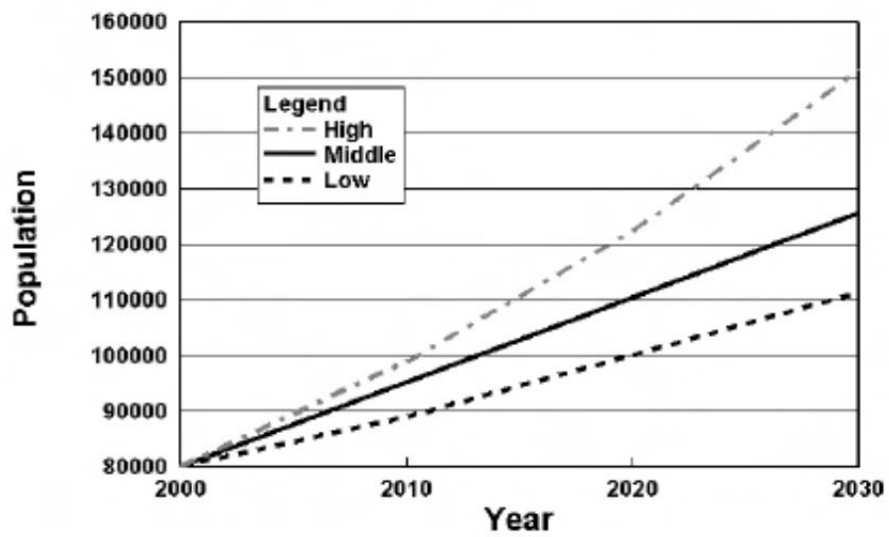
POPULATION GROWTH AND MARKET ABSORPTION

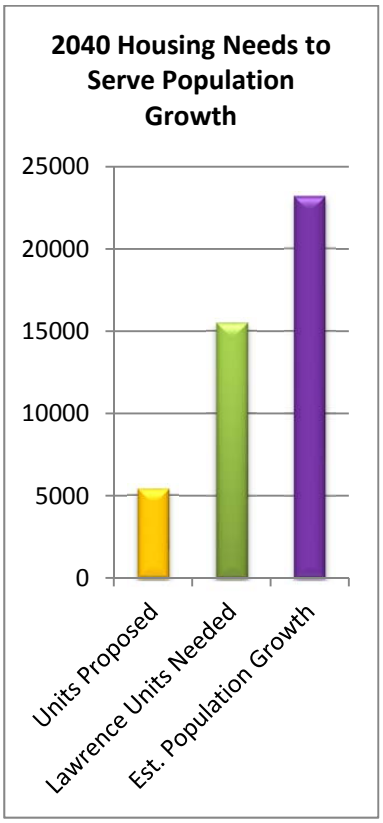
Analysis of population growth and market absorption rates assists with validating the future land use assumptions. Potential future land uses within the Planning Area include 511,000 square feet of retail and 1,600,000 square feet of non-retail. Assuming complete development by the traffic analysis horizon year 2040, these totals equate to a yearly increase of 17,033 square feet of retail and 53,333 square feet of non-retail per year.

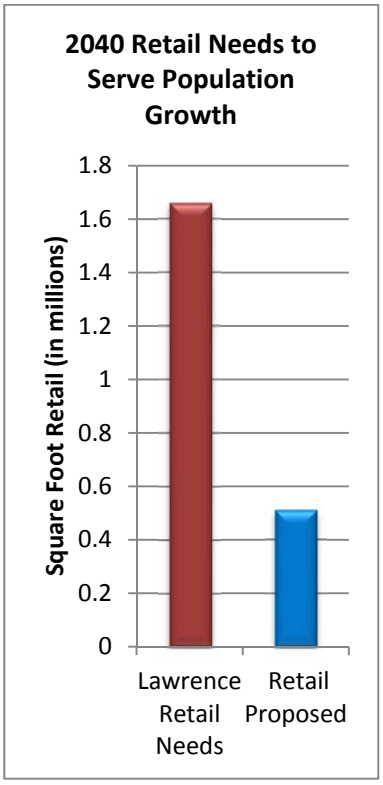
Population Growth

Lawrence has experienced a steady population growth of 2.5 percent per year since 1950. In similar fashion, employment opportunities have grown at 2.4 percent per year since 1970. With long term projections indicating more urban growth, it is expected some of that growth will occur in the Planning Area. Horizon 2020 population projections provided high (99,013), medium (95,178), and low (88,961) growth scenarios as shown in **Figure 3.1**. The 2010 US Census estimate for Lawrence is 87,643, closest to the low population projection. Linear growth between the 2010 US Census population and the 2030 Low Scenario results in a population growth of 1,177 people per year. Extrapolating to 2040, the estimated population growth is 35,322 persons with a total population of 122,965 people.

Figure 3.1: Horizon 2020 Population Estimates







Housing Requirements and Absorption

Horizon 2020 estimates the City of Lawrence population will have an additional 23,548 persons by 2030 and need an additional 10,361 dwelling units (518 dwellings per year). These numbers calculate to 0.44 units per person or 2.3 persons per dwelling unit.

Given the estimated growth of 35,322 persons by 2040, Lawrence will need an additional 15,542 dwelling units by 2040. Future land uses within the Planning Area is expected to provide 5,427 new dwelling units by 2040, accounting for approximately 35 percent of the new dwelling units needed throughout the community by 2040.

Retail Growth and Absorption

The Lawrence-Douglas County Planning Department recently prepared the *2010 Retail Market Report* which estimated roughly 47 square feet of retail space in Lawrence per capita. Applying this rate of retail needs to the estimated low scenario population growth of 35,322 persons by 2040 equates to about 1.66 million square feet (55,338 square feet per year) of additional retail space in the community. The Planning Area includes an estimated 511,000 square feet of future retail space planned, accounting for 31 percent of the expected retail space absorbed by 2040.

Timing of Growth and Absorption

The need for additional new homes and retail service is a function of supply and demand. In the current economic downturn, the demand for new homes and retail services has likewise slowed. As the economic environment improves, the demand for new homes and retail services will improve.

Developments planned for east of K-10 may begin in the next five years. Overall, the market absorption of proposed housing and retail development within the Planning Area appears reasonable to anticipate by 2040. Absorption of all of the non-retail commercial/office space proposed may be more challenging given the more than 1,000,000 square feet in current land use and development plans identified within the Planning Area.

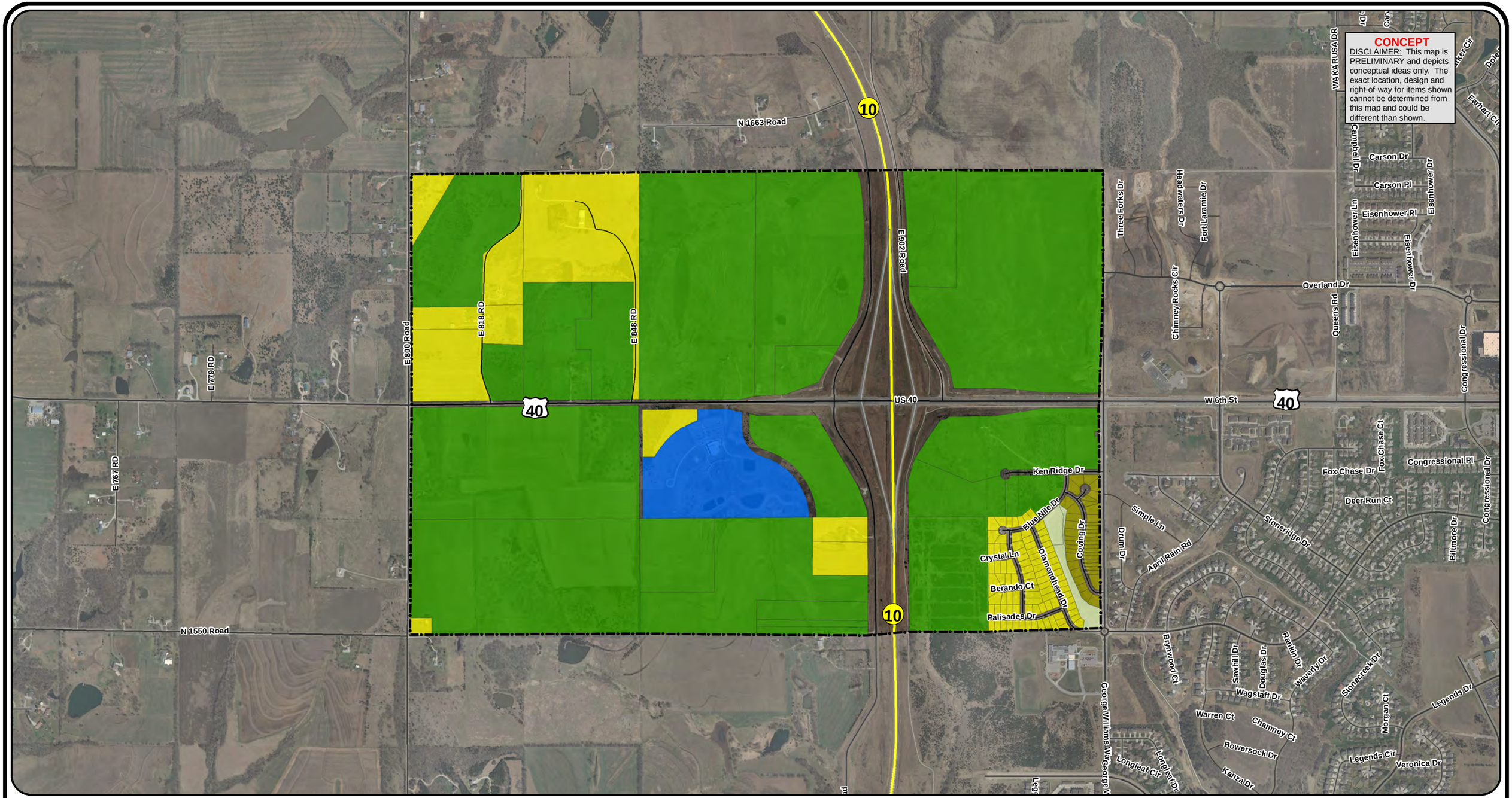
PRACTICAL RESERVE CAPACITY AND LAND USE

The Project Team expressed the desire to develop a flexible Plan to address future uncertainties that may affect traffic patterns and traffic demands, including the type and density of the future land uses. Variations in future land uses and the timing of development can only be estimated with a relative degree of accuracy. The population forecasts used in the absorption analysis for this plan are based on the 2010 Census data which met the Horizon 2020 low population growth scenario for 2010.

To obtain the middle or high population projections of Horizon 2020 for the years 2020 and 2030, the City of Lawrence would need to grow at a substantially faster rate than previously experienced. A "what-if" scenario incorporating a faster population and development growth should be considered. The two most likely results would be:

1) Faster, denser, and more complete absorption of all land use and development types forecast for the Planning Area, and/or
2) Population and development growth that covers more land and extends development further west, outside the Planning Area.

Both of these results would increase the traffic growth in the Planning Area. As a result, it is prudent to identify and consider the practical reserve capacity in the proposed transportation improvements as discussed in Chapter 5.



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1 " = 0.2 mile

Land Use Type

- Commercial
- Office/Industrial/Warehouse
- Open Space
- Agricultural
- Public/Quasi-Public
- Single-Family
- Two-Family
- Multi-Family

Planning Area

Exhibit 3.1: Existing Land Use

AREA TRANSPORTATION PLAN

US-40/West 6th Street and K-10 Interchange

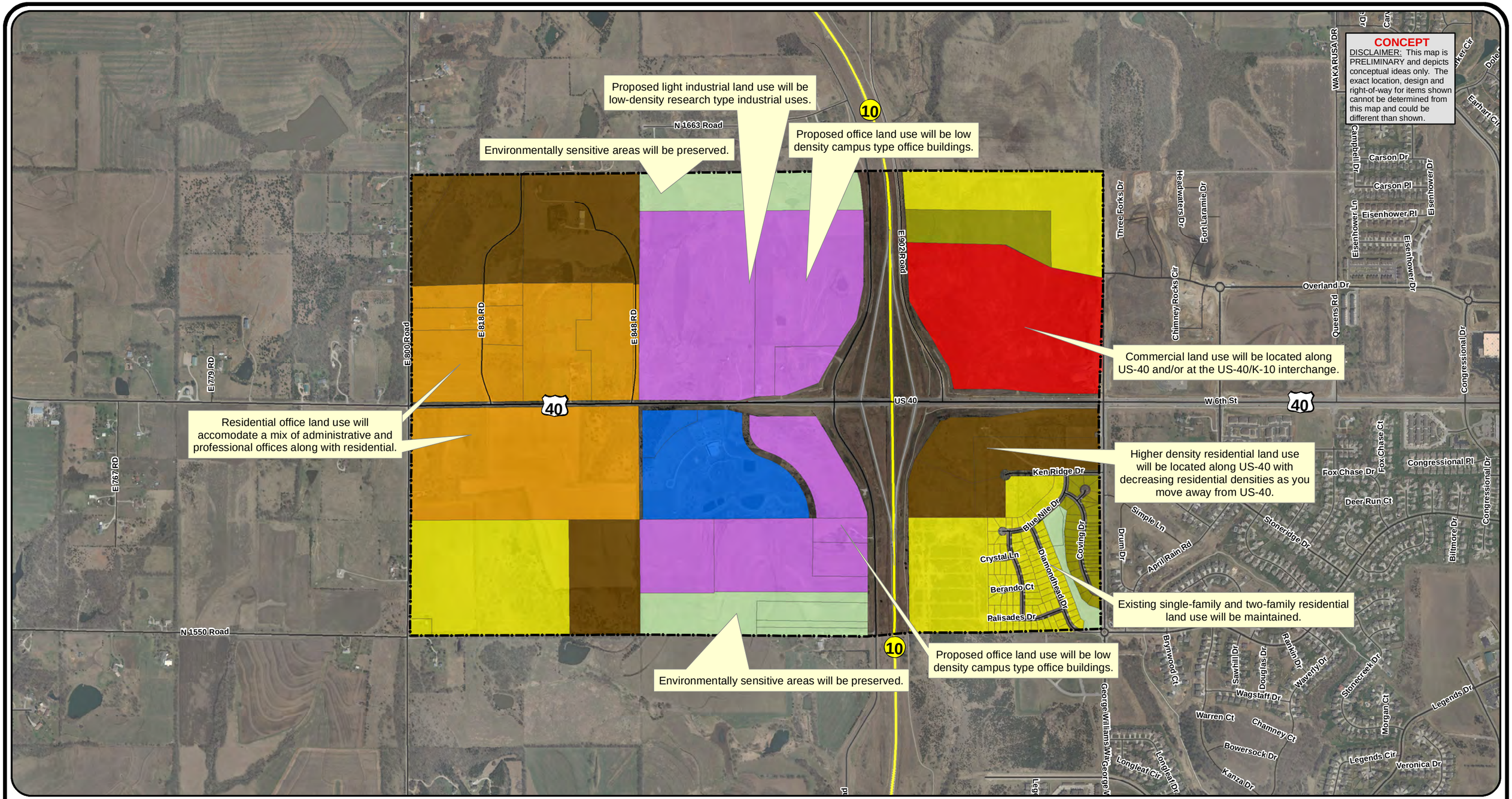
Kansas Department of Transportation

City of Lawrence Kansas

BG Consultants

WilburSmith Associates

KDOT Project: 40-23 KA-1869-01
Date Prepared: March 2012



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1 " = 0.2 mile

Land Use Type

- Commercial
- Office/Industrial/Warehouse
- Open Space
- Public/Quasi-Public
- Residential Office
- Single-Family
- Single/Multi-Family (Medium Density)
- Two-Family

Planning Area

Exhibit 3.2: Anticipated Land Use Scenario

AREA TRANSPORTATION PLAN

US-40/West 6th Street and K-10 Interchange

Kansas Department of Transportation

City of Lawrence Kansas

BG Consultants

WilburSmith Associates

KDOT Project: 40-23 KA-1869-01
Date Prepared: March 2012

SUMMARY

The Planning Area contains a wide range of natural and artificial features which create a transition from the rolling terrain and scenic countryside of a 2-lane rural road to a 4-lane urban arterial. The existing natural features near US-40 will likely be disturbed as improvements are made to meet the safety and mobility needs of the traveling public. This chapter summarizes existing conditions, natural features, and permitting and mitigation measures that may be needed for future improvements.

EXISTING TRANSPORTATION INFRASTRUCTURE

The US-40 Planning Area between E 800 Road and George Williams Way is distinctly split by K-10. West of K-10, US-40 is a two-lane rural highway traversing land primarily used for agriculture purposes. Woodlands are located in the lower elevations surrounding streams; transitioning to pastures and cultivated fields in the higher elevations. The highway is set in a rolling terrain, providing the appearance of a scenic countryside in eastern Kansas. The vertical profile of US-40 west of K-10 contains centerline slopes ranging between 1% and 6.5%. The posted speed limit is 55 mph.

The US-40 and K-10 Interchange is a diamond interchange constructed in mid 1990's. The 88 foot wide US-40 roadway is carried over K-10 on a 120' – 120' Continuous Prestressed Concrete Beam bridge. The bridge was designed and constructed to accommodate expansion of K-10 to a 4-lane divided facility in the future.

East of K-10, US-40 enters the Lawrence City Limits, transitioning to a 4-lane urban arterial with a raised median. This section of the Planning Area is located on higher ground, some of which is currently being developed. The area has a very "open" and urban appearance with relatively few trees. The roadway was reconstructed to its current configuration in 2005-2006. The posted speed limit is 45 mph.

Pedestrian and bicycle facilities exist in the Planning Area east of K-10. A 10 foot wide concrete shared use path parallels US-40 along the south right-of-way line and a 6 foot wide concrete sidewalk

parallels US-40 along the north right-of-way line. The K-10 shared use path parallels K-10 on the east through the Planning Area.

STORM WATER RUNOFF AND US-40

Understanding storm water impacts on transportation facilities helps to understand whether alternative alignments should be considered to mitigate large expenses associated with structures that span waterways. The storm water runoff within the Planning Area is relatively minor and does not present the need to consider alternative US-40 alignments to mitigate storm drainage impacts.

West of K-10, four small watersheds direct storm water from south to north. The watersheds range in size from approximately 10 acres to 130 acres. East of K-10, US-40 follows the ridge of the drainage basins for the Kansas River and the Wakarusa River with runoff breaking north and south from US-40/West 6th Street.

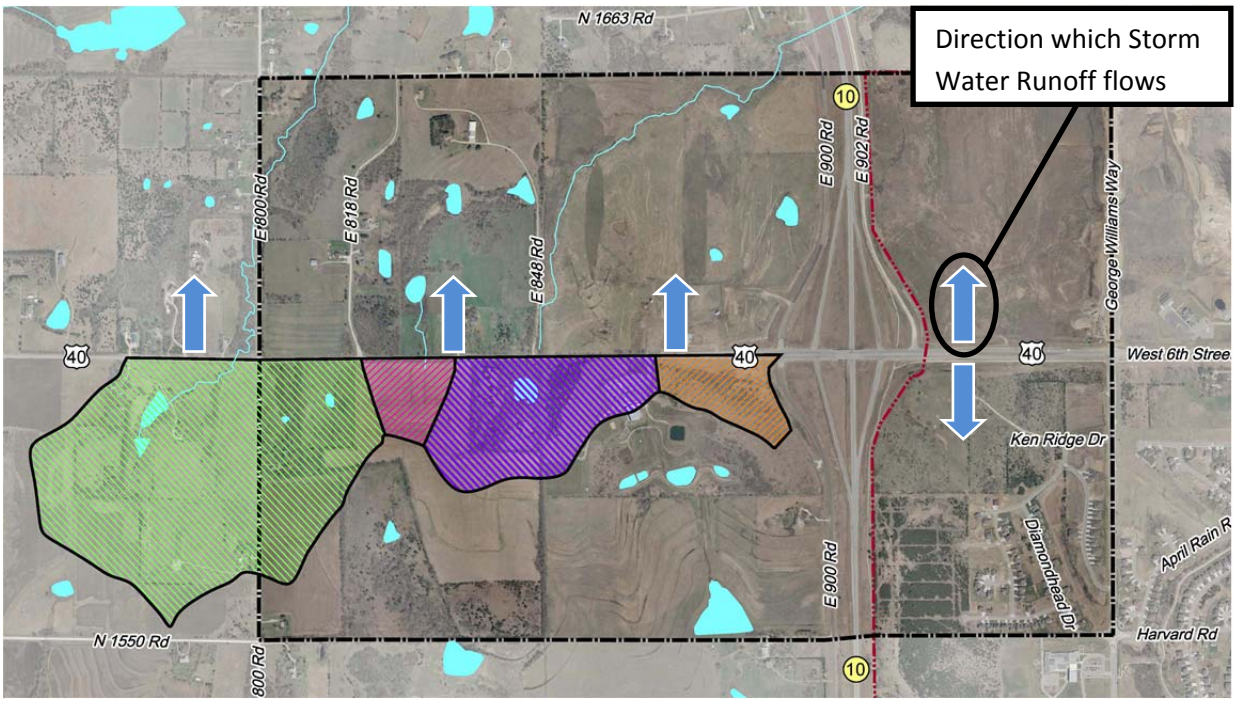


Figure 4.1: Watershed Map

ENVIRONMENTAL RESOURCES / CONSTRAINTS

The following environmental resources are located in the Planning Area. The information is based on an initial environmental scan report from KDOT supplemented by further site review. **Exhibit 4.1** graphically presents the environmental constraints.

Ponds and Streams

Numerous small ponds and two streams are located within the Planning Area. Streams include Baldwin Creek and its tributaries, and Yankee Tank Creek. Baldwin Creek impacts the northwestern portion of the Planning Area, flowing northeast toward the Kansas River. The South Branch of Baldwin Creek enters the Planning Area west of K-10, runs southwest to E 848 Road before turning south, passing under US-40 just east of E 848 Road and terminating at a pond. Baldwin Creek has two more tributaries entering the Planning Area, but they do not cross US-40.

Yankee Tank Creek begins in the Southwest Quarter Section of the Planning Area, flowing southeast through the future location of the K-10 and Bob Billings Parkway Interchange to the Wakarusa River.

Floodplains

There are no floodplains beyond the stream channels in the Planning Area.

Wetlands

According to the National Wetland Inventory Mapping, there are four emergent wetland complexes in the Planning Area in addition to the scattered ponds.

Parks and Trails

There are no parks within the Planning Area. However, there are two parks adjacent to the Planning Area on the east, Oregon Trail Park and DeVictor Park. A shared use path runs parallel to K-10 and eastward along US-40. On-street bike lanes are present along George Williams Way south of US-40.

Historic and Archaeological Resources

There are no historic buildings or archaeological sites listed on the National Register of Historic Places (NHRP) in the Planning Area.

However, there are two historic trails and one structure that were recorded in the Bureau of Land Management's General Land Office (GLO) records. The two historic trails, the California Road and an unnamed road, cross the Planning Area. The California Road trail crosses US-40 just west of George Williams Way. There is the potential for historic archaeological sites along these trails. In addition, the GLO maps recorded the presence of a house on E 800 Road south of US-40 near the California Road. There is also the potential that this site is a historic archaeological site.

Protected Areas

There is a protected conservation area within the Planning Area south of US-40. The parcel of land, listed as Olson (2004) Douglas County, has been entered into the Kansas Land Trust which ensures the natural state of the property will be preserved in the future. This parcel is shown as a conservation easement on **Exhibit 4.1**.

Threatened and Endangered Species

The US Fish and Wildlife Service (USFWS) lists the following threatened and endangered species in Douglas County:

- Mead's Milweed
- Western Prairie Fringed Orchid
- Pallid Sturgeon
- Topeka Shiner

Mead's Milkweed and Western Prairie Fringed Orchid may be found in high quality native prairie which may occur in the Planning Area. The streams listed within the Planning Area are not listed as habitat for either the Pallid Sturgeon or the Topeka Shiner.

The Kansas Department of Wildlife and Parks (KDWP) lists the following threatened and endangered species in Douglas County:

- American Burying Beetle
- Chestnut Lamprey
- Eastern Spotted Skunk
- Eskimo Curlew
- Flathead Chub
- Least Tern
- Pallid Sturgeon
- Piping Plover
- Redbelly Snake
- Sicklefin Chub
- Silver Chub
- Smooth Earth Snake
- Snowy Plover
- Surgeon Chub
- Topeka Shiner
- Western Silvery Minnow
- Whooping Crane

Habitat for two of the listed species may occur in the Planning Area, the American Burying Beetle and the Redbelly Snake.

FUTURE ENVIRONMENTAL REQUIREMENTS AND MITIGATION

Depending on actions taken by the Plan Partners, the following permits, coordination requirements, or mitigation may be needed. Overall environmental impacts of roadway and bicycle/pedestrian improvements along US-40 in the Planning Area are not expected to be significant. If federal funds are involved in construction, a Categorical Exclusion document may be needed.

Ponds and Streams

If the ponds and streams in the Planning Area are deemed by the U.S. Army Corps of Engineers as jurisdictional, any fill placed in them will require a Section 404 permit and mitigation. In addition, the construction or modification of bridges and culverts, or changes made to the cross section of jurisdictional streams will require Stream Obstructions or Channel Changes permits from the Kansas Department of Agriculture, Division of Water Resources.

Roadway improvements to US-40 will impact the crossing of the South Branch of Baldwin Creek east of E 848 Road. Baldwin Creek will be impacted when E 800 Road north of US-40 is improved. It is not expected that any ponds will be impacted by improvements to US-40. However, private development will likely impact the Planning Area ponds and streams.

Wetlands

If the wetlands in the Planning Area are deemed to be under the U.S. Army Corps of Engineers jurisdiction, any fill placed in them will require a Section 404 permit and compensatory mitigation. George Williams Way north of US-40 may impact an emergent wetland complex that has already been impacted by development. Any other wetland impacts would be expected to be from urban development of private property which will have the opportunity to avoid these known wetlands.

Historic and Archaeological Resources

The site of the house recorded on the GLO maps may warrant a Phase II archaeological investigation to confirm the presence of an archaeological site. Even though there are no historic structures or

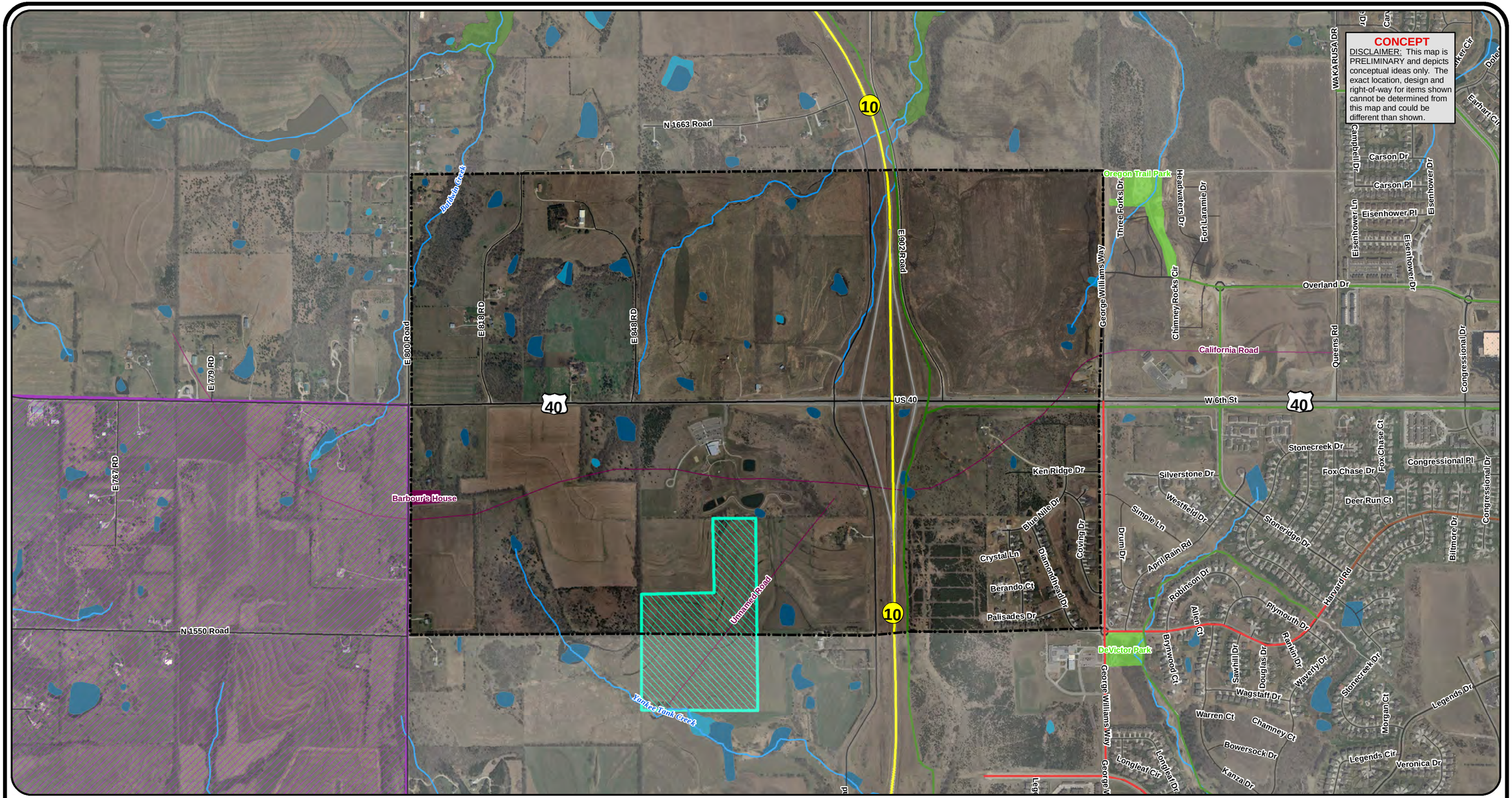
archaeological sites listed on the NRHP, any structures over 50 years old are potentially eligible for listing. Activity I investigations may be required if there is any site disturbance. There are no impacts anticipated from US-40 roadway improvements. Improvements to E 800 Road represent the most likely potential for impacts to the noted historic potential of the house listed above.

Threatened and Endangered Species

If high quality native prairie will be impacted, a survey for the presence of Mead's Milkweed and Western Prairie Fringed Orchid may be needed. If either plant would be impacted, a Section 7 consultation with USFWS will be needed.

If designated critical habitat for the Redbelly Snake is impacted, an Action Permit from the KDWP will be required. In addition, if 25 acres or more of suitable American Burying Beetle habitat is impacted, a survey for their presence will be needed. If any American Burying Beetles are found, a Section 7 consultation with the USFWS will be needed.

The Planning Area contains wooded streams, grasslands, and forested areas which are identified as some of the preferred habitat for the Redbelly Snake and the American Burying Beetle. Roadway improvements and private development activities have potential impacts; however, an environmental survey should be conducted to determine if these two endangered species or their designated critical habitat exist in the Planning Area.



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1 " = 0.2 mile

- Planning Area
- Floodplain
- Freshwater Emergent Wetland
- Freshwater Pond
- Bike Lanes
- Bike Routes
- Shared Use Path
- Park
- Historic Trails and Roads
- Potential Historic Sturcture
- Higher Level Archeological Site
- Conservation Easement
- Streams

Exhibit 4.1: Existing Environmental Conditions

AREA TRANSPORTATION PLAN

US-40/West 6th Street and K-10 Interchange

Kansas Department of Transportation
City of Lawrence Kansas
BG Consultants
WilburSmith Associates

KDOT Project: 40-23 KA-1869-01
Date Prepared: March 2012

SUMMARY

US-40/West 6th Street assumes a unique role in the Lawrence-Douglas County transportation system. This principal arterial street currently conveys commuter traffic between Lawrence and the I-70 corridor. Significant growth anticipated within the Planning Area will likely shift the purpose of US-40/West 6th Street to serve not only the needs of commuters, but also to serve as the transportation gateway for the flow of people, goods, and commerce into northwest Lawrence. This chapter summarizes traffic operating conditions for current and future transportation demands.

METHODOLOGY

A combination of existing traffic data, historical growth rates, the KDOT's Travel Demand Model, and the information collected during the public involvement phase enabled a detailed analysis of facilities that may be needed to accommodate urban development.

Traffic engineering analyses included a cursory review of the existing infrastructure and a detailed analysis of the estimated future traffic operating conditions. Traffic operations analyses were completed using the *HCS+* software program which uses the *Highway Capacity Manual* methodologies. Analysis was focused primarily on the Level-of-Service (LOS) provided by the Interrupted Flow facilities.

Table 5.1 – Level of Service Criteria

Level of Service (LOS)	Signalized Intersection Average Control Delay (sec/veh)	Unsignalized Intersection Average Control Delay (sec/veh)
A	0 to 10	0 to 10
B	> 10 to 20	> 10 to 15
C	> 20 to 35	> 15 to 25
D	> 35 to 55	> 25 to 35
E	> 55 to 80	> 35 to 50
F	> 80	> 50

EXISTING TRAFFIC OPERATING CONDITIONS

The Client Team collected existing traffic data to develop this Plan. Similar to the appearance of the Planning Area discussed in the prior chapter, the traffic characteristics are distinctly split by K-10. **Figure 5.1** provides a brief overview of the 2010 daily traffic volumes on US-40/West 6th Street.

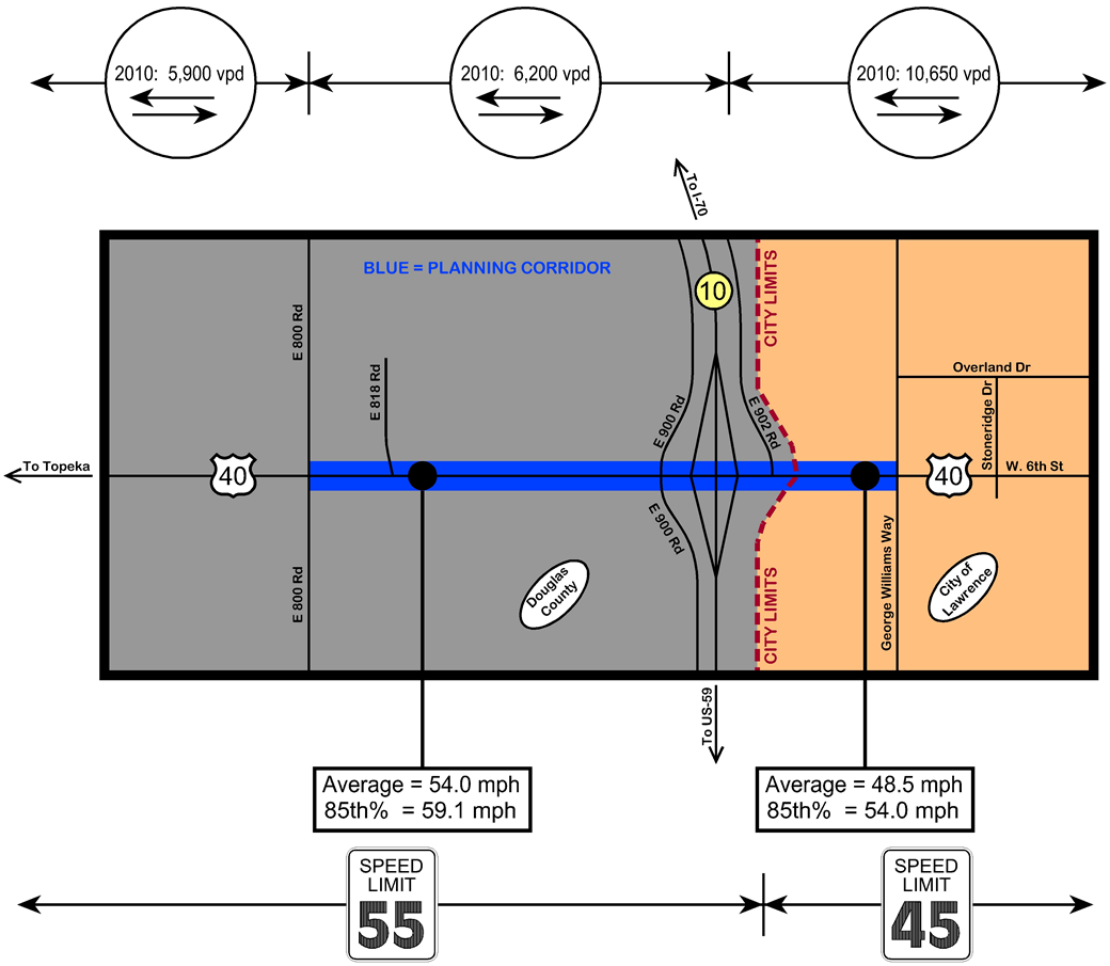


Figure 5.1: Summary of Daily Traffic Volume and Speed

The posted speed limit of US-40 is 55 mph in the rural section west of K-10 and 45 mph in the urban section east of K-10. Spot speed studies were conducted at two locations. The first location was approximately one-quarter mile east of E 800 Road. The second location was approximately midway between K-10 and George Williams Way. **Figure 5.1** summarizes the speed data and the locations where the data was obtained. The current posted speed limits are appropriate for the prevailing speed of existing traffic.

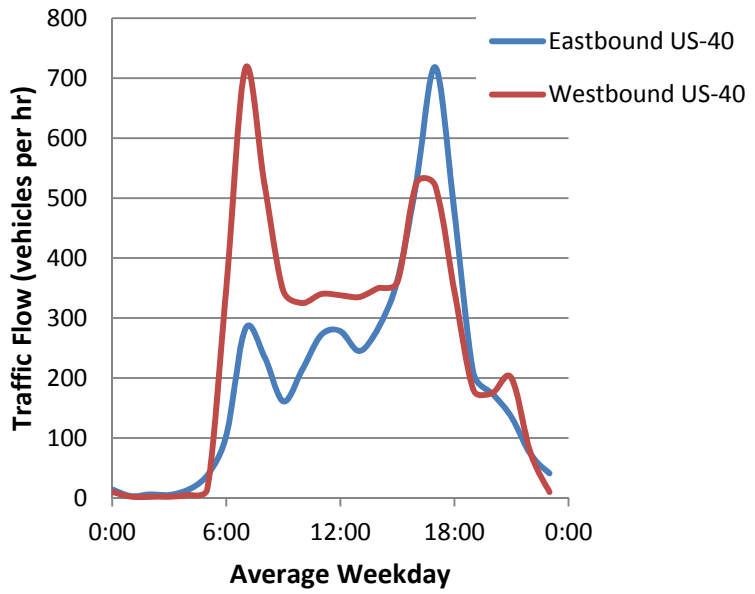


Figure 5.2: Weekday Directional Traffic Flow

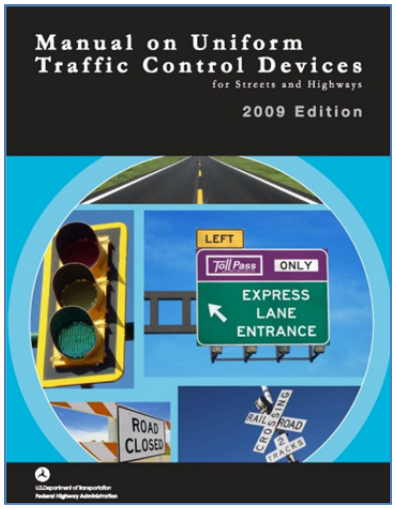
Analysis of the AM and PM Peak Hour traffic flow reveals a very distinct commuter traffic pattern. A very high rate of traffic flow is experienced in the westbound US-40/West 6th Street to northbound K-10 during the AM Peak Hour as commuters leave Lawrence and access I-70. The pattern is reversed during the PM Peak Hour as commuters come back to Lawrence, creating a southbound K-10 to eastbound US-40 traffic pattern. This commuter pattern can be seen in the weekday directional traffic flow shown in **Figure 5.2** and the peak hour traffic patterns on **Exhibit 5.1**.

With exception of two locations, the existing US-40/West 6th Street is providing adequate capacity for existing traffic demands. One of the two exceptions is the US-40/West 6th Street and George Williams Way intersection. The northbound left-turn movement operates below desirable levels-of-service. This movement has also generated a pattern of crashes which will be discussed later in this chapter. Future installation of a traffic signal at this intersection, as identified in Traffic Impact Studies for developments along US-40/West 6th Street, will address the capacity deficiencies.

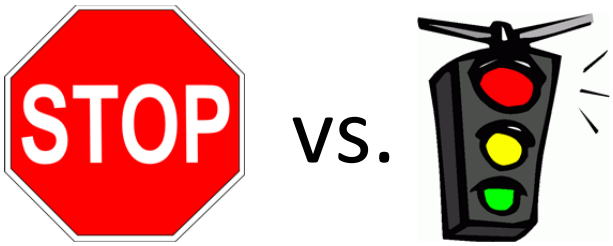
The second location operating below desirable capacity levels is the US-40 and K-10 Interchange. The PM Peak Hour commuter traffic movement from southbound K-10 to eastbound US-40 currently operates at a LOS F. There are not enough adequate gaps in the free flow east/west US-40 traffic for southbound K-10 traffic to enter the traffic stream. Queues of 20 to 30 vehicles on the southbound off-ramp can be observed daily, with some reports of 1,700' queues approaching the K-10 traveled way. Traffic exiting K-10 and approaching the excessive off-ramp queue has also been observed making an indirect left-turn by making a right-turn to travel west on

US-40 followed by a U-turn west of the interchange to reverse direction and travel east on US-40.

KDOT's Traffic Engineering Unit completed a Traffic Investigation of the US-40 and K-10 Interchange in August of 2009. The investigation was completed in response to citizen concerns about congestion at the interchange, particularly the southbound K-10 off-ramp. Traffic data collected during the Traffic Investigation revealed traffic demands at both ramp terminals met the criteria of Traffic Signal Warrants #2 and #3 in the *Manual on Uniform Traffic Control Devices (MUTCD)*. Additionally, the east ramp terminal for the northbound K-10 off-ramp met criteria for the combination of Traffic Signal Warrant #1 Conditions A and B. The recommendation of the Traffic Investigation was that KDOT's Traffic Engineering Unit Staff would not be opposed to installation of traffic signals at the ramp terminals, although additional geometric improvements would need to be implemented prior to installing traffic signals.



The traffic data collected for this Plan was compared against the Traffic Signal Warrants in the *MUTCD*. Existing traffic demands continue to meet the criteria of Traffic Signal Warrants #2 and #3. Additional discussion about capacity improvements at the interchange are discussed in the Analysis of Short Term Traffic Operations later in this chapter. **Exhibit 5.2** presents the AM Peak Hour and PM Peak Hour levels-of-service provided by the current geometry and traffic control.



CRASH HISTORY

KDOT supplied crash data for all reported crashes on US-40 spanning a four year period between 2007 and 2010. The crash reports totaled 22 crashes, including 8 injury crashes, and 14 property damage crashes. Five of the property damage crashes were deer-vehicle collisions. Most of the 22 crashes are located sporadically through the Planning Area. There are, however, three identifiable crash patterns, one of which is a pattern of deer-vehicle collisions occurring just east of E 800 Road.

The second crash pattern is a rear-end crash at US-40 and E 800 Road. Three rear-end crashes occurred in a 2-year span at this location, resulting in a crash rate of approximately 7.0 crashes per ten-million vehicles entering the intersection (c/tmev).

The third crash pattern consists of angle crashes at US-40/West 6th Street and George Williams Way. Four crashes occurred in a 3-year span at this location, resulting in a crash rate of approximately 3.5 (c/tmev). This intersection is a relatively new intersection with essentially no traffic on the north leg. The crashes are the result of northbound George Williams Way traffic failing to yield to US-40 traffic. Two of the crashes involved an eastbound vehicle on US-40 and resulted in injuries. The other two crashes involved westbound vehicles on US-40 and resulted in property damage.

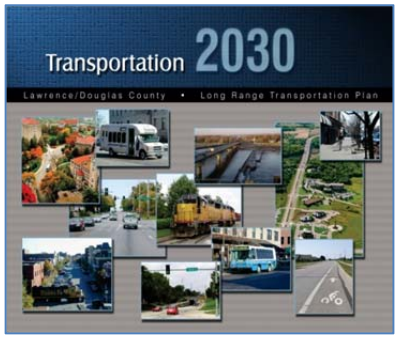
KDOT Statewide Average Crash Rates for Intersections:

Urban Intersections: 10 c/tmev

Rural Intersections: 5 c/tmev

The crashes at key intersections in the Planning Area, although unfortunate, do not result in crash rates that would trigger the need to implement immediate safety improvements.

TRAFFIC FORECASTING



KDOT and the MPO have developed a Travel Demand Model for the Lawrence – Douglas County area to assist with the MPO's long-range transportation planning efforts. Using the Travel Demand Model, KDOT provided estimates of future daily traffic volumes along the Planning Area for a 30-year horizon period, calendar year 2040. The data for 2040 represents a near fully developed Urban Growth Boundary west of K-10.

A historical data based trend line growth rate was also provided by KDOT. West of K-10, the historical data is based primarily on rural growth as little to no urban development has occurred west of K-10. The trend line growth rate therefore is assumed to represent growth of the existing traffic due to increased population in rural areas of Douglas County. The trend line generates a background traffic growth rate of 1.6% per year for the next 30 years, resulting in an estimated 60% increase in traffic west of K-10 from a "no development" scenario.

Table 5.2 – Historic and Estimated Future Daily Traffic Volumes on US-40

Year	±4,000' West of K-10		±1,000' East of K-10	
	Avg. Daily Traffic (vehicles per day)	Growth Rate (% per year)	Avg. Daily Traffic (vehicles per day)	Growth Rate (% per year)
1990	7,085		6,030	
2000	7,845	+1% per yr.	8,500 (estimated)	+3.5% per yr.
2010	6,200	-2% per yr.	10,650	+2.4% per yr.
2030	8,500 (no development)	+1.6% per yr. from 2010	15,000 (no development)	+1.7% per yr. from 2010
	26,000 (full development)	+7.5% per yr. from 2010	29,000 (full development)	+5.1% per yr. from 2010
2040	10,000 (no development)	+1.6% per yr. from 2010	18,500 (no development)	+1.9% per yr. from 2010
	29,000 (full development)	+5.3% per yr. from 2010	33,000 (full development)	+3.8% per yr. from 2010

Estimate of Trips Generated by Future Land Uses

The focused size of the Planning Area allowed a detailed analysis of the potential traffic patterns and demands from the anticipated future land uses. Future traffic demands were estimated using the industry standard rates in the Institute of Transportation Engineer's *Trip Generation, 8th Edition*. The rates are based on detailed studies of similar land uses throughout the USA. **Exhibit 5.3** summarizes the estimated traffic demands generated by the future land uses.

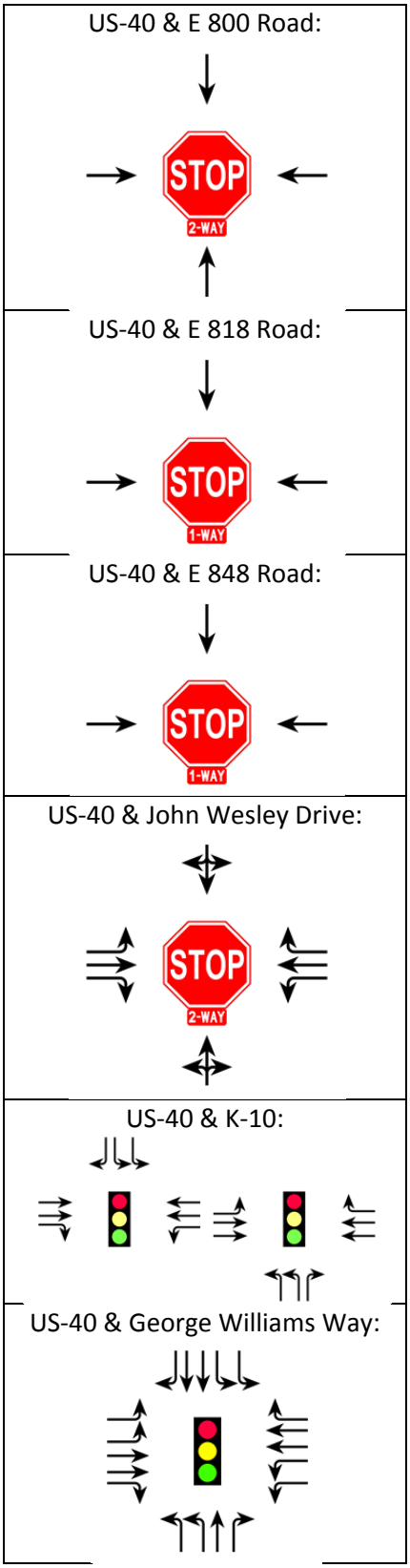


Figure 5.3: Short Term Intersection Configuration

SHORT TERM TRAFFIC OPERATIONS

Short Term traffic operations were analyzed to determine if there are any existing operational deficiencies within the Planning Area and to quantify the immediate needs. Consideration was also given to possible transportation needs that may be realized within ±5 years.

Immediate transportation needs include additional capacity at the US-40 and K-10 Interchange and at the US-40/West 6th Street and George Williams Way intersection. The addition of a second left-turn lane to the K-10 off-ramps and the installation of traffic signals at both ramp terminals could improve the traffic operations to a LOS B or better at each ramp terminal. The total delay experienced by traffic at the west ramp terminal in particular could be reduced by roughly 85% during the PM Peak Hour, from 41 total hours of delay to less than 5 hours of total delay.

The short term improvement to the interchange will provide capacity for approximately 50% of the estimated long term traffic demands. Widening of US-40 over K-10 to add a second left-turn lane for east/west US-40 traffic will be needed when additional traffic demands more left-turn queue storage between the ramp terminals.

The intersection of US-40/West 6th Street and George Williams Way has been identified as a future traffic signal controlled intersection. This improvement is anticipated to be needed in part by developments along George Williams Way. The E 902 Road access to US-40 will also be eliminated as part of the Mercato development.

Additional short term transportation needs may include construction of John Wesley Drive north and south from US-40 with temporary access roads connecting to E 900 Road, thus allowing the removal of the existing US-40 and E 900 Road intersection. This short term need would require reconstruction of the US-40 vertical profile for a distance of about 1,400 feet to provide adequate sight distance. The US-40 and John Wesley Drive intersection could operate as a two-way stop controlled facility with John Wesley Drive being the stop controlled approach. Future conversion from a two-way stop intersection to a traffic signal controlled intersection will be needed for the long term improvements to US-40.

2040 LONG TERM TRAFFIC OPERATIONS

Superimposing the trip generation data from **Exhibit 5.3** on the growth of the background traffic demands produces the estimated long term traffic demands as shown in **Exhibit 5.4**.

As identified in *T2030*, future traffic patterns will generate the need for a 4-lane US-40 facility. The timing of this improvement, however, is more complex. The need to improve US-40/West 6th Street must consider a number of transportation issues including:

- Growth of existing traffic demands requiring more capacity.
- New traffic demands requiring improved access to US-40.
- The sequence of development(s) west of K-10.
- Safety concerns that may come about as traffic increases.
- The need for infrastructure to accommodate other modes of travel such as pedestrian and/or transit.

The goal of the long term traffic analysis was to identify capacity needs to maintain an overall intersection LOS C or better at all signalized intersections. The long term operational analysis of US-40/West 6th Street assumed future intersections spaced at approximately one-quarter mile intervals west of K-10. Traffic signal controlled intersections were assigned a 90 second cycle and a "green time" band width sufficient to provide coordinated progression of east/west traffic. The use of a 90 second cycle time was due primarily to the limited amount of queue storage available between the ramp terminals at the US-40 and K-10 Interchange. Furthermore, longer traffic signal cycles may not be attainable without modifications to the interchange.

Exhibit 5.5 summarizes the estimated Peak Hour LOS. Signalized intersections are estimated to provide an overall LOS C or better. With exception of John Wesley Drive and George Williams Way, individual side street approaches are estimated to operate at LOS D or better. The two exceptions have approaches estimated to operate at LOS E during the PM Peak Hour. The additional delay is due primarily to the need to provide extended green time to the high-volume east/west thru movements on US-40.

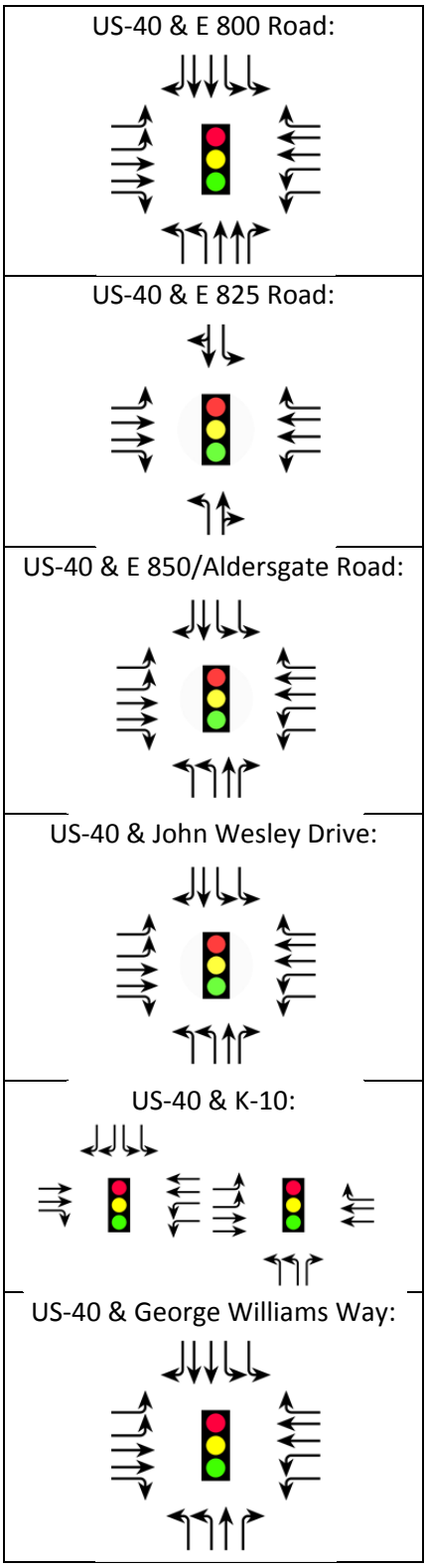


Figure 5.4: 2040 Long Term Intersection Configuration

PRACTICAL RESERVE CAPACITY

The Project Team expressed the desire to have a flexible Plan to accommodate potential variances between the estimated traffic demands and the actual future traffic demands that may one day be realized. A number of variables affect traffic patterns and traffic demands including the type and density of the future land uses. Variations in future land uses can only be estimated with a relative degree of accuracy. Other variables, such as technological advances or socio-economic changes within the community, are currently unknown.

The traffic engineering concept of "Practical Reserve Capacity" can provide the Plan Partners with a relatively simple way to compare the traffic patterns generated by individual developments within the Planning Area to the estimations of this Plan. Practical Reserve Capacity is the difference between the capacity of a transportation facility and the traffic demand. A positive Practical Reserve Capacity indicates the facility is operating below capacity and may be able to accommodate additional traffic. A negative Practical Reserve Capacity indicates the traffic demand is greater than the capacity of the facility, typically causing significant queues at intersections or significant reductions in travel speed on a highway.

The capacity of a transportation facility is presented in the *Highway Capacity Manual* as the threshold between LOS E and F. Traffic flow at a facility operating at a LOS E is characterized as unstable, with traffic demands approaching or equal to capacity. LOS F indicates a facility is operating extremely poor, with traffic demands exceeding capacity. Both of these operating conditions, LOS E and LOS F, would result in significant traffic delay and excessive queues for an urban arterial facility with one-quarter mile intersection spacing as is being considered along US-40/West 6th Street.

Considering the LOS operating characteristics and the possible expansion of the current Urban Growth Boundary westward, Practical Reserve Capacity for this Plan represents an estimate of additional capacity at each intersection to the point where the estimated future

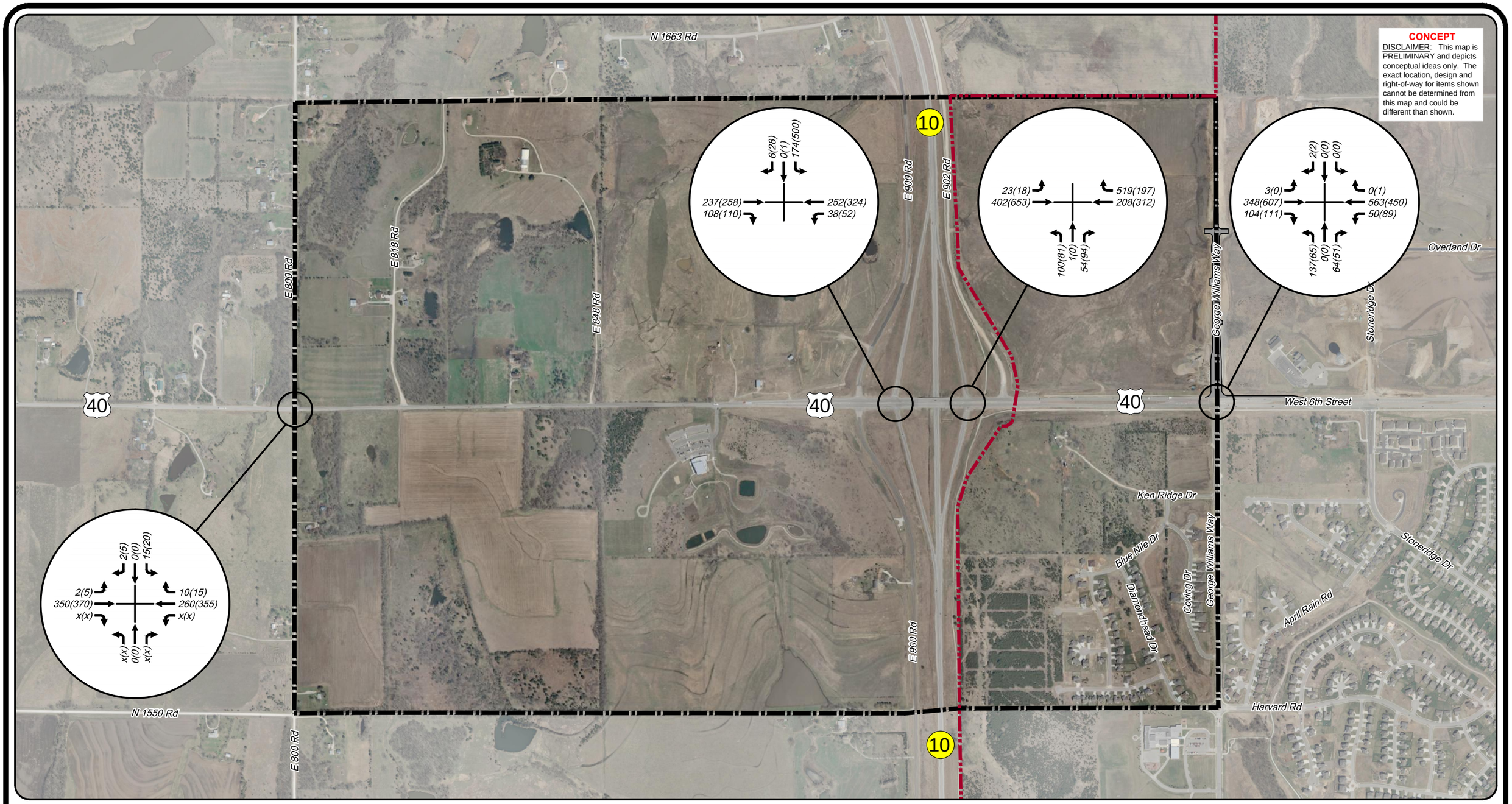
LOS deteriorates from LOS D to LOS E for one or more of the approaches to the intersection.

It is important to understand the relationship between increased development intensities and the overall traffic demand at an intersection in order to quantify the amount of additional capacity a facility may have. Background traffic from areas outside of the Planning Area represent approximately one-third of the estimated 2040 long term traffic demands west of K-10. The remaining two-thirds is estimated to be comprised of new traffic generated from urban growth within the Planning Area. A 10% increase/decrease in the estimated traffic generated by urban development west of K-10 therefore results in approximately a 6% increase/decrease in overall 2040 long term traffic flow. **Table 5.3** presents the estimated Practical Reserve Capacity of the intersections in the Planning Area in the long term scenario.

Table 5.3 – Practical Reserve Capacity

Intersection	2040 Practical Reserve Capacity *		Comments
	AM Peak Hour	PM Peak Hour	
US-40 & E 800 Road	+24%	+24%	
US-40 & E 825 Road	+15%	+15%	
US-40 & Aldersgate Road (E850 Road)	+15%	+12%	
US-40 & John Wesley Drive	+3%	+0%	
US-40 & K-10 West Ramp Terminal	+33%	+15%	Requires the relocation of a Ramp Terminal to obtain PRC.
US-40 & K-10 East Ramp Terminal	+30%	+15%	Requires Ramp Terminal relocation and a second westbound right-turn lane to obtain PRC.
US-40/West 6th Street & George Williams Way	+9%	+6%	Additional capacity on George Williams Way during the PM Peak Hour can be obtained by reallocating US-40/West 6th Street green time to the side street.

* = A +6% results in an estimated 10% increase in traffic generated from a new development.



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800' 0 800' 1,600'

1" = 800'

Planning Area

City Limits

200(300)
PM Peak Hour Traffic (veh. per hr)
AM Peak Hour Traffic (veh. per hr)
Direction of Traffic Movement

NOTE: Peak Hour Traffic volumes account for all vehicle types, including heavy commercial vehicles.

Exhibit 5.1: 2010 Traffic

AREA TRANSPORTATION PLAN

US-40/West 6th Street and K-10 Interchange

Kansas Department of Transportation

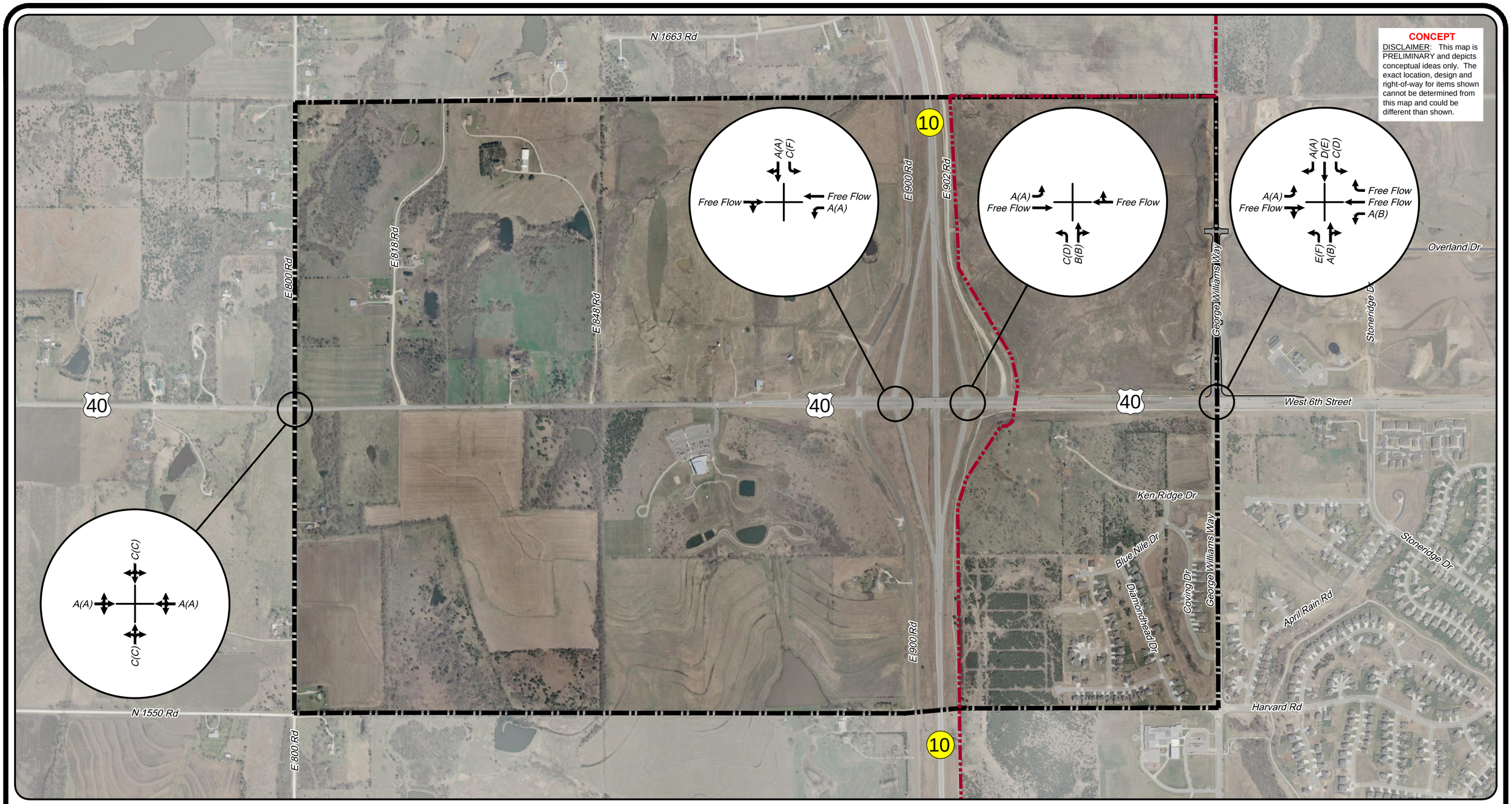
City of Lawrence KANSAS

BG CONSULTANTS

WilburSmith ASSOCIATES

KDOT Project: 40-23 KA-1869-01

Date Prepared: March 2012



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800' 0 800' 1,600'

1" = 800'

Planning Area

City Limits

A (B)
PM Peak Hour Level-of-Service
AM Peak Hour Level-of-Service
Direction of Traffic Movement

Exhibit 5.2: 2010 Level-of-Service

AREA TRANSPORTATION PLAN

US-40/West 6th Street and K-10 Interchange

Kansas Department of Transportation

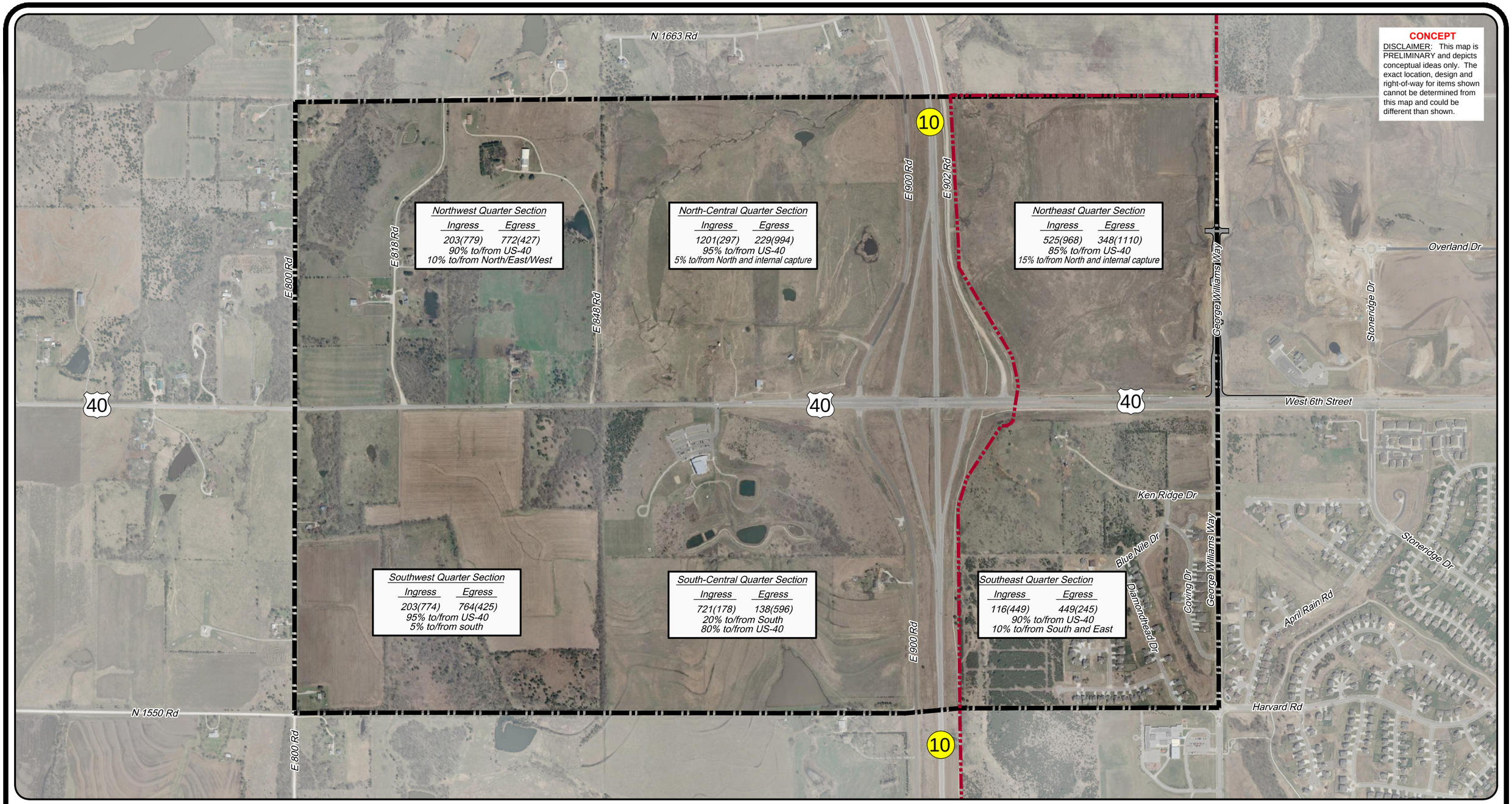
City of Lawrence KANSAS

BG CONSULTANTS

WilburSmith ASSOCIATES

KDOT Project: 40-23 KA-1869-01

Date Prepared: March 2012



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800' 0 800' 1,600'

1" = 800'

Planning Area

City Limits

Internal Capture Rates are estimated and are applied as a percentage reduction in the total trips generated by a Quarter Section. The reduction accounts for trips generated by individual land uses within a Quarter Section which will use the internal street network to access each land use.

200(300)

PM Peak Hour Trips Generated (veh. per hr)

AM Peak Hour Trips Generated (veh. per hr)

NOTE: Peak Hour Trips Generated account for all vehicle types, including heavy commercial vehicles.

Exhibit 5.3: Trip Generation

AREA TRANSPORTATION PLAN

US-40/West 6th Street and K-10 Interchange

Kansas Department of Transportation

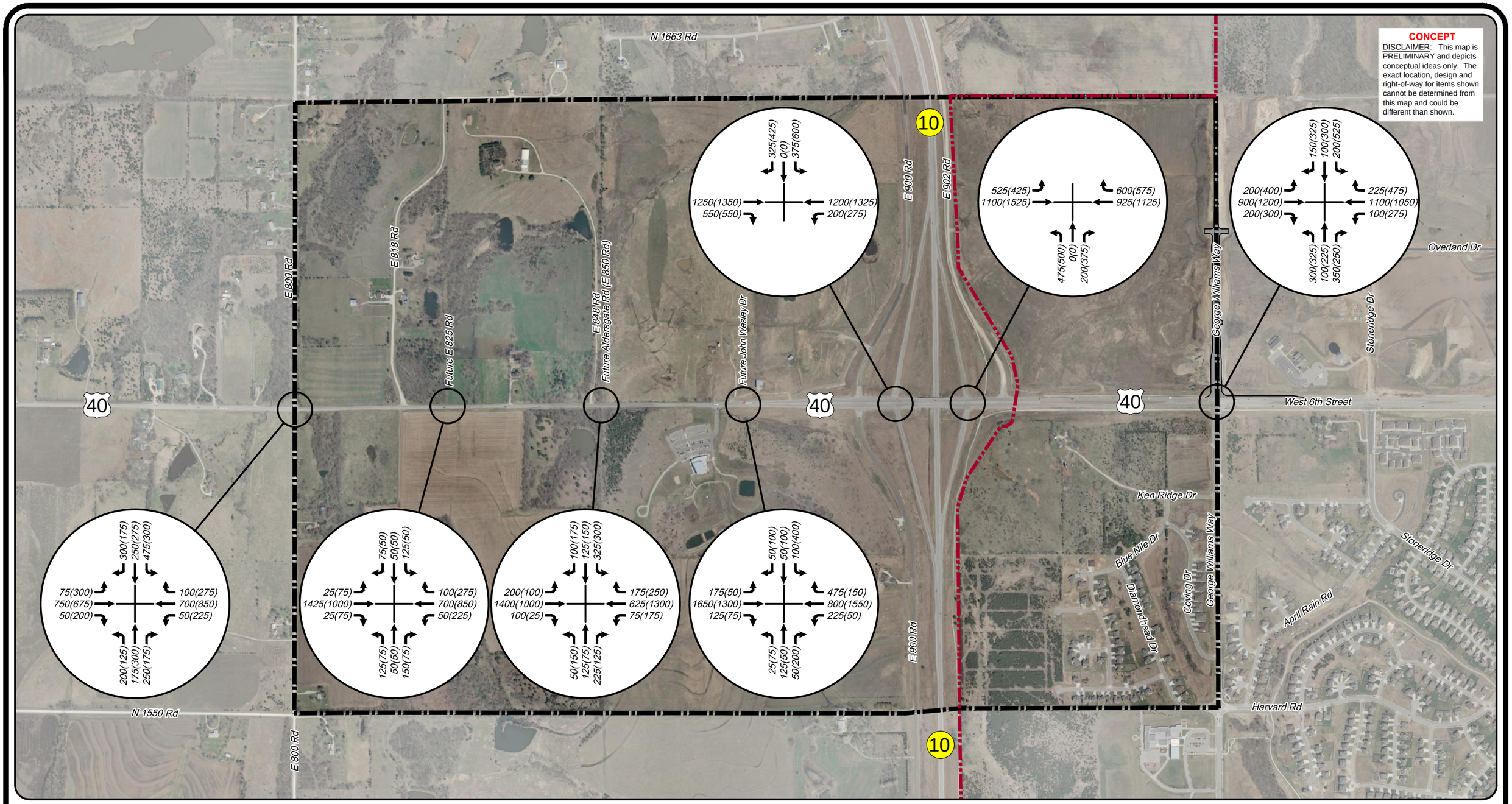
City of Lawrence KANSAS

BG CONSULTANTS

WilburSmith ASSOCIATES

KDOT Project: 40-23 KA-1869-01

Date Prepared: March 2012



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800' 0 800' 1,600'

1" = 800'

Planning Area

City Limits

200(300)
PM Peak Hour Traffic (veh. per hr)
AM Peak Hour Traffic (veh. per hr)
Direction of Traffic Movement

NOTE: Peak Hour Traffic volumes account for all vehicle types, including heavy commercial vehicles.

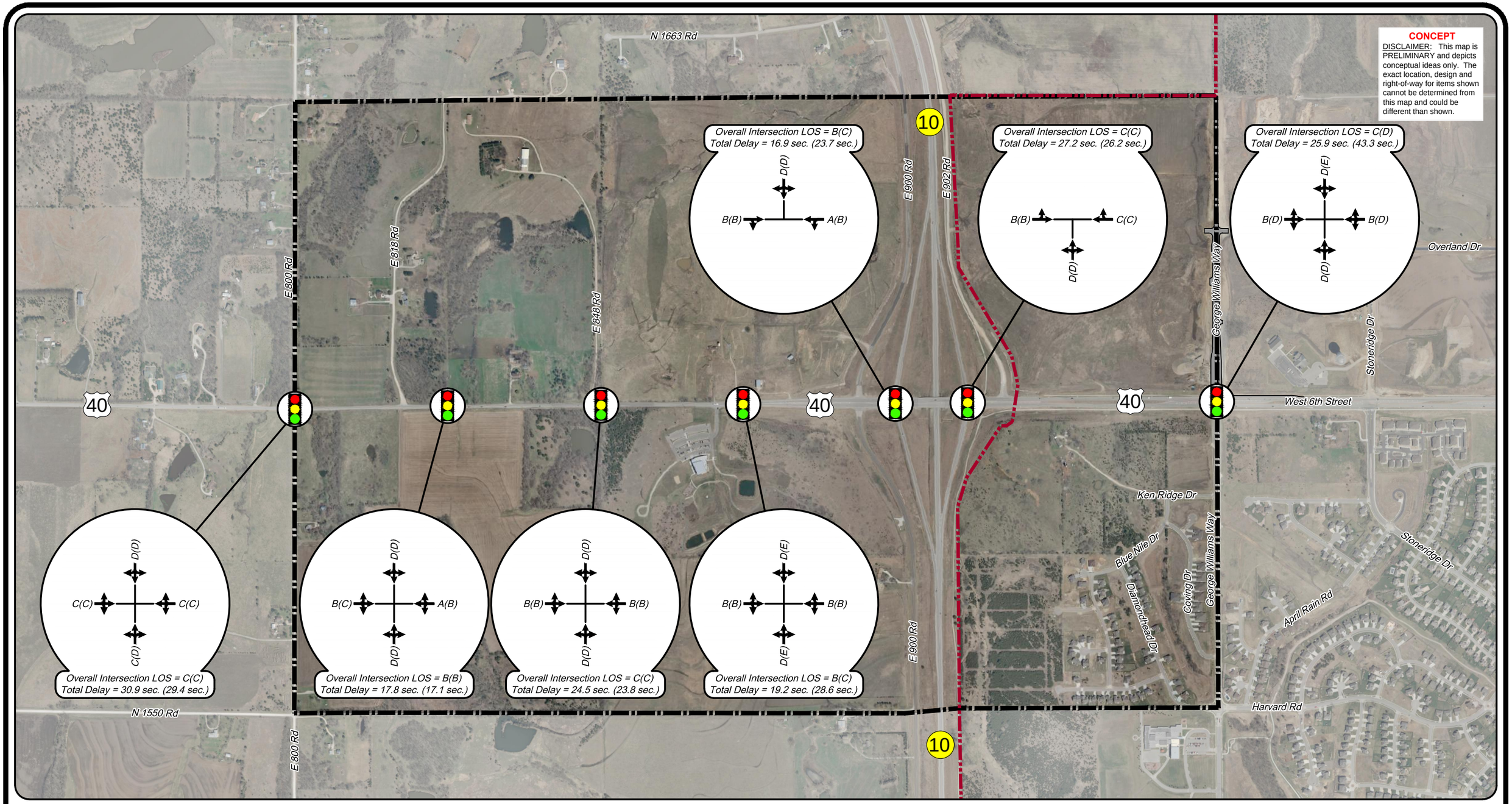
Exhibit 5.4: Long Term Estimated Traffic

AREA TRANSPORTATION PLAN

US-40/West 6th Street and K-10 Interchange

Kansas Department of Transportation
City of Lawrence Kansas
BG Consultants
WilburSmith Associates

KDOT Project: 40-23 KA-1869-01
Date Prepared: March 2012



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1" = 800'

Planning Area

City Limits

Planned Traffic Signal Controlled Intersection

A (B)
PM Peak Hour Level-of-Service
AM Peak Hour Level-of-Service
Direction of Traffic Movement

Exhibit 5.5: Long Term Estimated Level-of-Service

AREA TRANSPORTATION PLAN

US-40/West 6th Street and K-10 Interchange

Kansas Department of Transportation

City of Lawrence Kansas

BG Consultants

WilburSmith Associates

KDOT Project: 40-23 KA-1869-01

Date Prepared: March 2012

SUMMARY

This chapter incorporates the land use and traffic analyses of the prior chapters to identify improvements that may be necessary to accommodate future transportation needs in the Planning Area. The Client Team will be able to use this information to identify short term roadway needs, long term roadway needs, and other improvements necessary to implement the vision of this Plan.

SHORT TERM NEEDS

The land owner and developer coordination in conjunction with the existing traffic operational analysis exposed the potential need for several short term improvements. Short term improvements are listed below and summarized graphically in **Exhibit 6.1**.

US-40 and K-10 Interchange

The operational capacity of the ramp terminals at the US-40 and K-10 Interchange currently needs to be improved. The addition of a second left-turn lane to the K-10 off-ramps and installation of traffic signals at the ramp terminals is necessary to accommodate the existing traffic demands.

The short term improvements at the US-40 and K-10 Interchange will provide capacity for approximately 50% of the anticipated increase in traffic demands in the Planning Area. This equates to 11,400 vpd of the estimated 22,800 additional vpd. The traffic growth rate deduced from the KDOT's Travel Demand Model places the service life of this short term improvement at approximately 15 years. Components of the short term improvement, such as the traffic signals and additional lanes on the off-ramps, should then be incorporated into the long term needs identified later in this chapter. At the time of preparing this Plan, KDOT has contracted with a design engineer to perform the preliminary engineering design of these improvements.

US-40 west of K-10

The geometric improvement of US-40 west of K-10 should be considered when traffic demands increase in/out of the 1st Church property and/or the North-Central Quarter Section of the Planning Area. The improvement would include extension of a westbound left-

turn lane west to John Wesley Drive, addition of a westbound right-turn lane, and improvement of the US-40 vertical profile to provide adequate intersection sight distance for John Wesley Drive.

Frontage Roads west of K-10

Improvements at John Wesley Drive should consider realignment of the existing E 900 Road on the west side of K-10. E 900 Road north of US-40 serves a relatively small rural subdivision. The realignment of this road over to John Wesley Drive is highly feasible when the North-Central Quarter Section develops. The realignment can also be incorporated into the long term transportation system.

E 900 Road to the south of US-40 may not be as feasible to relocate in the short term. The terrain and timing of development on the South-Central Quarter Section might cause a temporary connection as shown in red on **Figure 6.1** to be relatively expensive and not sustainable for the long term needs. The benefit of this temporary connection road may not be substantial enough to warrant implementation as there are currently two residences generating a very minimal traffic demand on the south extension of E 900 Road.

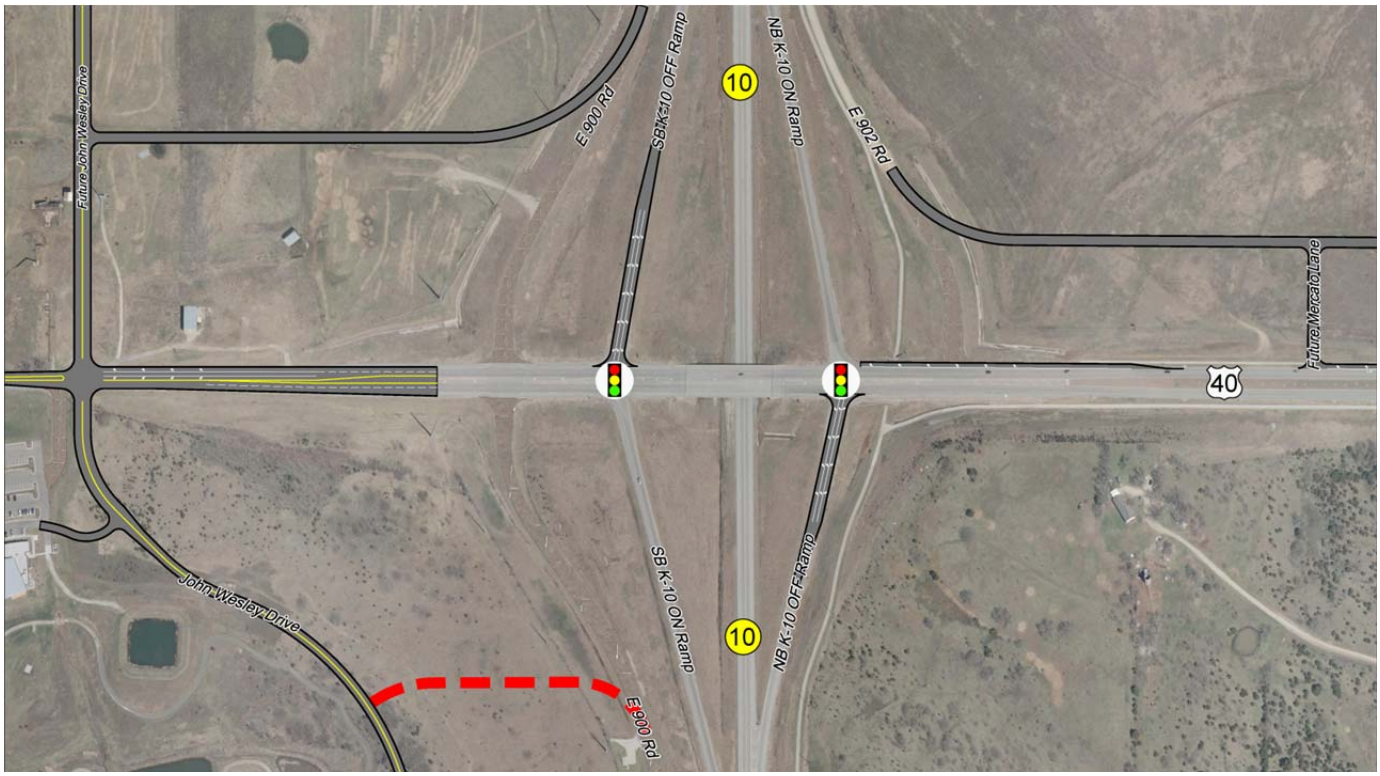


Figure 6.1: Short Term needs at US-40 and K-10 Interchange

E 902 Road access to US-40

The existing E 902 Road serving as the frontage road on the east side of K-10 should be removed and realigned to connect to the internal street network for the Mercato development. This improvement has previously been approved by the Plan Partners and will become feasible when the internal street network for Mercato is built. The Agreement between the Plan Partners and the developer of Mercato includes a provision to extend a new Collector Street from within Mercato to access US-40/West 6th Street between K-10 and George Williams Way. The access of the new Collector Street with US-40/West 6th Street will be a ½ access intersection (right-in/right-out only). The new ½ access intersection can only be constructed if the E 902 Road access to US-40/West 6th Street is removed concurrently.

US-40/West 6th Street and George Williams Way

The existing intersection of US-40/West 6th Street and George Williams Way should be signalized when traffic demands warrant signalization. Several platted properties adjacent to George Williams Way, including Mercato, Diamond Head, and Oregon Trail, could trigger the need for installing a traffic signal. The intersection has previously been identified as a future signalized intersection. The lack of development in this area due to the recent economic downturn has delayed the need for installing a traffic signal.

The geometry of the south leg of the intersection should also be improved to accommodate an eastbound right-turn lane, two northbound left-turn lanes, one northbound thru lane, and one northbound right-turn lane.

Right-of-Way Preservation

The Plan Partners should take a proactive approach to preserve right-of-way for long term improvements as properties west of K-10 and abutting US-40 are platted or change ownership. Long term improvements and future right-of-way needs are discussed later in this chapter.

LONG TERM NEEDS

The existing geometry and lane configuration of US-40 west of K-10 is not conducive to long term urban growth and public access. Major improvements to US-40 will be necessary to accommodate the anticipated traffic demands resulting from urban development of the Planning Area.

US-40 West of K-10

West of K-10, US-40 should be planned for improvement to a 4-lane urban arterial. Pedestrian facilities, which are discussed in greater detail later in this chapter, should be included on both sides of US-40. The street should generally resemble US-40 east of K-10 with consideration given to the Context Sensitive Solutions described later in this chapter.

The cross section should consist of two 12 foot driving lanes in both the east and west directions. A raised median with a minimum width of 36 feet should be included to control access, improve aesthetics, and channelize traffic. A median of this width will also accommodate dual left-turn lanes at intersections. A right turn-lane on US-40 should also be provided for the east and west approaches to all future intersections.

Figure 6.2: Future US-40 west of K-10

A total right-of-way width of 150 feet should be preserved for the necessary infrastructure; consisting of 75 feet of right-of-way on each side of the center line of US-40. The right of way should either be acquired when undeveloped properties change ownership, during the preliminary engineering phase of improvements to US-40, or during the platting process when properties within the Planning Area develop.

The vertical profile of US-40 west of K-10 should be improved to accommodate the long term roadway needs. The current profile of US-40 between E 800 Road and K-10 will not provide sufficient intersection sight distance required as the area develops and the proposed intersections are constructed. **Exhibits 6.2 – 6.5** present a concept vertical profile of US-40 west of K-10 to provide the sight distances necessary for the long term needs.

Intersections west of K-10 should be spaced at approximately one-quarter mile intervals to facilitate managed access to adjacent properties and to enable effective coordination of future traffic signals. The intersections can operate as two-way stop controlled intersections, with the side street approach to US-40 being stop controlled, for a period of time until traffic demands warrant the installation of a traffic signal. Management of intersections is discussed in greater detail later in this chapter.

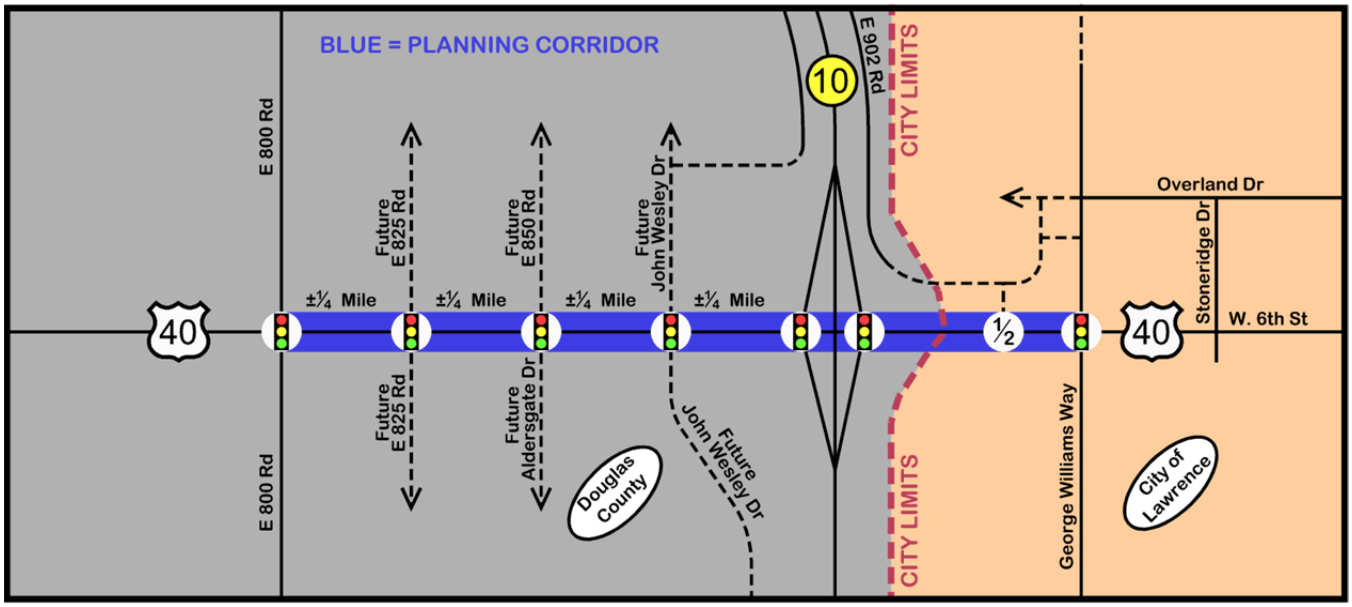


Figure 6.3: Long Term Intersections

US-40 and K-10 Interchange

The short term improvements to the US-40 and K-10 Interchange are estimated to provide capacity for approximately 50% of the anticipated long term traffic demands. Additional interchange improvements may be needed between 2025 and 2030 assuming the anticipated urban growth scenario fully develops by 2040 and assuming a uniform growth of long term traffic demands.

The additional improvements to the interchange will be needed when continued growth in traffic demands result in queue storage deficiencies within the single lane left-turn lanes on US-40 between the ramp terminals. The long term improvements should include improving the US-40/West 6th Street cross section from just west of the west ramp terminal to the Lawrence City Limits to accommodate dual-left turn lanes, right turn lanes for the US-40 approaches to the ramp terminals, and pedestrian accommodations. The addition of dual left-turn lanes on US-40 will require the addition of a second lane to the K-10 on-ramps to provide dual receiving lanes.

US-40/West 6th Street East of K-10

US-40/West 6th Street between K-10 and George Williams Way can mostly remain in its current configuration as a 4-lane urban arterial. The short term improvements to remove the existing E 902 Road access and to improve the US-40/West 6th Street and George Williams Way intersection are estimated to provide adequate capacity for the anticipated 2040 traffic demands.

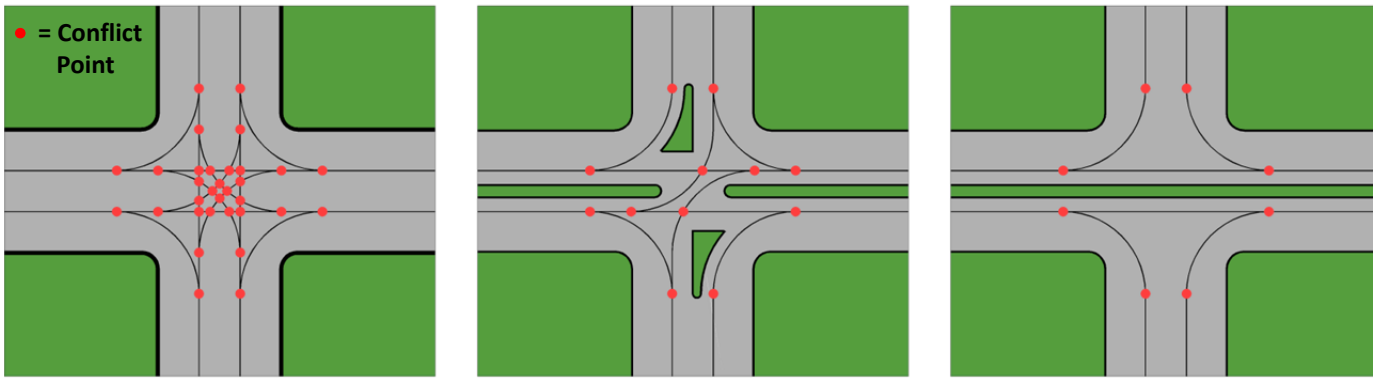
Frontage Roads

The short term improvements to remove the existing E 902 Road access to US-40/West 6th Street and the removal of the E 900 Road access to US-40 will address the anticipated long term needs in the Planning Area.

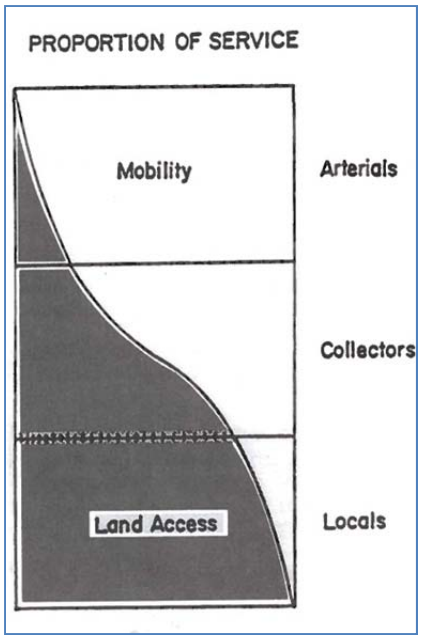
ACCESS MANAGEMENT

Access management is the **"systematic control of the location, spacing, design, and operation of driveways, median openings, interchanges, and street connections to a roadway."**
- Transportation Research Board

The purpose of access management is to provide vehicular access to land development in a manner that preserves the safety and efficiency of the transportation system. Intersections and driveways interrupt the flow of traffic and introduce conflict points into the transportation system. Each conflict point represents the intersection of conflicting vehicular movements. They are the points where a driver must have a heightened awareness of their surroundings. As the number of conflict points increase, a driver's ability to focus on critical tasks involved with driving a vehicle can decrease. Managing the location of access points and/or restricting certain vehicular movements can directly improve or preserve the safety of a roadway.



Full Access **3/4 Access** **1/2 Access**



The primarily undeveloped condition of the Planning Area presents the opportunity to implement at least two fundamental strategies of access management. One strategy is management of the Interchange Area. Managing the functional area of a grade-separated interchange, the "Interchange Area", is essential to avoid traffic backups onto freeways and to preserve safe and efficient traffic operating conditions through these critical components of the public street network. This strategy is one of the key purposes for developing this Plan. Furthermore, the US-40 and K-10 Interchange supports regional traffic entering/exiting Lawrence which could include drivers that are unfamiliar with the area. It is important for the Interchange Area to be managed to accommodate adequate lengths of auxiliary lanes and to allow drivers who may or may not be familiar with the area to safely traverse the interchange.

The second access management strategy is managing the location of accesses or adjacent intersections to reduce or eliminate overlapping functional areas. The functional area of an intersection extends beyond the physical limits of an intersection. The area includes three components:

1. The distance traveled during the time which a driver perceives the intersection, makes a decision about how to negotiate the intersection, and then begins to react to that decision **(d_1)**.
2. The distance traveled to maneuver to a turn-lane and decelerate to a stop **(d_2)**.
3. The queue storage in the lane(s) resulting from the traffic control device at the intersection **(d_3)**.

Exhibit 6.6 and **Exhibit 6.7** show the estimated functional area footprint of the proposed US-40/West 6th Street.

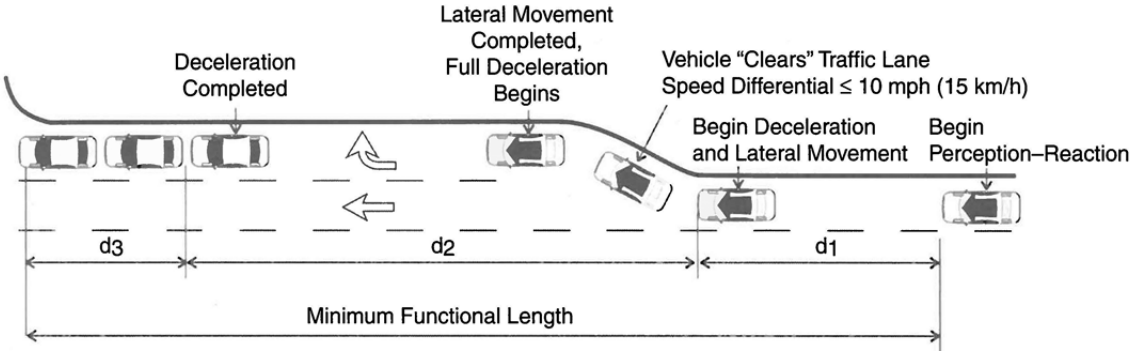


Figure 6.4: Upstream Functional Intersection Area (TRB's *Access Management Manual*)

Figure 6.5 and **Table 6.1** summarize the recommended access management techniques for this Plan.

Figure 6.5: Tools for US-40/West 6th Street Access Management

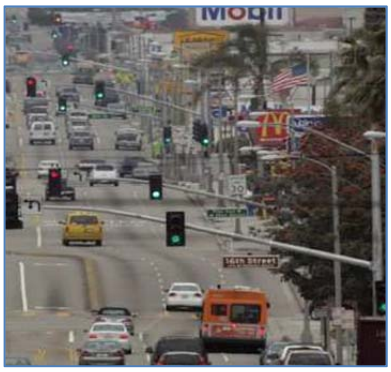
1. Remove existing driveways, provide alternate access.
2. Consolidate multiple driveways into a shared access.
3. Close intersections and provide alternate access.
4. Preserve right-of-way during development of a property.
5. Acquire access rights.
6. Manage the Functional Area of intersections along US-40/West 6th street to avoid overlapping traffic movements.

Table 6.1 – Access Management Recommendations

Tool	I.D.		Description	Trigger
Intersection Clearance from Interchange	1		The nearest full access intersection west of K-10 should be at least 1,320' west of the west ramp terminal, but no closer than 1,000' to Aldersgate Road (E 850 Road). No additional full access intersections should be constructed between K-10 and George Williams Way.	Improvement of US-40 west of K-10 and/or removal of frontage roads
Future Intersection Spacing	2		Full access intersections **west of K-10** should be spaced at approximately one-quarter mile intervals to facilitate signal coordination.	Improvement of US-40 west of K-10
Close Existing Private Driveways	3	A	Close existing field entrance for the Southwest Quarter Section (Williams Property) and relocate access to the proposed E 825 Road intersection.	Land Use Change or Improvement of US-40
		B	Close existing residential entrance to the Crawford Property on the north side of US-40 and connect to proposed E 825 Road or Aldersgate Road (E 850 Road).	Land Use Change, Construction of E 825 Road and/or Aldersgate Road (E 850 Road)
		C	Connect the existing residential access at E 848 Road to the future Aldersgate Road (E 850 Road) when US-40 is improved.	Improvement of US-40 and/or Aldersgate Road (E 850 Road)
		D	Close First Church West Campus driveway to US-40 and provide access via John Wesley Drive.	Construction of John Wesley Drive south of US-40
		E	Close existing residential/field entrances to the North-Central Quarter Section and provide access via John Wesley Drive.	Construction of John Wesley Drive north of US-40
Close Existing Public Road Intersecting US-40/West 6th Street	4	A	Close E 818 Road access to US-40	Land Use Change or Construction of Improved US-40
		B	Close E 900 Road access to US-40 (north of US-40)	Land Use Change or Construction of Improved US-40
		C	Close E 900 Road access to US-40 (south of US-40)	Land Use Change or Construction of Improved US-40
		D	Close E 902 Road access to US-40/West 6th Street	Construction of street network within Mercato
Future Private Driveways accessing US-40	5		Future, permanent driveways for developments should not be allowed to access US-40. Relocating existing driveway(s) for improvement of US-40 should be considered temporary.	Development/Site Planning
Private Driveways accessing City Streets	6		Private driveways accessing City Streets should not be located in the Functional Area of a City Streets intersection with US-40/West 6th Street.	Development/Site Planning
Side Street Classification	7		The functional classification of local streets intersecting US-40/West 6th Street should be Collector or Arterial.	Transportation Plan Update and/or Land Development

PRACTICAL RESERVE CAPACITY CONSIDERATIONS

The concept of Practical Reserve Capacity of a transportation facility was introduced in Chapter 4. Practical Reserve Capacity documentation provides this Plan with a level of flexibility, identifying possible adjustments that may be necessary depending upon the type and intensity of future development. The considerations listed below are tools that may be necessary as the Plan Partners monitor the growth in traffic demand through the Planning Area.

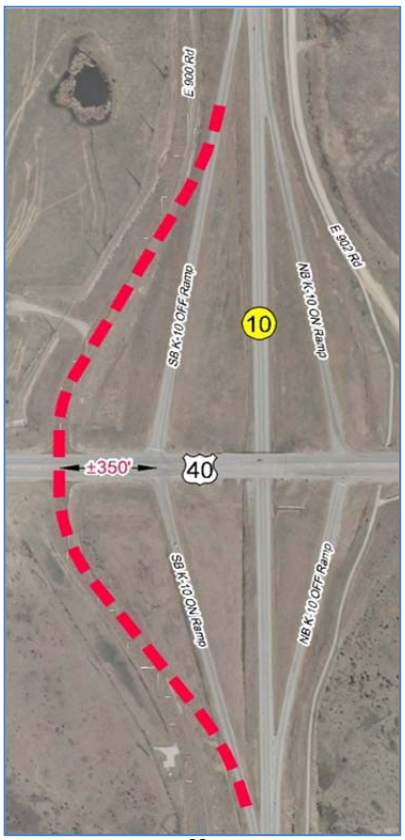


Intelligent Transportation Systems (ITS)

The recommended US-40 improvements will result in a future urban signalized corridor west of K-10. Coordinating the signals to maximize capacity will be critical as traffic demands increase and if the density of urban development increases beyond what is anticipated in this Plan. ITS strategies will need to be implemented along US-40/West 6th Street to produce optimum traffic signal timings and maintain efficient flow of traffic.

Ramp Terminal Relocation(s) of US-40 and K-10 Interchange

The US-40 and K-10 Interchange will quickly become the problematic component of transportation infrastructure if actual traffic demands exceed the estimates in this Plan. The limited space between the ramp terminals to store traffic queues will quickly become the capacity controlling characteristic of the interchange. When traffic queues exceed the storage available, the actual delay experienced at an intersection may be more than what is estimated using the *Highway Capacity Manual* methodologies.



K-10 Off-Ramp

The centerlines of the US-40 and K-10 Interchange ramp terminals are approximately 650 feet apart. This geometry results in approximately 275 feet of storage available for the two eastbound left-turn lanes and approximately 150 feet of storage available for the two westbound left-turn lanes. The average queue lengths for the 2040 traffic are estimated to be contained within these available storage lengths. Provided the traffic signals are coordinated, the 95th percentile queue lengths are estimated to be equal to or just slightly longer than the available storage lengths. An increase in traffic demands above what has been estimated in this Plan will cause left-

turn queue lengths to encroach on the east/west thru traffic movements. Furthermore, the queues for eastbound and westbound thru movements may spillback across K-10 and negatively affect traffic operations at the upstream ramp terminal.

Relocating the west ramp terminal westward to the existing earthen embankment for E 900 Road could provide the additional queue storage needed for adequate traffic operations. Likewise, relocating the east ramp terminal eastward could provide the additional storage needed between the ramp terminals. However, the east ramp terminal is not as feasible to relocate due to existing constraints.

Westbound US-40 right-turns at East Ramp Terminal

right-turn lanes for westbound US-40 at east ramp terminal

The future K-10 and Bob Billings Parkway interchange is expected to divert some of the commuter traffic demand from the US-40 and K-10 Interchange. Depending on the actual amount of diverted traffic, the flow of westbound US-40 traffic to northbound K-10 may require dual westbound right turn lanes at the east ramp terminal. The on-ramp will have dual receiving lanes as a result of the dual left-turn lanes on US-40, thus making the dual westbound right-turn lanes a feasible option. Consideration was given to using a free flow right turn movement, but the option was discarded in favor of the dual right-turn lanes given the future urban context of this area, the high potential for pedestrian/bicycle demands across the ramp terminal, and the signal controlled condition of a dual right-turn configuration.

E 800 Rd, E 825 Rd, and Aldersgate Road (E 850 Rd) Intersections

The tools identified in the "Intersections and Access Management" section suggests the Plan Partners manage the functional area of intersections to maintain safe and efficient traffic operations. The functional area of the future signalized intersections west of K-10 will change in size relative to the change in development patterns.

The Plan Partners should monitor and adjust the functional areas of intersections as Traffic Impact Studies (TIS) for developments within the Planning Area are submitted. The development approval process within Lawrence-Douglas County requires submission of a TIS to supplement development plans. The TIS should identify compliance or non-compliance with the estimated traffic patterns and quantify a development's impact to an intersection or the Planning Area.

MULTI-MODAL CONSIDERATIONS

The City of Lawrence has a wide range of transportation needs resulting from a diverse population. Whether walking, biking, or driving a car, multiple modes of travel have been a part of daily life since the community was founded. The introduction of transit services in December 2000 provided additional opportunities.

Transit

The Lawrence Transit System (The "T") does not provide transit service to the Planning Area. The closest route reaches the City's Indoor Aquatic Center at Free State High School near U.S. 40/West 6th Street and Wakarusa Drive intersection. Representatives from the agency indicated there are no current plans to expand transit service into the Planning Area. A proactive approach must therefore be considered during implementation of the recommendations and the land development process to enable future transit opportunities within the Planning Area.

Transit Opportunities

Consideration should be given to the timing of a transit route extended into the Planning Area. Locations for bus turnouts and bus stops along the future urban street network should also be considered and identified during the land development process. The installation of transit amenities at bus stops, such as bus shelters, benches, and route maps, should be completed when a route is extended.

The development of two primary areas should be used to identify future extension of transit routes. One development area is Mercato located at US-40/West 6th Street and George Williams Way. Extension of a "T" route connected to the #6, #9, and/or #10 routes should be considered when commercial and retail development within Mercato approaches 50% of the planned total square footage.

A second development area is the development of the North-Central and/or South-Central Quarter Sections within the Planning Area. These areas present a significant opportunity for transit use due to the anticipated office and light industrial land uses. These development areas also present the opportunity for extension of a

West Lawrence transit route west of K-10. The construction of Aldersgate Road (E 850 Road) should be used as a trigger for considering the extension of a West Lawrence route and/or installation of transit hub or a park and ride facility.

Another transit opportunity for the Planning Area is a regional commuter route. A significant portion of the current automobile traffic demand on the existing transportation system consists of commuters traveling along the I-70 corridor between Topeka and Kansas City. Coordinating a regional transit service that connects the Topeka Metro, the Lawrence "T", and Kansas City's "The Metro" could be beneficial. The regional transit connection could be at a new park and ride facility or a transit center near the US-40 and K-10 Interchange. A park and ride facility could also serve as a stop on a future west Lawrence "T" route.

Bicycle and Pedestrian Facilities

Lawrence is a bicycle friendly community with an avid bicycling population. Bicycle facilities around the community are typically provided in the form of on-street bike lanes or off-street shared use paths. Pedestrian facilities are generally provided in the form of sidewalks and shared use paths.

The Lawrence-Douglas County Subdivision Regulations have been developed to provide ample opportunities for bicyclists and pedestrians to access the transportation network. The regulations currently require, at a minimum, sidewalks on both sides of all urban streets. Additional requirements apply to Arterial streets.

The Lawrence-Douglas County MPO classifies US-40 as a Principal Arterial and E 800 Road as a Minor Arterial. These two arterials would be required by the regulations to have a 6' wide sidewalk on one side of the street and a 10' wide shared use path on the other.

With exception of E 800 Road, the planned urban streets intersecting US-40/West 6th Street in the Planning Area are recommended to be classified as Collector streets. These streets would be required by the regulations to have 5' wide sidewalks on both sides of the street.

Crossing K-10 with Bicycle/Pedestrian Facilities

The ability for bicyclists and pedestrians to cross K-10 presents a unique obstacle in the Planning Area. There are two key solutions to overcome this obstacle, each with its own set of pros and cons.

- Construct a shared use path on the US-40 bridge over K-10. This improvement would provide continued bicycle/pedestrian opportunities in the east/west direction along US-40. However, the ramp terminals are projected to operate with a high volume of automobile traffic.
- Construct a shared use path on a stand-alone grade separated crossing south of the US-40 and K-10 Interchange. This option would separate bicyclists/pedestrians from automobile traffic at the interchange. However, the bridge would likely be of significant length and would need to be located far enough away from US-40 to achieve the required vertical clearances from the K-10 ramps.

Bicycle/Pedestrian Facilities Recommendations

The following list of bicycle and pedestrian facilities should be considered as development within the Planning Area is realized.

- Construct a 10' shared use path and a 6' sidewalk along US-40 west of K-10. Connect the facilities to adjacent sidewalks, bike lanes, and other adjacent bicycle/pedestrian facilities.
- Construct bike lanes on Aldersgate Road (E 850 Road) north and south of US-40.
- Construct sidewalks and shared use paths as the local street network is constructed.
- Provide sidewalk/shared use path connections between the public streets and individual land uses in the Planning Area.
- Future bicycle and pedestrian facilities should connect to the existing K-10 shared use path on the north and south side of US-40/West 6th Street.
- Consider construction of a parking lot on the northeast corner of the US-40 and K-10 Interchange connected to the public street network within Mercato. Current users of the K-10 shared use path park on E 902 Road north of US-40 to access the K-10 path for recreation.

- Existing K-10 shared use path tunnel under US-40:
  - The tunnel should be extended to a sufficient length to allow for improved storm water drainage away from the tunnel at both ends.
  - Security lighting in the tunnel should be considered.
- The existing 6' sidewalk on the north side of US-40/West 6th Street east of K-10 should be reconstructed to a 10' shared use path and connected to the internal street and sidewalk network for the Mercato development.
- Connect any bicycle/pedestrian improvements in the Planning Area to the bicycle/pedestrian crossing of K-10.

Currently Planned Bicycle/Pedestrian Facilities

Some bicycle facilities had previously been planned for this area. **Figure 6.8** below shows the Bikeway System Map from *T2030*.

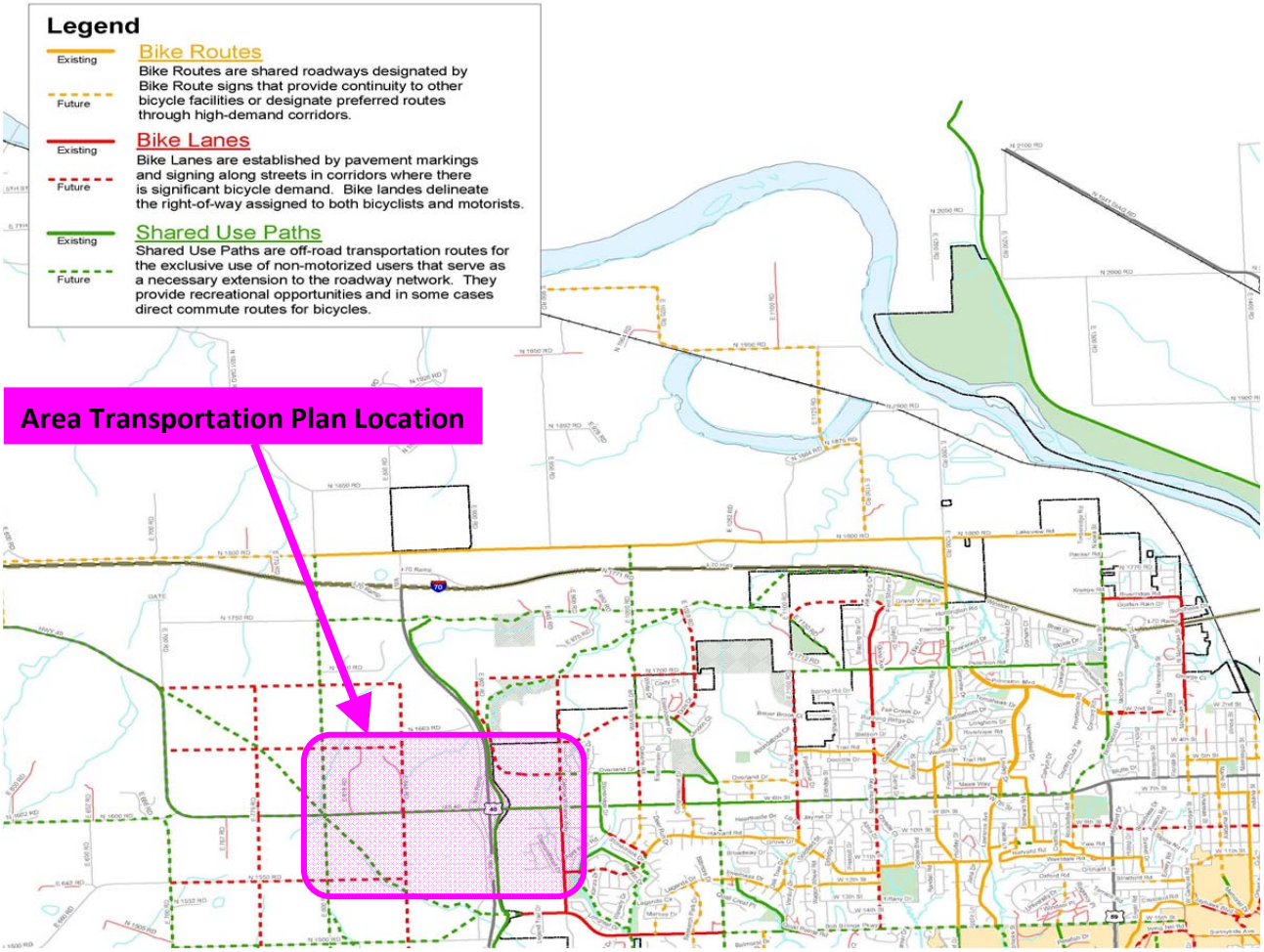


Figure 6.8: T2030 Bikeway System Map

CONTEXT SENSITIVE SOLUTIONS

The Federal Highway Administration defines Context Sensitive Solutions (CSS) as "**a collaborative, interdisciplinary approach that involves all stakeholders to develop a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic and environmental resources, while maintaining safety and mobility. CSS is an approach that considers the total context within which a transportation improvement project will exist**." CSS seeks to balance the need to move traffic efficiently and safely with other desirable outcomes, including historic preservation, environmental sustainability, and the creation of vital public spaces.

The City of Lawrence has embraced the CSS concept, implementing CSS design techniques into recent capital improvement projects. The Plan Partners should continue to incorporate these solutions into projects within the Planning Area where applicable. Establishing a vision for the Planning Area can be accomplished by creating one or more themes. The goals of these themes can help guide the incorporation of context sensitive solutions into future improvements. Meeting these goals will require a collaborative effort between the Plan Partners and the land developers to achieve the goals described in this Plan.

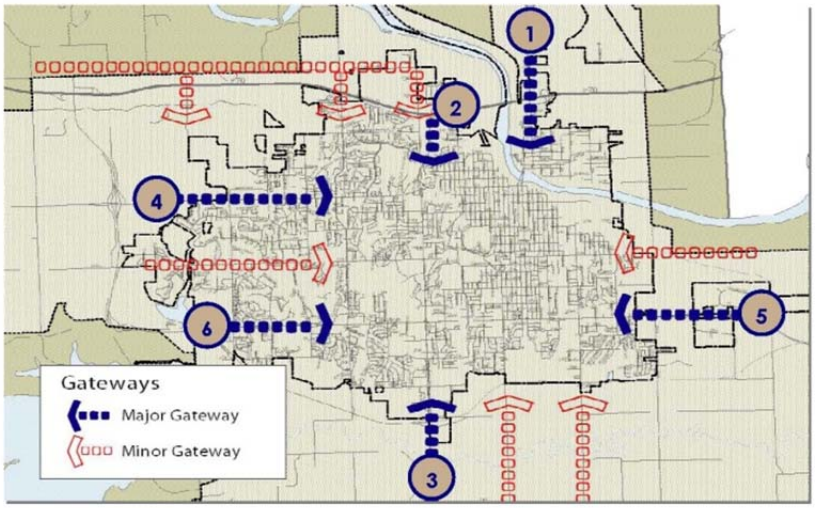


Figure 6.9: T2030 Gateways Map

Two themes should be established for the Planning Area to guide development and transportation improvements in this area. First, *T2030* establishes US-40/West 6th Street as a Major Gateway to the community. Building a theme around the gateway concept, particularly at the US-40 and K-10 Interchange, can help to enhance aesthetic appeal of the community as traffic enters the northwest part of the City. Secondly, the public involvement revealed the desire to build the Planning Area as a transitional area between the rural context of Douglas County and the urban context of Lawrence.

Theme #1: US-40 and K-10 Interchange is a Major Gateway

Theme #1 focuses on landscaping and other aesthetic improvements around the interchange to provide subtle clues to drivers that they are entering the City of Lawrence. Context specific items include:

- Landscaping around the ramp terminals.
- Install "LAWRENCE" sign on US-40 near interchange.
- Install decorative lights and decorative railing on the bridge.

Figure 6.10: Example US-40 and K-10 Interchange Aesthetic Improvements

Theme #2: US-40 west of K-10 is a "Rural-to-Urban" transition

Theme #2 focuses on the use of landscaping and engineering designs to maintain the rolling, countryside context of the existing US-40 west of K-10. This theme may need to be used on future improvements west of the Planning Area as well.

- Street trees in median and along property frontage.
- Consider larger green spaces between curbs and sidewalks/shared use paths to allow for street trees.
- Use existing stream crossings of US-40 to incorporate woodland areas and potential shared use paths.

Additional Context Sensitive Solutions to consider during the engineering design phase of improvements may include:

- Use smaller radius curb returns at intersections.
- Use 11' travel lanes on City Side Streets.
- Consider using a target design speed on City Side Streets.

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SUMMARY

Substantial effort has been put into the development of this Area Transportation Plan. As discussed in prior chapters, the Project Team:

- Collected and analyzed all available, relevant background information;
- Identified trends and scenarios for development based on current plans and discussions with landowners and other stakeholders;
- Analyzed opportunities and constraints that may affect development in the area;
- Reached out to interested stakeholders to develop a vision and understanding of needs in the area;
- Developed a plan of improvements that may be needed based on a consensus of ideas from KDOT, City of Lawrence, Douglas County, MPO, and stakeholders.

The data and recommendations within this Plan are intended to guide future decision-making within the Planning Area by all interested parties so the vision, and to the extent possible, the details of this Plan can become reality. To make the vision a reality, the Plan Partners must take action to implement this Plan.

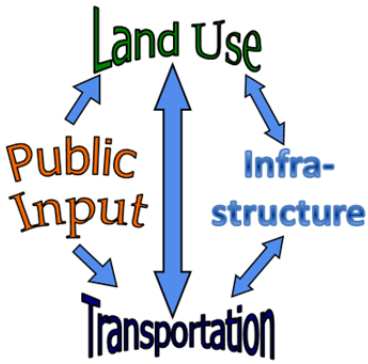
This chapter describes key techniques or actions that can be used by the partners to turn the plan into actual improvements to US-40 and adjoining transportation facilities.

IMPLEMENTATION GOALS

The goals of the implementation plan are:

- Implement as many of the recommendations as possible.
- Complete implementation in a cost-effective manner that maximizes use of limited funding resources.
- Meet the needs of future development in a timely manner, not after the fact.
- Define procedures for identifying future actions and potential changes to the Plan.

CONNECTING DEVELOPMENT & TRANSPORTATION



An important part of the implementation of recommendations is the recognition of the inter-relationship between transportation and land use/development. The recommendations of this Plan are based on certain land use and development assumptions as discussed in Chapter 3. Estimates of future traffic, discussed in Chapter 5, were developed based on these land use and development assumptions. Recommendations have been made based on these traffic projections and anticipated land use needs. If the land use and development patterns change substantially from the assumptions of this Plan, there may need to be changes in the implementation of improvements in the area. This is one of the reasons for incorporating the Practical Reserve Capacity concept into this Plan.

At the same time, transportation improvements may encourage and affect development. For example, it would be prudent to have the necessary infrastructure improvements in place before or in conjunction with urban development to avoid substantial traffic issues. Other improvements such as transit and bicycle/pedestrian connections in the Planning Area may also enhance the desirability of adjacent parcels by providing access for a wider segment of the population including potential consumers and employees.

The identification of potential triggers for infrastructure needs is one way the Plan Partners can manage the connection between land use and transportation. Another is to have set criteria for amending the plan. Both of these plan management techniques are discussed in detail within this chapter.

TRIGGERS

Defining Triggers

In the context of this Plan, triggers are defined as specific activities or measurable conditions occurring in or adjacent to the Planning Area that indicate that a specific recommendation should be implemented. Examples of potential triggers would include:

- Development or movement on planned development in specific parcels or groupings of parcels in the area that would indicate the need for improvements.
- The attainment of certain daily or peak hour traffic volumes along US-40.
- Specific service improvements such as transit or bicycle/pedestrian upgrades that may lead to other needed actions.
- Specific local or regional population thresholds or other demographic indicators.

The Private Sector Role in Implementation

The majority of the land in the Planning Area is owned by private entities and in turn these landowners will play a significant role in the implementation of this Plan. They are likely to be involved in nearly all realms of recommendations, from preserving rights-of-way to funding and constructing specific improvements. The private sector will likely be the driving force behind the timing and type of land development that generates the future traffic demands.

Linking Triggers to Recommendations

Tables 7.1, 7.2, and 7.3 provide key recommendations from Chapter 6 along with potential triggers that would indicate the need to implement each part of the Plan. Some of these triggers are subjective in nature based on the best available information at the time of preparing this Plan. Realizing the dynamic nature of land development and future land uses, the subjective triggers were established by the Project Team to estimate the approximate timing of implementing a specific recommendation.

Table 7.1 – Short Term Needs (1-5 years)

I.D.	Description	Trigger	Project Cost (in millions)	Agency	
1	Signalize Ramp Terminals and add Turn Lane to Off-Ramps	Currently needed due to existing traffic demand	$1.5	KDOT	✓
				City	
				County	
				Private	
2	Close E 902 Road access to US-40/West 6th Street	Construction of street network within Mercato	-----	KDOT	✓
				City	✓
				County	✓
				Private	✓
3	US-40 and George Williams Way Traffic Signal and Geometric Improvements	When additional development along George Williams Way generates traffic to meet MUTCD Warrant #1 or #2	$1.5	KDOT	✓
				City	✓
				County	
				Private	✓
4	Construction of John Wesley Drive with Short Term US-40 Geometric Improvement	Additional development on the South-Central Quarter Section **or** construction of Short Term Needs #1.	$2.5	KDOT	✓
				City	✓
				County	✓
				Private	✓
5	Close First Church West Campus driveway, E 900 Road and residential/field access to North-Central Quarter Section	Construction of Short Term Needs #4	$0.25	KDOT	✓
				City	✓
				County	✓
				Private	✓
6	Right-of-Way Acquisition	As properties adjacent to US-40 change ownership and/or during the platting process	-----	KDOT	✓
				City	✓
				County	
				Private	✓

Table 7.2 – Long Term US-40 Roadway Needs (>5 years)

I.D.		Description	Trigger	Project Cost (in millions)	Agency	
7		Improve US-40 from John Wesley Drive to Existing City Limits with bridge modification	Increase in traffic demands such that additional queue storage is needed between the ramp terminals	$3.0	KDOT	✓
					City	✓
					County	
					Private	
8	A	Improve US-40 between E 800 Road and K-10	Future Safety need **OR** development of the North-Central and/or South-Central Quarter Section	$15.0	KDOT	✓
					City	✓
					County	✓
					Private	
	B1	Improve US-40 between Aldersgate Road (E 850 Road) and K-10	Future Safety need **OR** development of the North-Central and/or South-Central Quarter Section	$10.0	KDOT	✓
					City	✓
					County	✓
					Private	
	B2	Improve US-40 between E 800 Road and Aldersgate Road (E850 Road)	Future Safety need **OR** development of the Northwest and/or Southwest Quarter Section	$7.0	KDOT	✓
					City	✓
					County	✓
					Private	

Table 7.3 – Long Term Multi-Modal and Context Sensitivity Solutions (>5 years)

I.D.	Description	Trigger	Project Cost (in millions)	Agency	
9	Extension of west Lawrence Transit Route to Mercato	Construction of a sufficient level of destination type development in Mercato to generate a transit demand (estimated 50% of Commercial area)	*	KDOT	
				City	✓
				County	
				Private	
10	Extension of west Lawrence Transit Route west of K-10 to Aldersgate Road (E 850 Road)	Filing of Development Plans for the North-Central or South-Central Quarter Sections	*	KDOT	
				City	✓
				County	
				Private	
11	Transit Park and Ride Facility near US-40 and Aldersgate Road (E 850 Road)	Extension of Transit Service west of K-10 to E 850 Road **and/or** The implementation of a regional commuter transit service	*	KDOT	✓
				City	✓
				County	
				Private	
12	Bicycle Facilities west of K-10 (Bike Lanes and Shared Use Paths)	Construction of these facilities should be concurrent with roadway improvements west of K-10	Included in Project Costs shown in Tables 7.1 and 7.2	KDOT	✓
				City	✓
				County	
				Private	✓
13	Optional Separate Shared Use Path crossing K-10 to the south of US-40	Development of the Diamondhead and South-Central Quarter Section	$1.5	KDOT	
				City	✓
				County	
				Private	
14	Shared Use Path Connection between Mercato and the K-10 Shared Use Path	Construction of internal sidewalk system in Mercato, specifically along Renaissance Drive and Mercato Way	$0.1	KDOT	
				City	✓
				County	
				Private	✓
15	Gateway Improvements and Landscaping around the US-40 and K-10 Interchange	Begin implementing during Long Term Need #7. Establish Landscaping Plan for the Node	$0.25 - $1.0	KDOT	
				City	✓
				County	
				Private	
16	Context Sensitive Solutions during Engineering Design	CSS should be considered and incorporated where applicable during design of roadway improvements	Potential Cost Savings	KDOT	✓
				City	✓
				County	
				Private	✓

* = Project costs to be determined at a later date when a defined scope of the Solution is quantified.

POTENTIAL PHASING

Improvements at US-40/K-10 Interchange including signalization at the ramps and along US-40 east of K-10 would be short term needs. (Existing shown)

Improvements west of K-10 would address more long term needs. (Existing shown)

This Plan identifies both short-term and long-term improvements that may be necessary as transportation demands change within the Planning Area. Short Term needs listed in **Table 7.1** are focused primarily on improvements to address existing transportation deficiencies and potential transportation needs in the next ±5 years.

Long term needs may include all or some of the recommendations listed in **Table 7.2 and 7.3**. It is anticipated that most of these needs will be triggered by an increase in traffic demands due to urban development west of K-10. However, the current geometry of US-40 may give rise to operational and/or safety issues for existing traffic, particularly as traffic demands increase in this area.

The most significant long term improvement is the conversion of US-40 west of K-10 to a 4-lane urban arterial. This improvement can be implemented in one of two ways. Option #1 is to implement a major construction project to build all of the long term roadway needs between E 800 Road and K-10 in one project. This option is highly dependent on the availability of funds from the Plan Partners if implemented in the near future. As urban development expands west of K-10, the demand for the long term improvements will increase. The likelihood of private sector participation in the funding of the improvements will also increase.

Option #2 is to implement a phased approach to build the long term needs. The current geometry of US-40 would allow for the first phase of improvements to US-40 between Aldersgate Road (E 850 Road) and K-10. A temporary geometric transition between the existing 2-lane rural cross section and the proposed 4-lane urban cross section would occur just west of Aldersgate Road (E 850 Road). Phase one would also include construction of the Aldersgate Road (E 850 Road) and John Wesley Drive intersections with US-40.

Phase two would include construction of the 4-lane urban cross section west of Aldersgate Road (E 850 Road) through the E 800 Road intersection. The phased approach may fit better with the anticipated timing of development and enhance opportunities for private sector participation in funding the improvements.

IMPLEMENTATION TOOLS

The KDOT Tool Box of Implementation Strategies included at the end of this chapter provides ample options for implementing the various parts of the Plan. The City of Lawrence and Douglas County currently use many of the tools discussed in the KDOT Tool Box. While all elements of the KDOT Tool Box have potential application, the Consultant Team suggests the Plan Partners pay particular attention to the following items due to their specific applicability to the Plan.

Corridor Preservation Strategies - Planning Tools

- Plan Consistency (Section I., Part A, Item 3, Page 7.12 of the Tool Box).
- Utility Planning (Section I., Part A, Item 4, Page 7.12 of the Tool Box).

Corridor Preservation Strategies - Regulatory Tools

- Zoning Approval Criteria (Section I., Part B, Item 2a, Page 7.15 of the Tool Box).
- Site Plans (Section I., Part B, Item 2d, Page 7.18 of the Tool Box).
- Setbacks Ordinances (Section I., Part B, Item 8, Page 7.24 of the Tool Box). In particular, the Lawrence-Douglas County Subdivision Regulations contain an extraordinary setback of 50 feet for US-40/West 6th Street east of K-10. The *West of K-10 Plan* recommended extending this 50 foot setback west to Stull Road to assist with future right-of-way needs. This Plan endorses that extension of the extraordinary setback.

Corridor Preservation Strategies - Administrative Tools

- Accessibility of the Comprehensive Plan (Section I., Part C, Item 1, Page 7.25 of the Tool Box). This Plan should be posted on the City of Lawrence website and other appropriate web locations. Copies of this document should be readily available at planning offices. This will help inform all interested parties of the recommendations of this Plan.
- Notice of Applicability of Plan (Section I., Part C, Item 2, Page 7.25 of the Tool Box).

- Notice and Opportunity to Provide Input (Section I., Part C, Item 3, Page 7.26 of the Tool Box).
- Notice of Land Marketed for Sale (Section I., Part C, Item 4, Page 7.27 of the Tool Box).

Corridor Preservation Strategies - Acquisition Tools

- Land Acquisition (Section I., Part D, Item 1, Page 7.27 of the Tool Box).
- Land Dedication and In-Lieu of Fees (Section I., Part D, Item 3, Page 7.28 of the Tool Box).

Access Management Strategies

- Closing of Access (Section II., Part A, Page 7.29 of the Tool Box).
- Approval of Access (Section II., Part B, Page 7.30 of the Tool Box).
- Input to KDOT on Access/Coordination of Access Management (Section II., Part C, Page 7.30 of the Tool Box).

Financing Strategies

- Traditional Funding (Section III., Part A, Page 7.34 of the Tool Box).
- Impact Fees (Section III., Part B, Item 1, Page 7.37 of the Tool Box).
- Transportation Development Districts (Section III., Part B, Item 3, Page 7.39 of the Tool Box).
- Transportation Utility Fee (Section III., Part B, Item 4, Page 7.40 of the Tool Box).
- Community Improvement Districts (Section III., Part B, Item 7, Page 7.43 of the Tool Box).
- General Contract Authority (Section III., Part B, Item 8, Page 7.44 of the Tool Box).

KDOT's TOOL BOX OF IMPLEMENTATION STRATEGIES

Introduction

Substantial effort and expense has been put into the development of this Corridor Management Plan. All of the parties have invested significant resources to:

- collect and analyze all available, relevant background information on the land area included within the corridor footprint map to fully understand current conditions;
- study and extrapolate projections from the current plans adopted and being prepared by the parties and other entities whose plans may have an impact on development within the Corridor to identify trends and prepare alternative scenarios of how future development may and can progress;
- prepare market projections on development opportunities and constraints that will either positively or adversely affect development potentials;
- reach out to all interested stakeholders to obtain input and guidance on what has occurred, what exists and what they feel should be the vision for this Corridor into the future; and
- forge a consensus among KDOT, the community partners and interested stakeholders on a plan that captures this shared vision for enhancements to the mainline highway and adjacent local street network and the interface between the two, including the type and location of points of access, as well as land uses and densities and intensities of development within the Corridor.

Successfully completing this planning effort is a major accomplishment in and of itself. The dividends which will flow to the parties from having achieved this goal are inestimable.

That being said, this Corridor Management Plan is just that: A PLAN. The real purpose for doing a plan is to, through comprehensive and thorough analysis, create a guide to decision-making by all the interested parties, so that the vision and, as much as possible, the details of the plan can become reality. To make the vision of the Plan a reality, KDOT and each of the local communities within the Corridor must take action to implement the Plan. This Chapter of the Plan describes a series of techniques that can be used by the partners to help turn the maps, illustrations, policies, goals, strategies and recommendations of the Plan into the actual facility improvements and the associated development patterns envisioned by the Plan. The tools described in this Chapter, when put into place, have the supplemental benefit of establishing additional criterion against which state, county, municipal and utility improvement plans and private development proposals can be evaluated, as each is brought forward through time. Having these supplemental criterion in place will give all parties greater assurance that all the resources the parties put toward creation of this Corridor Management Plan are realized upon and that the vision for this Corridor becomes a well-functioning component of each community.

The tool box of techniques described here is divided into four major sub-sets: Corridor Preservation Strategies; Access Management Strategies, Financing Strategies and Interlocal Cooperation. Each of these sub-sets are, where appropriate, further categorized to give those using the Plan a better understanding of the role the technique plays in this tool box of implementation techniques, the authority to use the tool and how the techniques complement one another when used appropriately.

I. Corridor Preservation Strategies

Corridor preservation is achieved through planning and the implementation of those resulting plans using a variety of regulatory strategies, including zoning, subdivision regulations, access management and exercise of the police power. One primary goal is to control or protect areas identified in the Plan that will be necessary for future enhancement to the mainline of the highway, as well as for improvements to the local street network within the Corridor. An equally important goal is to preserve and, wherever possible, enhance opportunities for development at locations within the Corridor that maximize the economic potential of the Corridor, while simultaneously preserving the functionality of the mainline highway, its access points and the interfacing adjacent local street network. Benefits of corridor preservation include:

- preventing incompatible development;
- minimizing adverse environmental/ social/economic impacts; reducing displacements;
- establishing the location of transportation facilities which allows communities increased opportunities to achieve orderly development through future planning; and
- reducing future project costs.

Close coordination between KDOT and the local communities is essential since authority for some preservation tools are vested in the state and the authority for others is vested in the local governments.

A. <u>Planning Tools</u>

1. Comprehensive Planning - To help ensure that the land development decisions are consistent with and are made in accordance with the recommendations of the Corridor Management Plan, each community should adopt the Corridor Management Plan, including the footprint map covering areas lying within the city's planning area, as a part of the city's comprehensive plan. K.S.A. 12-747 authorizes city and county planning agencies to make or cause to be made a comprehensive plan for the development of that community. There is specific authority to adopt area or sector plans covering only a portion of the area within a community's jurisdictional boundaries. The plan must show the commission's recommendation for the development or redevelopment of the territory included in the portion of the plan prepared. The planning commission must hold a hearing on the adoption of the Corridor Management

Plan and make a recommendation to the governing body on its adoption. The plan does not become effective unless approved by the governing body. *Jurisdiction: Local*.

2. Official Maps – An official map is a legally adopted map that conclusively shows the location and width of proposed roads or streets, public facilities and public areas and drainage rights-of-way. It is also commonly referred to as a major street plan. Although the Kansas statutes do not specifically authorize cities or counties to adopt an official map, K.S.A. 12-747, in its description of the elements that should be covered in a comprehensive plan, clearly contemplates that the plan include the type of information that is traditionally included in an official map. It goes without saying that the lack of specific statutory authority to adopt an official map in no way precludes a city or county from acting pursuant to their home rule authority to do so. In addition, K.S.A. 12-765, discussed below, granting authority to cities and counties to establish building or setback lines, does authorize cities doing so to incorporate by reference an official map in the ordinance or resolution, as the case may be. The adoption of an official map as a part of the community's comprehensive plan or as a standalone document gives that community one additional point of reference and source of guidance when considering development applications relating to land that lies within the Corridor to determine whether the development proposed will have an impact on the improvements contemplated by the Corridor Management Plan. *Jurisdiction: Local*.

3. Plan Consistency - To help ensure that the community's comprehensive plan is internally consistent and therefore effectively serves as a comprehensive guide to development within the community, upon adoption or in conjunction with the adoption of the Corridor Management Plan, the community should review its existing comprehensive plan to assure that other portions of the plan support and are not in conflict with the recommendations of the Corridor Management Plan. If the community identifies inconsistencies, it should revise and readopt the comprehensive plan with revisions designed to eliminate those inconsistencies using the procedures outlined for the adoption of a comprehensive plan. *Jurisdiction: Local*.

4. Utility Planning - Utilities necessary to support development will be constructed within the Corridor. It is critical that these utilities be located at places that are consistent with the Corridor Management Plan, so they will not have to be relocated upon construction of enhancements to the mainline highway at future dates. Each community within the Corridor should, in coordination with all providers of utility services within its corporate boundaries, prepare and continually update a utility master plan. These utility master plans must be carefully coordinated with the Corridor Management Plan to ensure consistency between the two. KDOT and communities within the Corridor should carefully evaluate the Corridor Management Plan, when making decisions about the location of new utilities and related easements. In addition, KDOT and each community should establish a regular point of interface

with each utility provider to ensure coordination between the parties in ongoing planning efforts and land acquisition and placement decisions. *Jurisdiction: KDOT/Local*.

5. Conformity of Public Improvements - K.S.A. 12-748 provides that whenever a planning commission has adopted a comprehensive plan for an area, no "public improvement, public facility or public utility," of a type covered by the recommendations of that plan, may be constructed without first being submitted to and approved by the planning commission as being in conformity with the plan. Public entities with plans for construction of these improvements, facilities and utilities should consult with the representative of cities and counties with adopted comprehensive plans early in that entity's decision-making process and timely submit those plans to the appropriate planning commissions for this determination. This requirement applies to any public entity that is intending to do this type of construction within the jurisdictional boundaries of a city or county. This is an important way to ensure due consideration is given to the recommendations of the Management Plan, once it is made a part of a community's comprehensive plan. Cities and counties that learn of plans for construction of this type, by another public entity within their boundaries, should be diligent in contacting the entity to make sure they are aware of this obligation and then to facilitate the contemplated review, thereby helping to ensure the Plan is fully considered in these situations. It is important to note that the governing body of the entity proposing this construction can over-ride a negative recommendation of a local community planning commission, but even in that instance, an important opportunity for review of the consistency between the proposed construction and the Management Plan by the parties is captured. *Jurisdiction: KDOT/Local*.

B. <u>Regulatory Tools</u>

1. Development Moratoria - A public sector entity may, through passage of a development moratorium, temporarily halt the processing of applications for all or a specified type of development until a governmental activity is completed, such as the adoption of a plan or the passage of a revised ordinance on a specified subject. The United States Supreme Court has held that a reasonable moratorium fulfills a legitimate public purpose and is not per se a taking.

   As vigilant as the partners to this Plan may be in incorporating the Management Plan into local comprehensive plans and utilizing the regulatory strategies to implement the Plan, situations are bound to arise where development pressures overtake the local professional staff's ability to effectively manage those pressures. In those situations, development moratoria are a very effective tool to help stem those pressures while the community determines what approach will be most effective; be it an amendment to the comprehensive plan or passage of an ordinance/resolution establishing a new or updated regulatory implementation technique, such as an overlay district. The moratorium ceases the processing of applications during a legislatively established period of time needed to prepare and adopt strategies the community

determines will best address the circumstance. It is important to note that adoption of moratoria is generally considered to be a zoning action. Accordingly, that ordinance/resolution must be passed pursuant to the hearing and notice requirement of Article 7 of the Kansas Statutes. For that reason, it is critical that communities act quickly to get a moratorium in place once a situation calling for a "time out" is identified. One way to close the window on the rush of applications that might result from notice of the consideration of a moratorium ordinance is for the community's governing body to adopt a resolution directing staff to stop accepting applications until the moratorium ordinance takes effect. The authority for adoption of a resolution of this type is found in the "pending ordinance" doctrine, which has been accepted by the courts of most states. *Jurisdiction: Local*.

2. Zoning – Zoning is one of the most prevalent and effective mechanisms for implementing a comprehensive plan. Zoning is a process utilized by local governments to classify land into areas and districts. These areas are generally referred to as "zones," and impose, in each area and district, restrictions related to building and structure designs, building and structure placement, and uses to which land, buildings, and structures within these districts may be put, including setbacks and height, lot coverage, and impervious cover restrictions. The authority to establish setbacks from rights-of-ways is not specifically mentioned, but is derived from the authority to set sizes of buildings, the percentage of each lot that may be occupied and the size of yard and other open space. See Subsection B.2 of the Chapter for a discussion of the authority to establish setbacks or building lines granted in K.S.A. 12-765 and the authority to establish setbacks derived from K.S.A. 12–749, which provides cities and counties with the authority to establish subdivision regulations. The implicit authority to establish setbacks as a part of zoning district restrictions is located in K.S.A. 12-755. These statutory provisions provide authority to establish setbacks for more than just buildings. They may apply to any structure within the designated setback. Traditionally, however, though established at depths adequate to preserve rights-of-way for the local street network system, the normal front and side yard setbacks included in zoning ordinances and subdivision regulations are not generally sufficient in depth to preserve rights of way that may be necessary for enhancement to the mainline highway within the Corridor. Zoning ordinances may also make provisions for certain uses to be established community-wide or in individual zones only by issuance of a special or conditional use permit. Rezoning of parcels that have been previously zoned may be initiated by the local community or by a property owner. *Jurisdiction: Local*.

   Through the adoption of zoning ordinances, which are carefully tailored to implement the strategies and policies of the Corridor Management Plan, development within the Corridor can be effectively managed to ensure successful implementation of that Plan. K.S.A. 12-755 and 12-756 authorize both cities and counties to adopt zoning ordinances, and K.S.A. 12-757 authorizes

the rezoning of properties in those instances where changing a property's zoning classification is advisable or necessary to adapt original zoning to current situations.

If a rezoning application proposes a zoning classification that is determined to have the potential of adversely impacting the Corridor, copies of the application, along with the staff report, should be provided to KDOT for input, at the same time any other affected party is provided notice of the hearing on the application.

K.S.A. 12-715b authorizes cities, with a couple of exceptions and under certain conditions, to adopt zoning regulations applicable to land located outside of its corporate limits, but only within three miles of those limits and only if the county has not adopted zoning regulations applicable to that area of the county. Written notice of a city's intent to adopt zoning outside its limits must be provided to the appropriate board of county commissioners. Similarly, each county that proposes to adopt zoning regulations affecting property within three miles of the corporate limits of a city, must give written notice of its intent to that city's governing body.

a. Zoning Approval Criteria -- Arguably, the most important Kansas Supreme Court case dealing with zoning is *Golden v. the City of Overland Park*. *Golden* sets out a set of factors that planning commissions and governing bodies may consider when deciding whether to approve or deny a zoning application. One of those factors is consistency with the comprehensive plan. Each community along the corridor, when acting on a development application related to land that lies within the Corridor, should consider whether the development proposed by that application is consistent with the Corridor Management Plan, as adopted into its comprehensive plan.

b. Overlay Districts -- One of the most effective plan implementation zoning techniques is overlay districts. An overlay district can be either mapped or narratively described to be mapped at some later point in time (floating). An overlay district superimposes certain additional restrictions that modify or supplement the restrictions of the underlying zoning district or districts, in recognition that distinguishing circumstances exist within the area that must be regulated in a manner different from the regulations of the underlying district. One misunderstanding about the term overlay district is that communities think there is a model that can be pulled off the shelf and adopted to serve as its overlay district. While it might be accurate to say that a model procedural framework might exist, nothing could be farther from the truth when talking about the real implementation aspects of the overlay district. The whole goal behind adoption of an overlay district is to address special and unique circumstances and considerations that affect a specific geographic area of the jurisdiction differently than other areas of the jurisdiction. Thus the objective is to identify those circumstances and considerations; articulate a vision for how that particular area should develop over time

(while both accommodating and capitalizing on opportunities presented by those considerations); then develop regulations, restrictions and incentives to guide development to effectively realize that vision.

Overlay ordinances are generally composed mainly of design and performance guidelines and standards, and are filled with illustrations and graphics. They are carefully prepared to effectuate the plan for that specific area. In this instance, the Corridor Management Plan has created the vision, or at least, the superstructure of that vision. An overlay district is crafted to implement that Plan. It is also common for people to believe that the community could prepare one overlay district, and that it would apply to all land in its jurisdiction within the Corridor. For the very reasons stated above, that notion is incorrect also. Because the Plan identifies development scenarios that are unique to each different location within the Corridor, the idea that one set of regulations and incentives could be prepared to guide development along an entire length of a corridor is flawed. Each one of those locations should have its own overlay district with carefully chosen implementation techniques employed to achieve Plan objectives. Potentially, one overlay district could be prepared for each jurisdiction along the Corridor, but for it to have any real usefulness, it would have to break the Corridor into distinct segments with a separate set of standards created for each segment. For example, an overlay district can be effectively used to establish setback or building lines that are deeper than the setbacks set out in the underlying district regulations. This can be particularly effectual, as diverse setback distances can be established for different segments along the Corridor, depending on the need for additional rights-of-way at a specific location and on whether the segment is a developed or an undeveloped area, as well as on the nature and intensity of any existing development.

c. Planned Districts -- Conventional zoning allows for an amendment of the zoning classification of land upon application of the governing body or the planning commission. If the proposed amendment affects specific property, the landowner may make application. The procedures set forth above govern the consideration of and action on zoning amendments, generally called rezonings. So long as the decision to rezone is reasonable, in light of the *Golden* criteria, the rezoning may take place at any point in time. Most commonly, a rezoning is applied for just in advance of development of that property or when a change of use is contemplated as a part of redevelopment of the property. Nothing, however, requires that there be pending development for a rezoning of a particular property to be reasonable. Sometimes properties are rezoned well in advance of any potential development or redevelopment activity. There may be a very valid public purpose for rezoning land substantially before it is ripe for development or redevelopment, and in those instances, the application should be made

by the governing body or planning commission. It is generally good planning, however, not to prematurely rezone land to a zoning category other than one that allows its current use or to a use that is imminent. A community can successfully illustrate its vision of how land should be developed, in terms of general uses, through the future land use map of its comprehensive plan. It really does not need to zone land to an anticipated land use well in advance of development to make its community vision for land use known.

Generally, a community's development objectives can best be served if it has as much information about contemplated uses, proposed site terrain, location and type of infrastructure being proposed, building arrangement, architectural design and other features of development, as is possible, when it considers a rezoning application. Planned districts are an excellent tool to help in achieving this objective. A community's zoning ordinance can provide that all its zoning districts are planned districts, it can provide a parallel planned district for each or any number of its conventional districts (such as C-1 and C-1/P) or it can create separate planned districts for certain types of development or for development in certain locations.

The planned district process ensures this type of information is available to the planning commission and governing body by converting the traditional rezoning process into a two step process. The applicant submits two separate plans to the community at different points in the approval process. The plan contains an increasing level of detail commensurate with the stage at which the property is in the development process. These plans are generally called development plans; one a preliminary and the other a final development plan. Although what the submittal is called is without significance. The preliminary development plan is submitted along with the application for rezoning. The amount of information that is included in the preliminary plan can and should vary from community to community, but in any event should include enough to allow decisions makers to understand the nature and quality of the development being proposed. The following type of information would generally be included: topography, locations of building and other structures, dimensions portraying relationships between buildings and to property and setback/build to lines, on site and adjacent area circulation, storm water management approach, preliminary sketches depicting the general style, size and exterior construction materials of proposed structures and evidence of adequate public facilities. Both the planning commission and the governing body consider and act on the preliminary plan at the same meeting they consider the rezoning application. No rezoning application may be approved until and unless a preliminary plan for that property is approved. This helps ensure that the decision makers fully understand what is going to be developed on that property when the

rezoning is approved. An applicant may opt to combine the two plans into one and submit the combined plan with the rezoning application. It is just necessary that all the submission requirements of the two plans are incorporated in the submitted plan.

If the development proposed by the preliminary development plan application is determined to have the potential of adversely impacting the Corridor, copies of the application, along with the staff report, should be provided to KDOT for input, at the same time any other affected party is provided notice of the hearing on the application.

Typically, the approved preliminary plan stays in effect for a set period of time; most commonly 2 years, with the possibility of an extension if justified and applied for before the expiration of the approval. This process can be easily adapted to phased projects.

The second step in the planned district approval process is the submission of a final development plan. This occurs after engineering drawings have been approved, but before any building permit may be issued. The final plan must be substantially consistent with the approved preliminary plan or be approved using the same process for preliminary plan approval. The final plan contains much more information than the preliminary, as, of course, the developer has moved farther along in designing the development, so more information is available to provide additional assurance to the community that the development proposed is appropriate for that location. These final plans, when consistent with the preliminary, can be approved administratively or legislatively or through a combination of the two. Once the plan is approved, it is filed of record with the county register of deeds. All development at the location covered by the rezoning and development plan application must then be constructed in accordance with the plan or risk stop work orders and zoning ordinance violations.

d. Site Plans — Although a site plan itself is very similar to the development plans discussed above in the description of Planned Districts, the term is used here to describe a plan submitted during the course of the development approval process when the community does not employ a planned district process. It is also designed as a mechanism to inform the decision makers of the applicant's proposal for development of a property. Unlike the Planned District process, which is traditionally a two step plan submittal process undertaken in conjunction with a rezoning of land, the site planning process is generally a one step process that is required of developers that are not required to rezone their property prior to the issuance of a building permit. To institute this mechanism, the community would need to revise its land development codes to require that, in instances of proposed developments, where some other plan approval process is not required prior to issuance of a building permit, the applicant must submit a site plan for review and approval prior to building permit issuance. It would be

common for certain types of development to be excluded from the site plan approval process, such as development of a single family house or similar smaller type developments that will have a minimal impact on facilities and services or on the landscape.

The usual site plan would be described as a plan for one or more lots on which is shown the existing and proposed conditions of the lot, including topography, vegetation, drainage, floodplains, wetlands, and waterways; landscaping and open spaces; walkways; means of ingress and egress; circulation; utility services; structures and buildings; signs and lighting; berms, buffers, and screening devices; surrounding development; and any other information that reasonably may be required for an informed decision to be made by the approving authority.

It is not uncommon for the site planning process to be divided formally or informally into two parts, and for that matter, for the planned district two step process to be modified to add a third step. In these circumstances, an initial submittal, often called a concept plan, is made to the technical staff for informal review. The applicant and its consultant sit down with the approving authority's technical staff to discuss the plan and exchange views on what the applicant is proposing and what the technical staff believes will be acceptable to the approving authority. It can also serve as an opportunity to fine-tune the plan for formal submittal. Once that process is complete, a formal site plan, as described above, or a preliminary development plan is submitted for staff review and report.

The nature of the approval required for a site plan can vary greatly, depending on the expertise of staff and the appetite of the community to delegate approval authority to an administrative official. So, for example, a community could decide to vest plan approval authority for some categories of development in an administrative official, other categories of development in its planning commission and retain to the governing body still another category of development approvals. One would expect that administrative approval would be available for those categories of development that are determined to be of the least potential community impact, moving up to governing body approval on those that could have far reaching impacts, such as development at certain locations (key intersections) along the Corridor.

If the site plan posed in the application is determined to have the potential of adversely impacting the Corridor, copies of the application, along with the staff report, should be provided to KDOT for input, at the same time any other affected party is provided notice of the hearing on the application. If no hearing is required, this notice should be

provided to KDOT in enough time before action on the application takes place to allow meaningful KDOT input.

Another excellent way to approach site planning is to combine site plan review with an overlay district. The site plan is then used to evaluate the extent to which the design and performance guidelines of the overlay district are met by the proposed development. Going a step further, the overlay district could set forth certain guidelines that are mandatory, others that are encouraged and a last tier that are desirable, or some variance of this approach. The nature of the approval could then be tied to the degree to which the different tiers of guidelines are achieved. For example, all proposals that achieve all the mandatory and encouraged guidelines can be approved administratively. If the staff determines that the proposals does not achieve the guidelines in both tiers, the site plan must be considered by the planning commission or governing body. The variants that can be employed here are nearly endless.

3. Subdivision Regulation - The subdivision of land through platting is the second most common method used by communities to manage the development of property within its jurisdiction. The control of the division of a parcel of land is effectuated by adopting subdivision regulations by ordinance or resolution that requires development be in accordance with set design standards and procedures adopted locally. K.S.A. 12 – 749 grants cities and counties the authority to adopt subdivision regulations. Subdivision regulations may include, but need not be limited to: efficient and orderly location of streets; reduction of vehicular congestion; reservation or dedication of land for open spaces; off-site and on-site public improvements; recreational facilities; flood protection; building lines; compatibility of design; storm water runoff; and any other services, facilities and improvements deemed appropriate. It is through the consideration and action on plats that communities are able to require that the distances which structures are set back from rights-of-way (a very important tool for preservation of rights-of-way for mainline highway), the layout of building lots, the points of ingress and egress from the lot(s) (effective in helping to manage access) and the public improvements associated with those lots do , in fact, conform to locally established standards, including adopted plans, such as corridor management plans. In some locations, subdivision regulation and plat approval may actually be the most significant regulatory tool for managing development. In some more rural areas, it is more common for counties to have adopted subdivision regulations than to have adopted zoning. In those unincorporated areas, there would be no local legislative authority to manage development through zoning restrictions. Accordingly, subdivision regulation would be those counties' primary land management tool.

   Subdivision regulations usually specify what improvements the subdivider will be required to provide and the standards to which the improvements need to be constructed. A plat is a map

prepared by a registered civil engineer or licensed land surveyor showing the boundaries and locations of individual properties and the streets of the proposed subdivision. The plat generally also shows land to be dedicated to a public sector entity for streets and easements for public utilities. K.S.A. 12-749 authorizes a planning commission to adopt and amend regulations regarding the subdivision of land, including payment of a fee in lieu of dedication of land. This same section also authorizes a county planning commission to establish subdivision regulations. Much like zoning, a city may adopt subdivision regulations that control the subdivision of land outside of its corporate boundaries, but only within three miles of that limit or one half the distance between two cities, whichever is less. Similar written notice requirements apply. The regulations must be considered by the planning commission at a public hearing, and the commission must forward its recommendation to the governing body for its approval. K.S.A. 12-750 lays out a process that must be followed where a city desires to adopt extraterritorial subdivision regulations and the county has its own regulations in effect as to that area. That process can result in the creation of a joint city/county committee for subdivision regulation.

K.S.A. 12-752 establishes the procedure for the consideration of and action on plats. Each plat must be submitted to the planning commission, which determines if the plat conforms to the subdivision regulations. If it finds that it does, it notifies the owners of that fact and endorses that fact on the plat. A dedication of land for public purposes must be accepted by the governing body before it takes effect.

See Section C.2 below, of this Chapter, regarding notices that should be placed on plats prior to their recording with Registers of Deeds to help ensure that prospective purchasers of properties, which are included in the geographic area covered by the Corridor Management Plan, are informed of the ramifications on those properties of being within an the area covered by the Corridor Management Plan. In addition, if the preliminary plat application is determined to have the potential of adversely impacting the Corridor, copies of the application, along with the staff report, should be provided to KDOT for input, at the same time any other affected party is provided notice of the hearing on the application. *Jurisdiction: Local*.

4. Building Permits – The same section of Kansas Statutes discussed immediately above, prohibits the issuance of a building permit for the use or construction of any structure on any platted lot in an area governed by subdivision regulations, except in the manner provided by that section. It further authorizes subdivision regulations adopted by cities and counties to provide a procedure for the issuance of building permits that takes into account the need for adequate street rights-of-way, easements, improvements of public facilities and zoning regulations, if in existence.

   The issuance of a building permit is obviously the last step in the typical development approval process. Although courts hold that a building permit must be issued upon submission of a

complete application, if all code provisions governing the process for building permit issuance have been fulfilled, this does not mean that communities cannot creatively incorporate building permit requirements into their governing code provisions. For example, it is common for the issuance of a building permit to be conditional upon the payment of a legislatively imposed fee, such as an impact fee.

In cities or counties that have not adopted zoning or subdivision regulations, local regulations governing the issuance of building permits may not only be the last step, but also the first step in the development approval process, thus markedly increasing the importance of this tool in the arsenal of techniques a community may employ to effectively manage land development. Even in communities that have adopted one or both regulatory tools, the procedure for the issuance of building permits still may play a very a critical role. See subsection B.3 above, of this Chapter, on Site Plans for a description of how that technique can be used to more effectively manage the development of land in jurisdictions where either zoning or subdivision regulations have not been enacted.

K.S.A. 12-751 authorizes cities to adopt and enforce building codes outside that city's limits and allows compliance with subdivision regulations to be a condition of the issuance of a building permit. *Jurisdiction: Local*.

5. Transfer of Development Rights and Density Transfers - Some locations along the Corridor, for a variety of reasons, including availability of access, are best developed with more intense and/or dense uses. Other locations along the Corridor, for other reasons, including the lack of direct access, are best suited for less intense or dense development. One way communities along the Corridor can help ensure that property owners are afforded the maximum opportunity to develop their property to its most reasonable and economic potential is to establish a system of density incentives and transfers to encourage more intense development in areas designated on the Plan for that type of development. This system provides those landowners whose land is designated for less intense development the ability to transfer some or all of their development rights to locations where more intense development is planned, through a sale of those rights to landowners at those intense locations. These systems involve the transfer of all or a part of the permitted density on one parcel to another parcel or to another portion of that same parcel, thus allowing higher density at that location than would be allowed under the existing zoning regulations. The transfer or removal of the right to develop or build is expressed in units per acre or floor area ratio. This transfer generally occurs in accordance with a legislative established program that allows the shifting of development potential from areas where more intense land uses are considered undesirable (the donor site or sending zone), such as at locations which are a distance from the location where mainline interchanges are to be constructed, to other areas (receiving zones) chosen on the basis of its ability to

accommodate development that is more dense or intense, such as areas adjacent to proposed interchanges. For example, developers can buy development rights from properties targeted for public open space and transfer the additional density to the base number of units permitted in the zone in which they propose to develop.

6. Density Incentives – This technique is an additional method of increasing density at locations designated by the Plan, and thereby maximizing the economic potential of the Corridor without sacrificing the functionality of the mainline highway and the adjacent local street network. It involves identifying areas, such as areas near interchanges or other access points, which are shown on the Management Plan as more appropriate for dense or intense development than other areas within the Corridor and providing incentives that will encourage developers to propose a form of development at those locations that conform to the density or intensity levels contemplated by the Plan. The most common incentive is to allow for a streamlined development approval process for applications that propose developments which exceed the density thresholds established by the local community through the restrictions of the underlying zoning district regulations. This is generally achieved by allowing for administrative, rather than legislative, approvals during the application review process. To be legally valid, the legislation establishing the program must include specific standards to guide the administrative official in decisions on when an application qualifies for streamlined review and when the application approval criteria are met. There are few limits to the innovation that can be used in creating incentives to lure more dense development. The Management Plan should serve as a good source of inspiration on potential incentives. *Jurisdiction: Local*.

7. Cluster Development - This technique is yet another tool to help achieve Plan goals of ensuring denser development at locations where the Plan calls for it, while simultaneously keeping development away from or at very minimal levels at locations where it will have an adverse impact on Plan goals. A good example would be to preserve and protect critical environment or cultural resources. This technique is generally authorized by specific district regulations, such as a cluster subdivision. It is a development design technique that concentrates buildings in specific areas on a site to allow the remaining land to be used for recreational, common open space or preservation of historically or environmentally sensitive areas. Through the employment of this technique, property owners are able to achieve an acceptable average density for the entire parcel, and both the public and private sector participants are able to effectively protect key community resources. This technique is intended to allow for significant creativity in site layout and planning, generally resulting in added value to development areas as a result of access to permanent open space and recreational opportunities. *Jurisdiction: Local*.

8. Setback Ordinances - One of the keys to successful implementation of the Corridor Management Plan is ensuring that development does not encroach on right-of-way that would be necessary for highway and interchange improvements as the Corridor develops. Along with the authority granted to cities and counties to zone and adopt subdivision regulation, one very effective way to achieve this objective is through the adoption of a building or setback line. This tool preserves projected rights-of-way and reduces acquisition costs: both over-riding goals of the Management Plan. K.S.A. 12-765 authorizes cities or counties, which have adopted a plan for a major street or highway system (which would include the Corridor Management Plan), as a part of its comprehensive plan, to adopt building setback lines. After consultation with the Secretary of Transportation, the county engineer and any planning commission of a county or counties within which that highway system lies, the governing body may establish, by ordinance or resolution, a building or setback line along proposed major streets or highways. This enactment, much like building and set back lines established in zoning district regulations and subdivision regulations, includes a prohibition on the location of buildings in front of that setback line. The enacting ordinance or resolution may incorporate by reference an official map showing with survey accuracy the location and width of existing or proposed major streets or highways and any setback or building line. A building or setback line cannot be enforced until a certified copy of the map and any adopting ordinance or resolution is filed with the register of deeds of each county. The key to the enforceability of the setback line is a careful evaluation of the impact of the line, and its attendant prohibition on adjacent landowners. The restriction on development must leave these owners with viable economic uses for their commonly owned contiguous parcels of land. As a safety valve, the local board of zoning appeals is vested by statute with the power to modify any building restrictions to address unwarranted hardships that constitute a complete deprivation of use. Building setback lines, like build-to lines, can also be established as a part of zoning district restrictions, subdivision regulations and as a design guideline in an overlay district. Although this is an additional tool available to communities along the Corridor to implement the Management Plan, it may well be that cities and counties can as effectively accomplish the goals of this tool through set back and building lines established in zoning ordinances and subdivision regulations. One place where this tool may be critical is in counties that have not adopted zoning or subdivision regulations. *Jurisdiction: KDOT/Local*.

9. 4(f) Uses - Federal statute places significant restrictions on the authority of the United States Secretary of Transportation to approve a transportation program requiring use of publicly-owned land, a public park, recreation area or wildlife refuges or land of a historic site. Because state transportation programs or projects often involve federal funds, the Secretary's approval is commonly required. Accordingly, it is important that these uses not be located within the Corridor unless no other viable option is available. This imperative makes it critical that

communities avoid locating or approving development applications seeking to establish public parks, recreation areas or wildlife refuges and historic sites, also known as 4(f) uses, in the areas shown on the Plan footprint map as right-of-way for the mainline or of any portion of the local street network. The moniker 4(f) comes from the United States Code provision that limits the Secretary's authority. *Jurisdiction: KDOT/Local*.

10. Variances - Communities in Kansas have authority to grant variances from the specific terms of the zoning restriction whenever doing so is not contrary to the public interest and where, due to special conditions, local enforcement of the provisions of the regulations in an individual case results in unnecessary hardship. K.S.A. 12-759. The board of zoning appeals has the authority to grant a variance to area and setback regulations applicable to that property. The grant of a variance from district restrictions, such as parking requirements and impervious cover requirements, may be an effective way to allow an important development proposal to proceed with minor modifications that keep it out of necessary rights-of-way and behind setback lines. At the same time, the grant of some variances could adversely impact the recommendations of the Plan. Therefore, it is recommended that the board of zoning appeals consult the Corridor Management Plan, as incorporated into its comprehensive plan, when considering any request for a variance to ensure that the variance decision supports the recommendations of the Plan. In addition, if the variance proposed is determined to have the potential of adversely impacting the Corridor, copies of the application, along with the staff report, should be provided to KDOT for input, at the same time any other affected party is provided notice of the hearing on the application. *Jurisdiction: Local*.

C. Administrative Tools

1. Accessibility of the Comprehensive Plan - The goal of a comprehensive plan is not only to serve as a guide to development for the planning commission and the governing body but also to owners and potential owners of property within the community's jurisdictional boundaries. That being the case, it is recommended that the amended comprehensive plan be posted on the city's website and at all other appropriate locations to assist in assuring that all interested parties are informed of the recommendations of the Corridor Management Plan for areas included in its footprint map. *Jurisdiction: Local*.

2. Notice of Applicability of Plan - One tool to help ensure that individuals who own property within the Corridor and who are considering purchase and/or development of that property are aware that the land is included in the area covered by the Corridor Management Plan is for all counties and cities that are partners in the development of a Corridor Management Plan to require that all plats approved by them contain a statement, similar to the following, placed in the dedication section of each approved plat.

"The property shown on and described in this plat is and shall hereinafter perpetually be subject to that certain [INSERT CORRIDOR NAME] Corridor Management Plan, adopted by the Kansas Department of Transportation on _____ , the City of _____, Kansas on _____, ____and _____County, Kansas on _____, ____, recorded in the Register of Deeds for _____ County, Kansas, in Book _____, at Page _____."

Another way to help ensure that those interested in developing areas of land covered by the Management Plan are aware of the Plan, is for communities within the Corridor to amend all their development applications to highlight the existence of special planning areas in the city or county, including the areas covered by the Corridor Management Plan. This could be handled informally through an internal process established wherein all individuals who request a development application are routinely asked by staff the location of the property that will be the subject of the application to allow the staff member to inform the potential applicant when the area to be developed is included in an area covered by a special area plan. Alternately, it could be handled more formally by inserting a line on all applications with a space to be filled in identifying parcels covered by special plan areas. The latter is the recommended approach, as it avoids reliance on, what could be, revolving staff to ensure that knowledge of the relevance of areas plans is consistently imparted to applicants. That being said, development application forms cannot always be changed immediately, so the informal process may be employed until the opportunity arises to make the formal change.

Entities or persons interested in developing at locations within the Corridor may also become informed of the existence of the Plan as a result of the requisite filing of the Interlocal Cooperation Agreement (entered into among all parties to the Study that resulted in the Corridor Management Plan) in the register of deeds office in the county where that property is located. It should be noted that upon its filing the Interlocal Agreement will not be filed in the grantor/grantee index, so it would typically not show up on a title search. The agreement is filed under the names of the parties to the agreement See Section IV of this Chapter for details on filing of the interlocal agreements. *Jurisdiction: Local*.

3. Notice and Opportunity to Provide Input - Since the Corridor Management Plan is a joint cooperative effort between the Kansas Department of Transportation and communities along the corridor to create a vision for development of that Corridor and provide a guide to development decisions made by each community within that Corridor, all parties with an interest in potential development along the Corridor should be afforded an opportunity to provide input on that decision-making process during the requisite application and consideration procedures utilized by that community. Accordingly, each community should provide KDOT with appropriate notice of any development application (including rezoning and

associated preliminary development plan applications, special or conditional use applications, site plan applications and preliminary plat applications and hearings on an amendment to that community's comprehensive plan), that could reasonably be expected to have the potential to adversely impact the Corridor. In addition, each community should provide KDOT with advance copies of all such proposed plan amendments or development applications and any related staff reports. *Jurisdiction: KDOT/Local*.

4. Notice of Land Marketed for Sale - Success in being able to acquire property necessary for right-of-way for the mainline highway at the earliest time possible is critical to the successful implementation of the Corridor Management Plan. The ability to act quickly when an opportunity arises is key to this success. If KDOT has prompt notice of properties that become available for purchase within areas shown as future right-of-way in the Corridor Management Plan, it will be in a better position to timely coordinate with local governments on the acquisition of necessary rights-of-way. Cities and counties within the Corridor should employ whatever means are available and identify additional means by which they can keep apprised of land purchase opportunities as they arise within the Corridor. *Jurisdiction: KDOT/Local*.

5. Economic Incentive Policy – As discussed below, city and county economic incentives can effectively be focused to increase the amount of revenues they generate to pay for the cost of acquisition of land needed for transportation facilities and for the actual construction of the facilities shown on the Plan, as well as to encourage dedications of land for facility rights-of way. Many cities and counties have adopted policies to guide governing body decisions on when to grant incentives and the level of incentives that will be available. If a community along the Corridor has adopted or is considering the adoption of an economic incentive policy, that policy should be revised or adopted to encourage the use of economic incentives to implement the recommendations of the Corridor Management Plan. *Jurisdiction: Local*.

D. Acquisition Tools

1. Land Acquisition - Public sector entities have the authority to acquire land for public improvements, including state highways and local roads and streets by gift, purchase, or condemnation. (K.S.A. 19-101 et seq., K.S.A. 26-201, et seq., Article 12, Section 5 of the Kansas Constitution, K.S.A. 68-404) Sufficient land may be acquired to accommodate immediate construction needs, as well as for future needs. In appropriate circumstances, public sector entities can acquire interests in land for public improvements in advance of the date of the start of construction. Timely acquisition of necessary rights-of-way preserves opportunities to fully implement the goals of the Corridor Plan and helps reduce the cost of full implementation. The primary objective of all the partners in implementing the Plan must be to continually coordinate with one another to identify opportunities to acquire the interests in land necessary to construct the transportation improvements envisioned by the Plan. Continuing coordination

is critical, but it means nothing if the partners are not equally devoted to cooperation with one another in the identification of traditional and innovative new sources of revenue and in creative partnering on acquisition strategies. *Jurisdiction: KDOT/Local*.

2. Access Acquisition – As discussed in Section II. A below, existing access points that are not consistent with the Corridor Management Plan can often be eliminated though the KDOT's, city's or county's exercise of their police power. For that exercise to be appropriate however, adjacent landowners must be left with "reasonable" access after the inconsistent access point is removed. A private property owner does not have a legal right to direct access to the highway or to a particular local street. It is only required that a reasonable access is available to a property owner through some alternative means, such as access to a frontage or reverse frontage road, in the case of a highway or from some other adjacent street. That being said, situations will arise where this objective of reasonable access cannot be achieved solely though exercise of a public entity's police power. Situations will also exist where it is desirable to eliminate one or more existing access points to a particular parcel to achieve the access management objectives of the Plan, while still leaving that property owner with a point of direct access that is consistent with the Plan. In those, and in other instances, it may be advisable or even necessary to acquire inconsistent points of access through traditional negotiation or condemnation processes. The authority to acquire land referenced in Section I.D.1 above is also the source of KDOT's, cities' and counties' authority to acquire access. Acquisition of access rights can be applied to:
    - limit access to designated locations or side streets;
    - control access and sight distance at intersections or interchanges;
    - introduce long term or permanent access control; and/or
    - control traffic and turning movements at locations where high numbers of conflicting movements occur.

3. Land Dedication and In-Lieu Fees - One of the most, if not the most, critical recommendation of the Corridor Management Plan is that both KDOT and the communities along the Corridor do everything within their power to preserve and acquire the right-of-way necessary to construct the enhancements to the highway mainline and to the adjacent and interfacing local street network. One of the goals of the plan is to maximize economic opportunities for both landowners and communities along the corridor while, at the same time, minimizing development of land at locations of a nature, and of an intensity that impedes the partners' ability to ensure that the mainline highway and the local street network function as envisioned by the Corridor Management Plan. New development that takes place within the corridor, in most instances, will create a need for new transportation network facilities to accommodate the vehicle trips it generates.

Both federal and state law authorize the communities along the corridor to require, as a condition of development approval, that the landowner dedicate rights-of-way needed for network improvements in an amount that is roughly proportionate to the need for facilities generated by that development. A carefully calculated system of fees in lieu of dedication also can be effectively utilized to ensure the timely purchase of sufficient rights-of-way. These in-lieu fees are authorized by K.S.A. 12-749. If each community along the corridor adopts a well-designed, legally defensible right-of-way dedication and/or in-lieu fee program, the significant costs of acquiring the right-of-way contemplated by the Corridor Management Plan can be greatly minimized, thereby helping to ensure successful implementation of the Plan. *Jurisdiction: Local*.

II. Access Management Strategies

KDOT and local communities can undertake access management activities through their "governmental police powers," which is the authority to take action to protect the well-being, safety and health of the public, and through its authority to acquire interests in land. These management strategies can be designed to apply equally to all parts of the transportation network within the Corridor. Alternatively, access management tools and regulations can be imposed as an overlay district and don't have to be city or county-wide, but can be tailored to accomplish specific objectives in defined areas. A component of access management is known as regulation of traffic flow. Regulation of traffic flow could include several actions listed in the access management tools described below or be as simple as prohibiting left turns, prescribing one-way traffic, or restricting speed. Managing access is complicated and requires careful consideration, but it can be done while still allowing the property owner reasonable access to their property and to the surrounding street network. It is important to understand the differences between access (connection with surrounding roadways) and routing (direction of flows between properties and surrounding roadways).

The following are several action steps the Corridor partners can take in the area of access management to help assure successful implementation of this Management Plan.

A. Closing of Access

While the ultimate objective of conversion of an existing route to an access controlled facility generally may not be realized immediately, KDOT and the communities need to constantly be looking for and acting on opportunities to eliminate access at locations other than those interchanges and access locations designated in the Plan. Access management is necessary to protect safety for the motoring public and the operational efficiency of the Corridor. Effective access management also protects public investments and facilitates the continued economic vitality of the corridor. In contrast, uncontrolled access, generally impedes development and produces high costs when and if retrofits are needed. *Jurisdiction: KDOT/Local*.

B. Approval of Access

As stated above, the authority to allow access to a state highway or city connecting links is vested in KDOT. See The Kansas Department of Transportation Corridor Management Policy, http://www.ksdot.org:9080/BurTrafficEng/cmpworking/Index.asp. A request for access is approved and controlled through issuance of a Highway Permit. The Permit is the legal document that establishes the relationship between the landowner and KDOT. All points of access to the state highway system must be the subject of a Highway Permit. This includes when access connections or local streets and intersections are installed, relocated, improved, removed, or replaced on or along state highway system right-of-way. The permit will specify such things as the location of the point of access, issues related to the construction of the access, type of use allowed at the access point and other conditions and limitations of access at that point. The KDOT District Engineer has been delegated the authority to approve Highway Permits. A request for a Highway Permit must be made with the appropriate KDOT Area Office.

With respect to access to local streets within the Corridor, the authority to approve that access is vested in either the city or county that has jurisdiction at the requested location. This authority is derived from the government's inherent police power. The actual procedure for obtaining access will vary from community to community. Some communities may have adopted an access management policy that governs the location and other aspects of access to the public streets and road. In other instances, regulations governing access points may be located in the community's zoning district regulations or its subdivision regulations. Provisions on access should be included in any overlay district created for an area within the Corridor. On City Connecting Links, a Highway Permit must be obtained for work in the right-of-way. Executed copies of the permit, approved by KDOT and the city or county will be provided to the property owner.

C. Input to KDOT on Access/ Coordination of Access Management

Because of the importance of access management on the mainline highway, and on the road and street network within the Corridor, and because the authority to permit and close access to the state highway system and its connecting links is vested exclusively in KDOT, (K.S.A. 68-413 and K.S.A. 68-404(a)), it is critical that communities along the Corridor confer with KDOT respecting development applications that propose access points on the mainline highway and on portions of the local street network that are included in the Corridor Management Plan, particularly if that access is not consistent with points shown on the Corridor Management Plan as future points of access. *Jurisdiction: KDOT/Local*.

D. Coordination with KDOT

The Corridor Management Plan identifies existing access points on the highway that should be closed over time, as appropriate circumstances present themselves, to achieve access management objectives. Accordingly, each community along the Corridor should cooperate with KDOT in identifying existing access points along the mainline and in closing those points, where doing so, will implement the access management goals of the Corridor Management Plan. Each local government partner should establish points of contact with KDOT to facilitate the ability to quickly capitalize on opportunities as they arise. Early coordination with KDOT at the site plan and preliminary plat stages is important. *Jurisdiction: KDOT/Local*.

E. Shared Access

One meaningful way to help ensure that all property owners are afforded reasonable access to the mainline and to the local street network consistent with the full functionality of that network, is to encourage that joint access to that network by adjacent property owners be utilized to the maximum extent possible. Therefore, communities, when reviewing development applications should consider, as a condition of approval of that application, the grant of a recorded easement by the applicant to adjoining property owners or such other conditions as are appropriate to further the Corridor access management objectives. *Jurisdiction: Local*.

A list of common access management tools is provided below. Each tool is illustrated in the Table that follows.

Access Management Tools:

1. Close median breaks
2. Consolidate mainline driveways
3. Eliminate mainline driveways/side road access
4. Eliminate public road connections to mainline, reconnect to frontage roads
5. Eliminate private driveways, reconnect to frontage roads
6. Intersection consolidation
7. Convert major intersections to interchanges
8. Advanced right-of-way acquisition
9. Interim intersection upgrades (traffic signals, turn-lanes and acceleration lanes)

Tool	Description	Jurisdiction	Implementation and Compensation Requirements
Close Mainline Median Breaks	Eliminate existing median breaks to prohibit left turns to/from mainline and abutting properties.	KDOT	Administrative action under police power to regulate traffic flow. No private property right exists in traffic flow (turning movements) and therefore no compensation due abutting property owners.
Consolidate Private Driveways	Eliminate redundant driveway connections to mainline into single driveway connection, either within an individual tract or at property line of contiguous tracts.	KDOT/LOCAL	If "reasonable" access to the property will remain after consolidation, consolidation can potentially be accomplished by KDOT regulation of driveway permits under police power without payment of compensation to affected property owners. More typically, existing access control breaks allowing private driveways to mainline are acquired through traditional negotiation or condemnation processes. If abutting property owner submits a re-zoning or development proposal to local government, driveway locations are subject to regulation under zoning authority without payment of compensation as condition of zoning or development plan approval.
Eliminate Private Driveways/ Side-Road Access	Where property owner has frontage on both mainline and side-road, eliminate mainline driveway and restrict access to side-road.	KDOT/LOCAL	If "reasonable" access to the property will remain after consolidation, elimination can potentially be accomplished by KDOT regulation of driveway permits under police power without payment of compensation to affected property owners. More typically, existing access control breaks allowing private driveways to mainline are acquired through traditional negotiation or condemnation processes. If abutting property owner submits a re-zoning or development proposal to local government, driveway locations are subject to regulation under zoning authority without payment of compensation as condition of zoning or development plan approval.
Eliminate Public Road Connections to Mainline, Re-Connect to Frontage Road	Where local roads connect to mainline at locations other than mile roads, eliminate connection between mainline and local cross-road, re-connecting cross-road to newly installed frontage or reverse frontage road.	KDOT/LOCAL	KDOT may regulate location where public roads connect to mainline under general statutory authority to establish and maintain state system and its police power. No public "property right" in location where local roads connect to mainline. Therefore, local governments cannot enjoin closure of mainline connections nor can abutting property owners seek compensation for resulting re-routing along local roads to mainline. More typically, KDOT and local governments will jointly undertake coordinated road improvement projects pursuant to their respective general statutory powers to establish and maintain public roadways. Such a project would include closing cross-road intersections with mainline and reconnecting cross-roads to frontage or reverse-frontage roads which connect to mile-roads and mainline interchanges. If abutting property owner submits a re-zoning or development proposal to local government, location of abutting public or private streets are subject to regulation under zoning authority without payment of compensation as condition of zoning or development plan approval.
Eliminate Private Driveways, Re-Connect to Frontage Road	Where private driveways connect directly to mainline, eliminate private driveways and re-connect to newly installed frontage or reverse road.	KDOT/LOCAL	Acquire existing access control breaks through negotiation or condemnation, stipulating property remaining will be connected to a newly installed frontage or reverse frontage road. If abutting property owner submits a re-zoning or development proposal to local government, driveway locations are subject to regulation under zoning authority without payment of compensation as condition of zoning or development plan approval.

Tool	Description	Jurisdiction	Implementation and Compensation Requirements
Intersection Consolidation	Consolidate redundant, at-grade local road intersections into single intersection by establishing local road network to facilitate connection to single remaining at-grade intersection.	KDOT/LOCAL	KDOT may regulate location where public roads connect to mainline under general statutory authority to establish and maintain state system and its police power. No public "property right" in location where local roads connect to mainline. Therefore, local governments cannot enjoin closure of mainline connections nor can abutting property owners seek compensation for resulting re-routing along local roads to mainline. More typically, KDOT and local governments will jointly undertake coordinated road improvement projects pursuant to their respective general statutory powers to establish and maintain public roadways. Such a project would include consolidating redundant, at-grade local road intersections with local road network to facilitate connection to single remaining at-grade intersection. If abutting property owner submits a re-zoning or development proposal to local government, intersection location is subject to regulation under zoning authority without payment of compensation as condition of zoning or development plan approval.
Interchanges at Major Roads	Replace major road at-grade intersections with grade-separated interchanges	KDOT	KDOT may install interchanges under general statutory authority to establish and maintain state system. Acquire necessary right of way through traditional negotiation and condemnation processes.
Advance ROW Acquisition	Identify and prioritize critical parcels most vulnerable to development or other market forces.	KDOT/LOCAL	After identifying and prioritizing critical parcels most vulnerable to development or other market forces which would make acquisition at time of future project physically impossible or unnecessarily expensive. KDOT or local government may acquire necessary right of way as funding is available through traditional negotiation and condemnation processes.
Interim Intersection Upgrades	Identify at-grade intersections where traffic volumes or accident rates require interim improvement until the corridor is complete.	KDOT/LOCAL	KDOT may authorize interim intersection improvements including traffic signals, turn-lanes and acceleration/deceleration lanes under general statutory authority to establish and maintain state system. Though KDOT must ultimately authorize these upgrades, the evaluations undertaken to determine if they are warranted, their timing, their nature and the source of funding for the upgrades is often initiated by local governments. It is also common for these upgrades to be provided, in whole or in part, by private landowner as a part of an exaction negotiated during the development approval process, based on the extent to which the demand for the upgrade is generated by the proposed development.

III. Financing Strategies

The Corridor Management Plan has been developed to maximize economic opportunity and to provide a fully functional highway and street network for property owners within the Corridor. The full costs of the improvements to the mainline highway and adjacent street network necessary to achieve these Plan objectives are significant. Monies needed to complete these enhancements may not be available from KDOT or from the local communities within the Corridor when the enhancements are needed. Therefore,

- identifying all existing financing tools, both the traditional and the alternative tools;
- creatively analyzing how these tools can best be utilized individually and in concert with one another to maximize resources;
- investigating possibilities for new options using home rule and delegated powers;
- pursuing federal and state statutory and regulatory amendments to eliminate funding obstacles and provide new approaches; and
- pursuing new legislative authority for innovative funding approaches

all are all critical to the successful implementation of the Management Plan.

To achieve this sought-after success, it is imperative that all Corridor partners carefully and constantly coordinate with one another to identify potential sources of funds and work diligently, once sources are identified, to make certain that available funds are utilized in the most effective and efficient way to the benefit of all parties to this endeavor.

That having been said, there is a wide array of financing options available to cities and counties to finance infrastructure improvements. Notably, many of these same financing options can be used as economic incentives to encourage development to occur at a certain location, in a certain form, and/or in specified densities or intensities. These financing options include the traditional mechanisms used by cities and counties to raise revenues and to pay for both the capital and operational expenses of government and other alternative financing strategies.

A. <u>Traditional Funding</u>

Traditional funding mechanisms include federal and state funds, real and personal property taxation (Article 12, Section 5 of the Kansas Constitution, K.S.A. 19-101 et seq. and K.S.A. 79-1801 et seq.), sales taxation (K.S.A. 12-187 et seq.), economic development tax exemptions (Article 11, Section 13, Kansas Constitution), special assessments (K.S.A. 12-6a01 et seq., and K.S.A. 12-601), and the Main Trafficway Act (K.S.A. 12-685). The latter two are both discussed in some detail immediately below.

1. K.S.A 12-6a Improvement Districts - Improvement Districts are the Kansas form or a traditional benefit district; a financing and development tool whereby cities and counties can establish a district, construct improvements and then issue general obligation bonds for construction of public improvements and assess the cost to those properties that are specifically benefited by the improvement. The bonds are then retired through payment of special assessments that are paid along with the benefited property owner's ad valorem property taxes by these benefiting properties. There is a very specific statutory process that must be followed to effectively utilize this strategy.

   Improvement Districts are used by the city and county to assist in development of arterial roadways (usually associated with section line roads), water lines and sanitary sewers, among other public improvements. It is a responsible and fair method available to communities in Kansas to pay for the roads and infrastructure associated with new development, though its use is not limited to improvements to support only new development. For example it is often used as the financing mechanism for the construction of new sidewalks in existing developments. However, the method can be effectively used to ensure existing property owners do not pay for improvements from which they do not receive a special benefit.

   With the number of roadway, sanitary sewers and water line improvements throughout a community, if the community did not utilize improvement districts, either the improvements would not be made or property owner's ad valorem property taxes would need to be raised to allow for the construction of these necessary improvements. Developers have the option to build the improvements in front of their land to meet city specifications, but in so doing, a hodge-podge of improvements would occur, and the improvements could be under construction at different times and cause much more disruption than the orderly process afforded by the creation and administration of Improvement Districts.

2. Main Trafficways – K.S.A. 12-685 *et seq*. authorizes cities to designate by ordinance any existing or proposed street, boulevard, avenue or part thereof, within its jurisdictional boundaries as a main trafficway, if the primary function of the street is the movement of traffic between areas of concentrated activity within or outside the city. Once designated a main trafficway, the city is authorized to acquire by purchase or condemnation the land necessary for that facility and to improve or reimprove that trafficway. Virtually all aspects of the construction of these trafficways is authorized, including bridges, viaducts, overpasses, underpasses, culverts and drainage, trafficway illumination, traffic control devices and pedestrian ways. The cost for these improvements, including acquisition, can be paid for from the cities general improvement fund, internal improvement fund or any other available funds or by the issuance of general obligation bonds. No vote of the public is required for issuance of bonds for these purposes.

This method is often used in conjunction with the improvement district statute for street improvements.

All of these financing mechanisms are available to fund improvements contemplated by the Corridor Management Plan and their use, as the situation dictates, should not be ignored.

Because the traditional mechanisms are regularly utilized by KDOT, cities and counties to pay for capital projects, they will not be discussed in further detail in this Chapter; rather this portion of this Chapter is devoted to an explanation of several of the less-traditional mechanisms available to cities and counties to pay for improvements contemplated by the Plan and to incent Corridor development that is consistent with the Plan's recommendations.

Although not actually a source of additional revenue, the bonding authority of cities and counties is worthy of mention. Each is authorized to issue long-term debt to finance projects, with that debt to be repaid from a variety of traditional and some alternative revenue sources. Bonding authority is important for many reasons, but one key advantage of issuing bonds to finance public improvements is that it allows the issuing entity to pay for an improvement up front (before total project costs are available in hand) to get a project started or even completed in those instances where timing is critical in terms of events in the community and/or to take advantage of favorable financial markets. These improvements can then be paid for over time, generally up to 20 years, as tax revenues or other dedicated sources become available. This can be a huge advantage and can help the partners in their efforts to acquire land for and make the improvements contemplated by the Plan when actual situations in the Corridor dictate those actions occur.

Cities and counties are authorized to issue general obligation bonds payable from a general tax levy on all taxable property within the city (K.S.A. 10-101 et seq.). These GO Bonds are backed by the full faith and credit of the issuing entity. As an alternate, the city may issue revenue bonds (K.S.A. 10-1201 et seq.). Revenue bonds are repaid from a pledge of the revenue from a specified income-generating facility or source. Revenue bonds are not guaranteed by the full faith and credit of the issuer. A city may issue special assessment bonds to be repaid, in whole or in part, from the revenues received from special assessments imposed on properties that are specially benefited by the improvement(s) constructed within an assessment district (K.S.A. 12-615). Special assessment bonds are actually general obligations of the issuer, which, in addition to the pledge of the revenues from the special assessment, are backed by the full faith and credit of the city. The final category of traditional municipal bonds is special obligation bonds. These are bonds issued under the authority of Kansas statute, specifically, K.S.A. 12-1770 et seq. and 12-17, 160, et seq., to finance the undertaking of redevelopment projects. These bonds are payable from incremental property tax increases resulting from the redevelopment in an established redevelopment district, a pledge of a portion of the revenues received by the issuer from transient guest, sales and use taxes collected from taxpayers

doing business in a redevelopment district, franchise fees, private, state or federal assistance or any combination thereof.

B. Alternative Funding Mechanisms

Most alternative funding techniques are devised by one local government to meet a local need and their use than spreads from community to community. The techniques are refined based on trial-and-error. Many of these approaches do not have specific legislative authority, but are enabled through home rule, local police powers, or a broad reading of authority from another source, such as local planning.

State highway, road and street projects required to support new development, may be constructed utilizing economic incentives, such as tax increment financing, Star Bonds, sales tax reimbursement agreements, tax abatement, special assessment districts and transportation development districts, to name only several of the options. It is important that, wherever possible, local communities along the Corridor be cognizant of their ability to require that revenues from the grant of these incentives to developers be used to offset the cost of the construction of mainline highway improvements and related improvements to the local street network, as shown on the Corridor Management Plan. But, even more importantly, they must actually make the grant of these incentives conditional on a reasonable portion of these monies being used to pay the cost of Corridor Management Plan identified improvements.

These incentives also can be effectively used to influence the location, type/uses, form, architectural quality, configuration and density/intensity of development. It is important to utilize these incentives, not only to offset traditional public costs for these facilities, but also as incentives to shape development proposals, so they further Plan recommendations and achieve quality design and sustainable development in the Corridor.

1. Impact Fees - Impact fees are one-time regulatory fees assessed against new development to cover the costs for necessary capital facilities proportionate to the demand generated by the new development. The fee is imposed by a public sector entity on development activity as a condition of granting development approval, and generally is calculated at the platting stage and collected at the time a building permit is issued. Kansas has no impact fee statutory authority. Nevertheless, cities and counties can establish a system of impact fees using their home rule authority. This system of fees requires the development of a local legislative adopted scheme that includes the calculation methodology for the fee, and a system of credits, exemptions and appeals. The system would be adopted by ordinance or resolution, as the case would require. Impact fees must be used to add capacity attributable to new development;

they cannot be used to pay for improvements necessitated by existing development. An impact fee must meet three requirements:

- The new facilities are a consequence of new development;
- There must be a proportionate relationship between the fee and the infrastructure demand; and
- The funds collected must be used to provide a substantial benefit to the new development.

In Kansas, impact fees may be collected either across the entire jurisdiction or in a designated geographic area. While they may be assessed at platting, impact fees are typically collected upon building permit issuance. A detailed calculation is necessary to ensure that the system, and particularly the fee charged property owners, is proportionate to the demand for new facilities that each unit of new development generates, i.e., its impact, in terms of facility capacity consumed. In funding transportation network facility improvements, the measuring stick for each development's impacts is the number of vehicle trips it will generate. Since streets are generally designed to accommodate the PM Peak trips, that is generally the time interval used.

The Kansas Supreme Court has recognized the legitimate use of impact fees in McCarthy v. City of Leawood.[1] In that case, the City of Leawood assessed the payment of impact fees on the issuance of building permits and plat approvals for properties within the K-150 (135th Street) Corridor. The purpose of the fee was to finance a portion of the improvements of K-150. Back when first established in 1988, the fee was calculated based upon trip generation, at a rate of $26.45 per trip. This rate was then multiplied by the average number of trips generated by a use to determine the individual fee. For example, residential uses were projected to generate 10 trips per day, multiplied by $26.45 for a fee of $264.50 per unit. *Jurisdiction: Local*.

2. Excise Tax - Technically, an excise tax is a broad term that covers every type of tax, except a property tax. As with all taxes, it is a method of raising revenue. It is distinguished by the fact that rather than being based on the value of property, it is levied on a certain activity or the exercise of a privilege – more accurately described as business done, income received, or privilege enjoyed. Typical examples of excise taxes include taxes on the purchase of gasoline, alcohol or cigarettes, business license taxes and on the rental of hotel rooms. In recent past, local governments in Kansas have innovatively used an excise tax to fund transportation network improvements that are required to support development. It is structured as a tax on

[1] 257 Kan. 566, 894 P.2d 836 (1995).

activity of platting lots. The rate of the tax is based on the amount of square footage proposed to be constructed or on the number of vehicle trips the proposed development will generate on the street network. The key reason for its use has been that because it is a tax and not a regulatory fee, the rate is not required to satisfy the constitutional benefit or nexus requirements of regulatory fees imposed by local governments, such as impact fees discussed above. Kansas courts had upheld this financing approach.

In 2006, however, the Kansas Legislature amended K.S.A. 12-194 to make it uniformly applicable to all cities. By doing so, this provision became no longer subject to a charter ordinance or resolution whereby cities and counties could make its provisions inapplicable to that city or county and adopt supplemental provisions on the subject. This charter approach was the one that cities and had used to eliminate the legal impediment in K.S.A. 12-194 and use their ordinary home rule power to establish an excise tax system of this type. It had become known as a "development excise tax." That amendment, in addition to precluding local governments that did not have a development excise tax in place from adopting one, also included a provision that prevented cities and counties that had levied or imposed a development excise from increasing the rate of the tax without a majority vote of the electors, after July 1, 2006. Accordingly, this technique is only available to local governments that had a development excise tax in place before that date, and those that did have one in place cannot increase the rate charged without a vote. *Jurisdiction: Local*.

3. Transportation Development Districts - A Transportation Development District (TDD) (K.S.A. 12-17,140 at seq.) is a form of a special district enacted specifically to facilitate the construction, maintenance and financing of a broad array of transportation projects, ranging from streets, roads, highway access roads, interchanges and bridges to light rail and mass transit facilities. Most improvements related thereto, such as streetscape, utility relocations and other necessary associated infrastructure, can also be funded using this technique. While a regular special district can be used to address transportation issues, transportation development districts allow greater funding flexibility, including authority to impose a transportation development district sales tax of up to 1% (K.S.A. 12-17,145), in addition to the authority to levy special assessments. If a transportation development district is sought to be imposed, the governing body must hold a duly noticed public hearing in advance of adopting the resolution or ordinance creating the district and approving the method of financing projects within the district. The district may issue bonds backed by the revenues received from properties in the district from the imposed sales tax or special assessment.

   One significant difficulty in utilizing this mechanism for improvements covering a larger area is that the district can only be formed through a petition signed by owners of all of the land area within the proposed district. So, if the improvement is adjacent to lands owned by different

owners, it may be difficult to obtain the consent of all necessary owners. It may have its greatest utility for distinct segments of the improvements proposed by the Management Plan, such as mainline highway interchanges and access roads located within one tract of land that is designated in the Plan for more dense or intense development. This technique can also be used effectively to assist in the financing of key portions of the adjacent local street network. The statutory scheme allows for a good deal of flexibility in how the boundaries of the district are established, so long as all included property owners agree. For that reason, the community partners should keep this tool on the list of the ones that should be considered for funding, particularly in those instances where a property owner or several property owners want to develop an area of land at an access point with sales tax generating properties. *Jurisdiction: Local*.

4. Transportation Utility Fee - A transportation utility fee is a fee collected on residences and businesses within a city's or county's corporate limits tied to the use and consumption of the transportation system. While this approach has only recently been applied to transportation services, utility charges have been used for years "to finance not only public water and wastewater systems but also such diverse facilities and services as electricity, telephone or telegraph services, gas, and a cotton gin."[2] There are a number of benefits to TUFs:

> Utility rates and fees provide a steady revenue stream that may be used for maintenance and operations costs, as well as facilities construction and are not required to meet the direct benefit test applicable to special assessments. Also, utility charges are generally not subject to voter approval, as are many taxes.[3]

And perhaps most applicable to the current circumstances, "[t]he development of a transportation utility is a particularly attractive option in states with strong home rule powers, such as Colorado, Florida, and California."[4]

Utility fees are collected from all development, both existing and new (as it "hooks-in" to the existing system). Charges are based on usage estimates of trips by land use and project budgets. The transportation utility fee is typically included on an existing county or utility collected tax or rate bill.

The uses to which revenues from a utility can be used are limited only by the restrictions placed on their use in the home rule authority. Generally, however, the revenues would be placed into

[2] 64 Am. Jur.2d Public Utilities § 1 (1972) (cited in Susan Schoettle & David Richardson, Nontraditional Uses of the Utility Concept to Fund Public Facilities, 25 URB. LAW. 519 (1993).
[3] *Id*. at 525.
[4] *Id*.

a separate fund and earmarked or dedicated to the purposes stated in the enabling authority and to no other purpose.

There is no specific legislative authority for transportation utility fees in Kansas. Local governments will need to look to home rule to authorize this financing mechanism. The key to the successful employment of this technique is crafting an ordinary ordinance or resolution that establishes a system of charges that will not be found to be a "tax," while at the same time ensuring that the ordinance or resolution is not in conflict with existing state statutes, such as, by example, K.S.A. 12-6a01 et seq., authorizing special assessment districts.

In the leading case on transportation utility fees, *Bloom v. City of Fort Collins*[5], the Colorado Supreme Court reached the following conclusion:

> We hold that a transportation utility fee is not a property tax but rather is a special fee imposed upon owners or occupants of developed lots fronting city streets and that such fee . . . is reasonably related to the expenses incurred by the city in carrying out its legitimate goal of maintaining an effective network of city streets.

The Fort Collins transportation utility fee was adopted to address maintenance issues. Nothing, however, would prohibit the utility fee from being designed to fund construction-related costs. The Fort Collins fee was calculated based on: "the amount of frontage in linear feet that each lot or parcel has on the right-of-way of an accepted street; the base rate maintenance cost of each foot of frontage; and the developed use of the property (which includes the amount of vehicular traffic generated by the property)".[6] The fee was billed monthly. The Colorado Supreme Court found that the transportation utility fee qualified as a fee and not a direct tax. "Unlike a tax, a special fee is not designed to raise revenues to defray the general expenses of government, but rather is a charge imposed upon persons or property for the purpose of defraying the cost of a particular governmental service."

Although this technique has a lot of potential as a viable alternative funding strategy, careful coordination with legal counsel will be necessary to ensure the precise structure developed is legally defensible. *Jurisdiction: Local*.

5. Tax Increment Financing - Tax increment financing (K.S.A. 12-1770 et seq.) is a tool used by local governments to capture the future increases in property tax and all or a portion of the revenues received from transient guest, use, local sales taxes collected from taxpayers doing business within the district, and increased franchise fees, and to make revenues realized therefrom

[5] 784 P.2d 304, 305 (Colo. 1989).
[6] *Id*. at 306.

available as an incentive to development, by using the revenue to pay for, generally, public infrastructure necessary to implement a redevelopment project plan (K.S.A. 12-1770a (o)). Project costs may not include costs related to a structure to be owned by or leased to a developer.

TIF funding can provide funds either as collected (pay-as-you-go) or through special obligation tax increment bonds repaid over twenty years.

While there is specific enabling authority for the use of TIF, it is limited to "eligible" areas that fall within one of the following categories and the boundaries of which are designated by the local government as a redevelopment district:

- blighted;
- blighted and in a 100-year flood-plain;
- intermodal transportation area;
- major commercial entertainment and tourism area Conservation (becoming blighted);
- major tourism area;
- historic theater;
- enterprise zone, or
- environmentally contaminated area.

Therefore, not all property within a local government's jurisdictional boundaries may qualify to be included in a redevelopment area.

Eligible project costs most certainly will include all transportation network public infrastructure identified in the Corridor Management Plan. *Jurisdiction: Local*.

6. Sales Tax and Revenue Bond Districts - This mechanism (K.S.A. 12-17, 160 et seq.) is the big brother/sister of tax increment financing. It's "Super TIF," if you will. The entire mechanism works almost exactly like tax increment financing, except the districts are called STAR bond project districts and the individual projects in the district are called STAR bond projects. Each project must be approved by the Secretary of Commerce and include at least a $50,000,000 of capital investment and evidence $50,000,000 in project gross annual sales or, if outside a MSA, met the requirements of K.S.A 12-17,162 (w). It is the heightened level of incentives authorized in these districts that is key. Once a district is established and a project plan is approved, the approving city may issue special obligation bonds. Importantly, those bonds may be repaid from the portion of the city and county sales and use tax collected from taxpayers within the city portion of the district AND the sales tax increment revenues received from any state sales taxes collected from taxpayers in that district. This is in addition to the property tax increment and

local sales, use and franchise fee that can be pledged to repayment of the special obligation bonds issued in a traditional tax increment financing project. The Secretary can set a limit on the amount of bonds that may be issued to pay eligible project costs.

7. Community Improvement Districts – K.S.A 12-6a26, et seq., authorize cities and counties to establish community improvement districts. These districts, like the other financing strategies discussed in this Section, can be used effectively to finance improvements and services contemplated by the Corridor Management Plan. The array of projects that may be financed in a district is very broad. It includes:

    - structures and facilities:
    - streets, roads, interchanges, highway access roads, intersections, bridges, over and underpasses, traffic signs and signals, pedestrian amenities, drainage, water, storm and sewer systems and other site improvements;
    - parking lots and garages;
    - streetscapes and lighting;
    - parks and landscape;
    - art and cultural amenities;
    - airports, railroad and mass transit;
    - lakes, wharfs, ports and levies;
    - contracts for music, news, childcare, transportation;
    - security;
    - promotion of tourism and cultural activities;
    - promotion of business activity or economic development;
    - personnel training programs; and
    - impact, marketing and planning studies.

    These projects may be funded with:

    - installment or front-end paid special assessments (levied in accordance with Chapter 12-6a01 discussed above, except no city at large levy is allowed);
    - a community improvement district retailer's sales tax in an amount not to exceed 2% (must sunset in 22 years if the project is financed with sales tax revenues as they are received [pay-as-you-go] or when the bonds are retired, if the revenues from a sales tax are pledged for that purpose);
    - ad valorem taxes;
    - other funds appropriated by the city or county.

Special obligation and full faith and credit bonds may be issued to facilitate the financing of a project; provided that, if a petition signed by 5% of the qualified voters of the city or county is filed with the clerk within 60 days of the public hearing held on the establishment of the district, no bonds may be issued unless and until approved by a majority of the voters voting at that election. The amount of any full faith and credit bonds issued that exceeds 3% of the assessed value of the issuing city or county shall be considered to be within that community's bonded debt limit.

Costs that can be paid for with revenues generated from sources above include: preliminary reports, plans and specifications; publication and ordinance or resolution preparation costs; necessary fees of consultants; bond issuance and interest costs; plus not to exceed 5% of total project cost for administration and supervision of the project by the city or county.
The process to establish a district with respect to which project costs both will be paid for only with special assessments and which is not seeking to issue full faith and credit bonds must be initiated by the filing of a petition signed by the owners of all the land area within the proposed district. Once the petition is filed, the governing body may proceed without notice or hearing to make findings by resolution or ordinance on the nature, advisability, estimated cost of the project, its boundaries, and the amount and method of assessment. Once these findings are made, the governing body, by majority vote, may by ordinance or resolution, authorize that project. All properties that are benefitted by the project(s) need not be included in the district.

On the other hand, the process to establish a district funded in any other authorized manner, may be initiated by the filing of a petition signed by landowners owning more than 55% of the land area AND by owners owning more than 55% of the assessed value of the land within the proposed district. In this instance, once a petition is filed, a resolution providing notice of a public hearing on the advisability of creating the district must be adopted The resolution must be published as required by this enactment and certified mail notice to all owners provided. Upon the completion of the hearing, the governing body may create the district, approve the estimated cost of the project and the legal description of the district boundaries, contain a map, levy the sales tax, approve the maximum amount and method of the assessment, if applicable and approve the method of financing, including the issuance of full faith and credit bonds, if applicable.

The contents of the petition in each of the above circumstances is also set forth in the enactment.

8. General Contract Authority – It is important to recognize that local governments have significant powers pursuant to the Constitutional home rule amendment and Chapter 19 of the

Kansas Statutes. These powers include all powers of local legislation and administration that they deem appropriate, with really only minor exceptions. This Chapter extensively discusses state, county and city powers, such as the power to regulate through exercise of the police power, the power to zone, the power to tax, the power to charge fees, the power to impose special assessments and the power to purchase, hold, sell and convey land, including exercise of the power of eminent domain . The one power that really hasn't yet received that much analysis is the power to contract. It would be a mistake not to also highlight this power which all the parties share. In addition to finding the source of the power to contract in the home rule provisions, K.S.A.12-101 contains a specific statutory delegation of power to cities to contract. K.S.A. 19-101 contains a similar grant to counties; and, among others, K.S.A. 75-5004 vests power to contract in the KDOT's Secretary of Transportation.

The limits on the power of the participants to the preparation of this Plan to contract are minimal. The two major limitations are: (1) whether the contract is within the scope of the delegated power: and (2) whether it is entered into and executed in accordance with statutory requirements. As to the first limitation, since the delegation in each instance is along the lines of "to make contracts in relation to the property and concerns of the city and necessary to the exercise of its corporate powers, " as is readily apparent, the power to contract is quite broad. Generally, it is only limited by whether the contract is in conflict with statute or the constitution. A contract that violates the first limitation is *ultra vires* and void. For example, a contract that violates the Cash-Basis Law (K.S.A. 10-11-1 *et seq*.) because it obligated the public entity to pay monies that are not budgeted and encumbered is completely void. Legally, it is as if it never existed.

It goes without saying that monies paid pursuant to a contractual obligation, like any other payment of monies by a public entity, must be for a public purpose. Courts, however, are clear on the broad scope of what constitutes a public purpose. Courts will presume that facts declared in support of a legislative determination of public purpose to be true and adequate. A good rule is that a public entity is permitted to enter into all contracts that are reasonable and proper and which are reasonably necessary to allow it to fully perform the functions expressly conferred on it, as well as those that are essential to enable it to perform the duties of government for the benefit of its citizens.

The other main limitation on the contract power of which public entities should be wary is the prohibition on contractually bargaining away its duty to make reasonable laws and exercise their other legislative powers whenever doing so is necessary to preserve or protect the public health, safely and general welfare. As an example, a public entity could not agree by contract to approve a rezoning or impose or not impose some tax or fee at some later point in time

The beauty of the contracting power is that it is so comparatively unfettered by limitation, particularly by those of the constitutional variety, such as the 5th Amendment's constraints on exercise of the zoning and police power to require the dedication of land as a condition. As noted above, for good and valid reasons, any dedication of land required in that instance must be roughly proportionate, in its nature and in its extent, to the impacts created by development. (See Sec. I.D.3)

In situations where the public entity is exercising its contract power, the parties are negotiating their own contractual duties and obligations. Ostensively, the ultimate objective of both parties is to achieve a win-win situation, where both receive the benefit of the bargain struck. The traditional elements of a contract must exist for the agreement to be binding, of course. There must be an offer, acceptance of the offer, mutuality and delivery. As an example of use of the contract power to implement the Plan, an entity or individual contracting with a community within the Corridor may be willing to agree to convey more land than the community could legally require them to dedicate when exercising its police or zoning power. So, there may well be benefits the community can and is willing to provide to a developer that are more valuable to them than retaining that portion of the land which exceeds what "rough proportionality" would allow the community to require, as a part of the development approval process. Based on the mutual interests of both parties, a deal can be struck that helps implement the Plan , while at the same time enhancing the developer's business objectives. The fact that a contracting party voluntarily agrees to an obligation to which it could not be required to commit as a part of the development application process does not make the contractual obligation illegal.

The opportunities to utilize public entity contract powers to help implement this Plan are numerous and should not be ignored. In fact, each community along the Corridor and KDOT should be ever vigilant about identifying situations where this power can be used beneficially.

Virtually every time public incentives are provided to a developer, a contract is employed to memorialize the duties and obligations of the parties. The recipient of the incentives will expect that it will be asked to provide benefits to the community in exchange for being provided development incentives. There is no absolute right to develop land. Each party to the contract, however, must receive compensation (mutuality). Communities should be constantly watchful for opportunities to negotiate for the inclusion of provisions into agreements with developers and landowners along the Corridor that obligate them to take whichever appropriate actions they may be able to take to help implement this Corridor Management Plan.

IV. Interlocal Cooperation

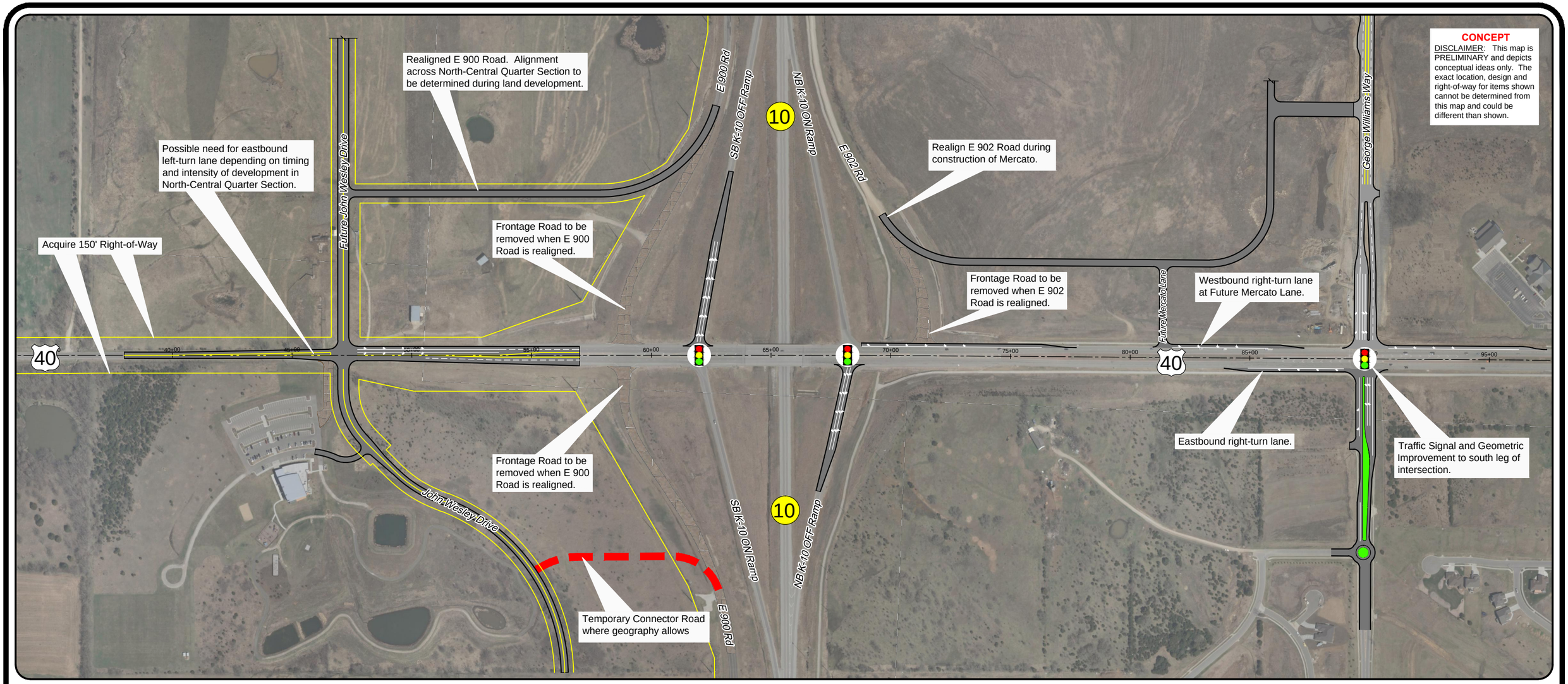
Through the exercise of home rule, by entering into an interlocal cooperation agreement, pursuant to K.S.A. 12-2901 et seq., and by utilizing powers granted to cities and counties by Kansas statutes, significant opportunities exist for cities and counties to cooperate with each other in the creation of corridor-wide financing strategies for the mainline highway enhancements and city connectors and local road projects within the corridor. There is potential for such cooperation in the use of both the traditional and the alternative financing mechanisms described above.

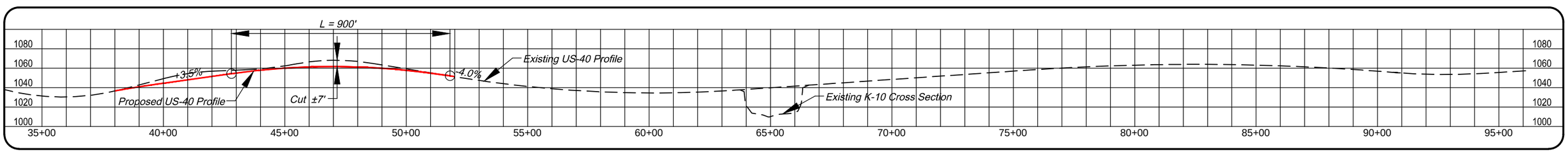
K.S.A. 12-2901 et seq. authorizes all public agencies of the state (including KDOT) to jointly cooperate in the exercise of any power, or privileges, or authority exercised or capable of exercise by such agency, including economic development and public improvements, pursuant to an agreement in the form therein provided. See also, K.S.A. 75-5023.

K.S.A 12-2904 (f) dictates that each interlocal agreement, prior to it taking effect, shall be submitted to the attorney general for a determination of whether or not the agreement is in proper form and compatible with the laws of the state. The Office of the Attorney General has made this determination on other interlocal agreements related to implementation of Corridor Management Plans, so obtaining approval of interlocal agreements, which are based on the KDOT approved template Interlocal Cooperation Agreement, is not daunting.

In addition, K.S.A. 12-2905 requires that, also prior to the interlocal agreement taking effect, it be filed with the register of deeds of every county in which each political subdivision or agency of the state that is a signator to the agreement is located. The agreement also must be filed with the Office of Secretary of State.

Wherever possible, these opportunities should be investigated by KDOT and each local community to ascertain if a multi-jurisdictional approach will be beneficial to all parties, by providing better opportunities to successfully implement the goals of the Management Plan. Jurisdiction: KDOT/Local.





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Not to Scale

Future Right-of-Way west of K-10 (approx.)

Future US-40 Profile

Traffic Signal Controlled Intersection

Exhibit 6.1: Short Term Needs

AREA TRANSPORTATION PLAN

US-40/West 6th Street and K-10 Interchange

Kansas Department of Transportation

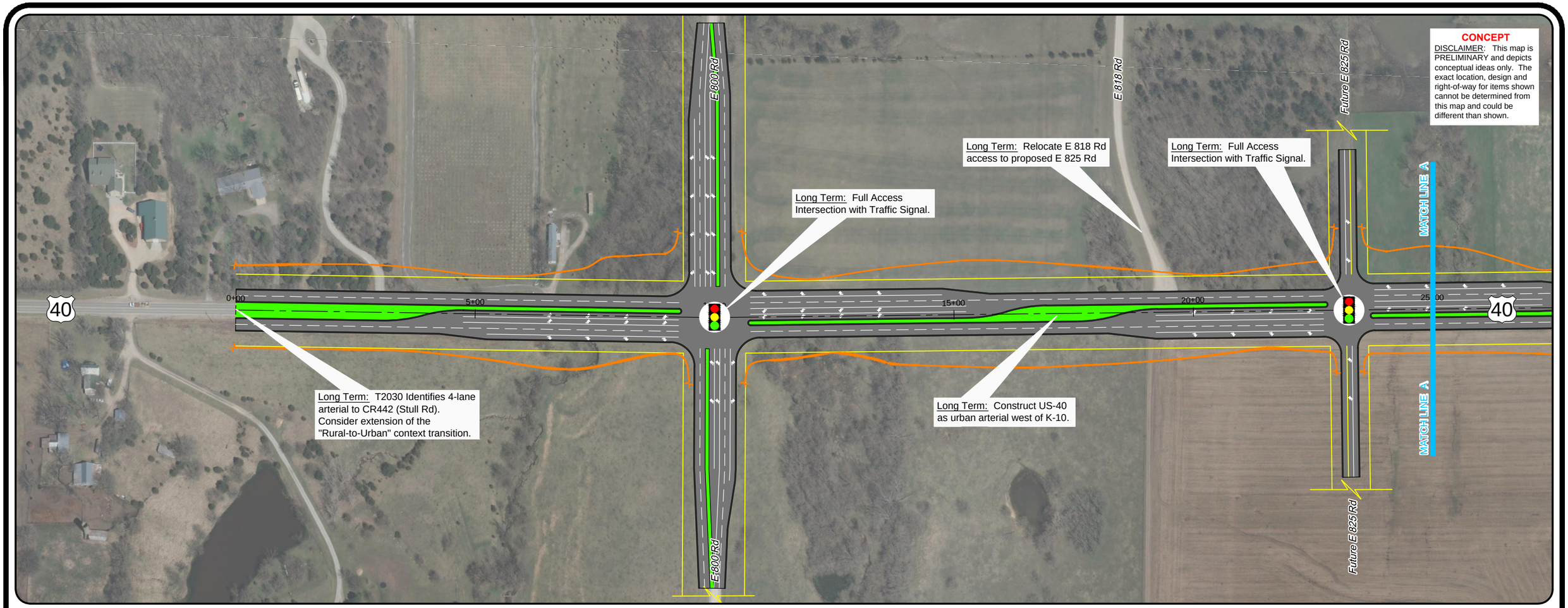
City of Lawrence Kansas

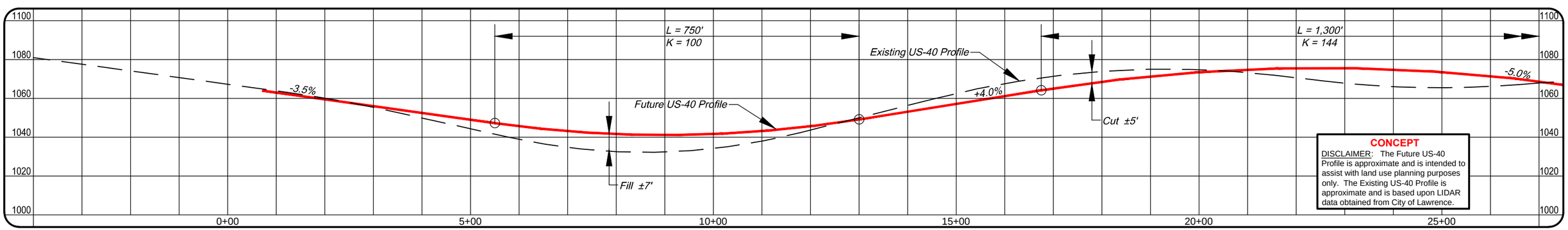
BG Consultants

WilburSmith Associates

KDOT Project: 40-23 KA-1869-01

Date Prepared: March 2012





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200' 0 200' 400'

Horizontal Scale: 1" = 200'

Future Right-of-Way west of K-10 (approx.)

Approximate Construction Limits for US-40

Future US-40 Profile

Traffic Signal Controlled Intersection

Exhibit 6.2: Long Term (2040) Plan & Profile 1 of 4

AREA TRANSPORTATION PLAN

US-40/West 6th Street and K-10 Interchange

Kansas Department of Transportation

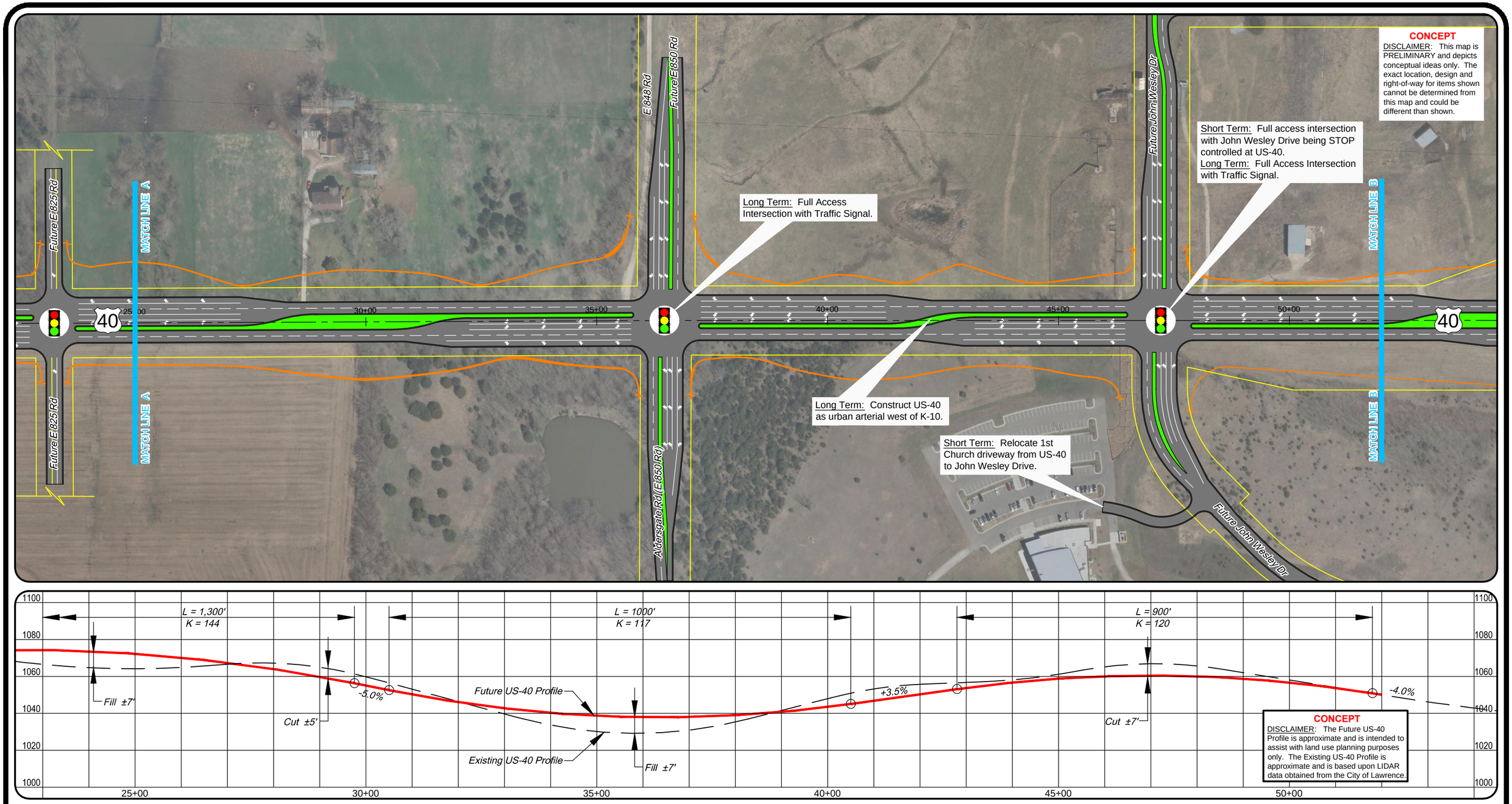
City of Lawrence

BG CONSULTANTS

WilburSmith ASSOCIATES

KDOT Project: 40-23 KA-1869-01

Date Prepared: March 2012



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Horizontal Scale: 1" = 200'

Future Right-of-Way west of K-10 (approx.)

Approximate Construction Limits for US-40

Future US-40 Profile

Traffic Signal Controlled Intersection

Exhibit 6.3: Long Term (2040) Plan & Profile 2 of 4

AREA TRANSPORTATION PLAN

US-40/West 6th Street and K-10 Interchange

Kansas Department of Transportation

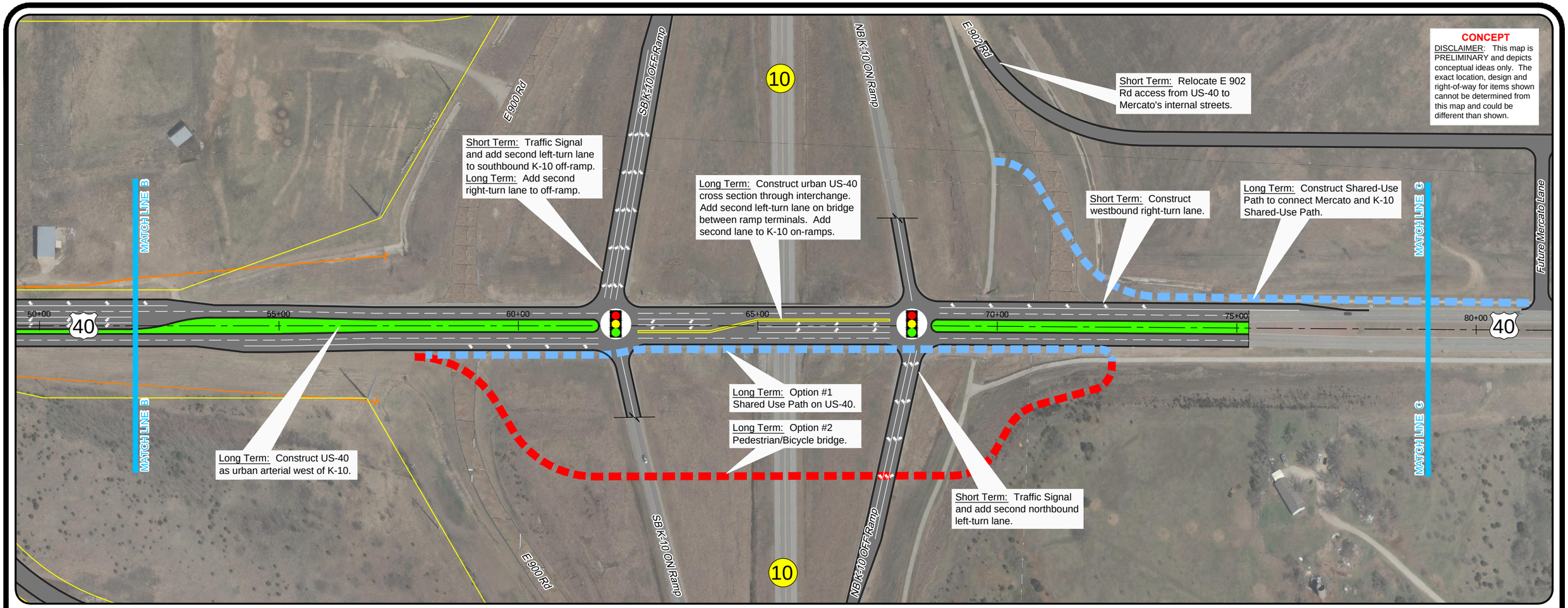
City of Lawrence KANSAS

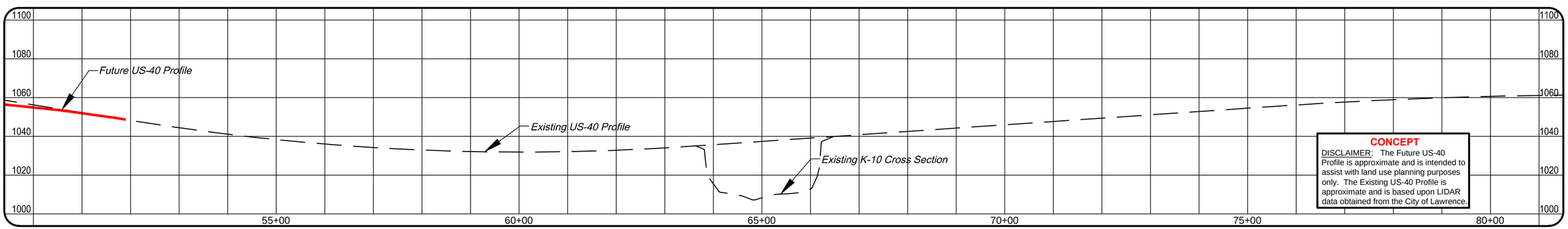
BG CONSULTANTS

WilburSmith ASSOCIATES

KDOT Project: 40-23 KA-1869-01

Date Prepared: March 2012





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200' 0 200' 400'

Horizontal Scale: 1" = 200'

Future Right-of-Way west of K-10 (approx.)

Approximate Construction Limits for US-40

Future US-40 Profile

Traffic Signal Controlled Intersection

Exhibit 6.4: Long Term (2040) Plan & Profile 3 of 4

AREA TRANSPORTATION PLAN

US-40/West 6th Street and K-10 Interchange

Kansas Department of Transportation

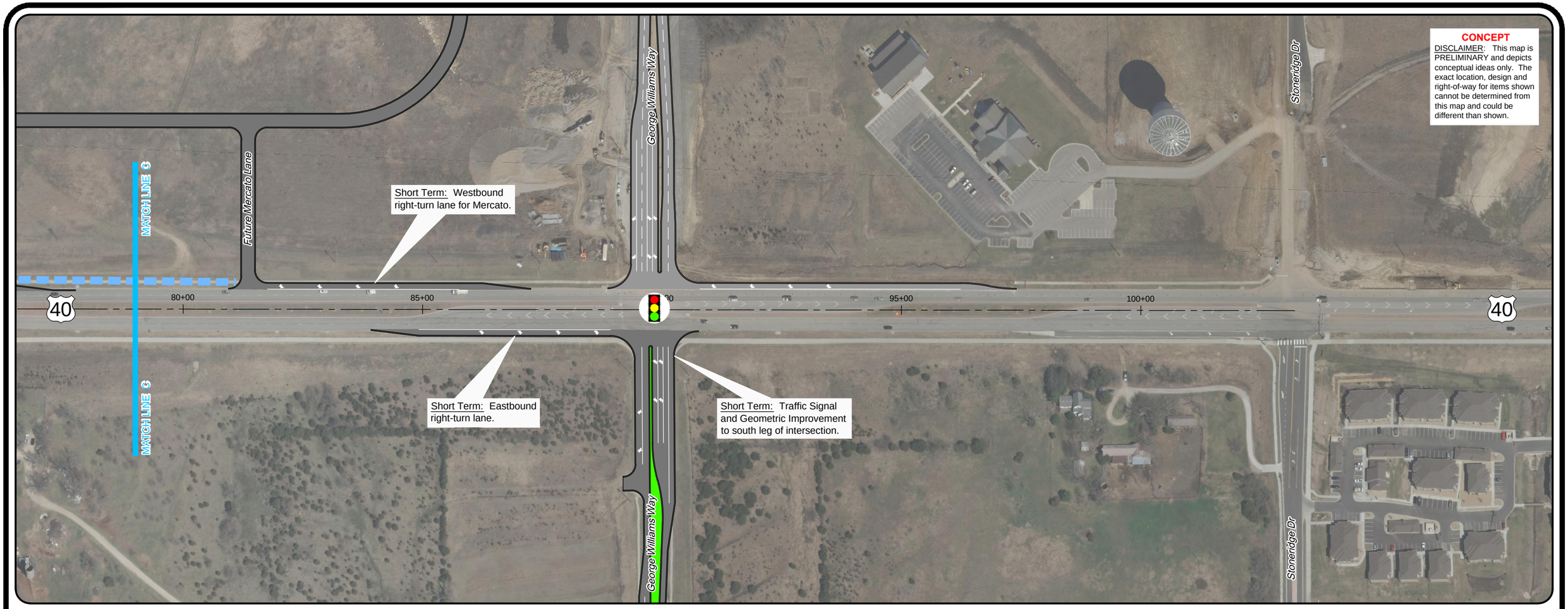
City of Lawrence Kansas

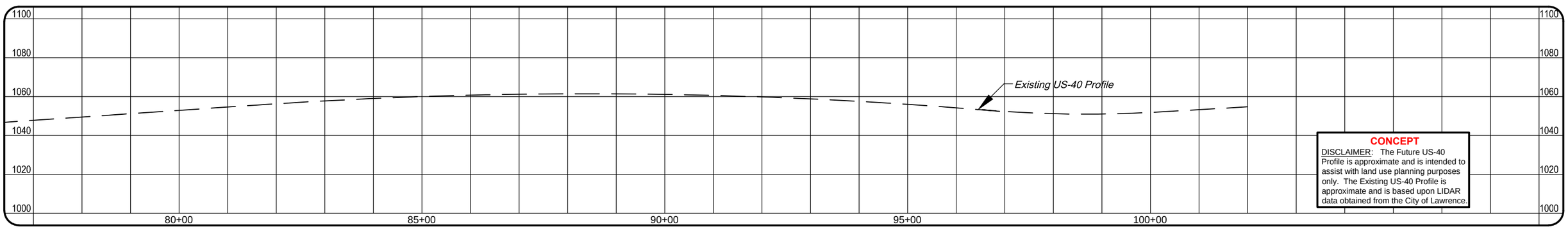
BG Consultants

WilburSmith Associates

KDOT Project: 40-23 KA-1869-01

Date Prepared: March 2012





N
W E
S

200' 0 200' 400'

Horizontal Scale: 1" = 200'

Future Right-of-Way west of K-10 (approx.)

Approximate Construction Limits for US-40

Future US-40 Profile

Traffic Signal Controlled Intersection

Exhibit 6.5: Long Term (2040) Plan & Profile 4 of 4

AREA TRANSPORTATION PLAN

US-40/West 6th Street and K-10 Interchange

Kansas Department of Transportation

City of Lawrence KANSAS

BG CONSULTANTS

WilburSmith ASSOCIATES

KDOT Project: 40-23 KA-1869-01

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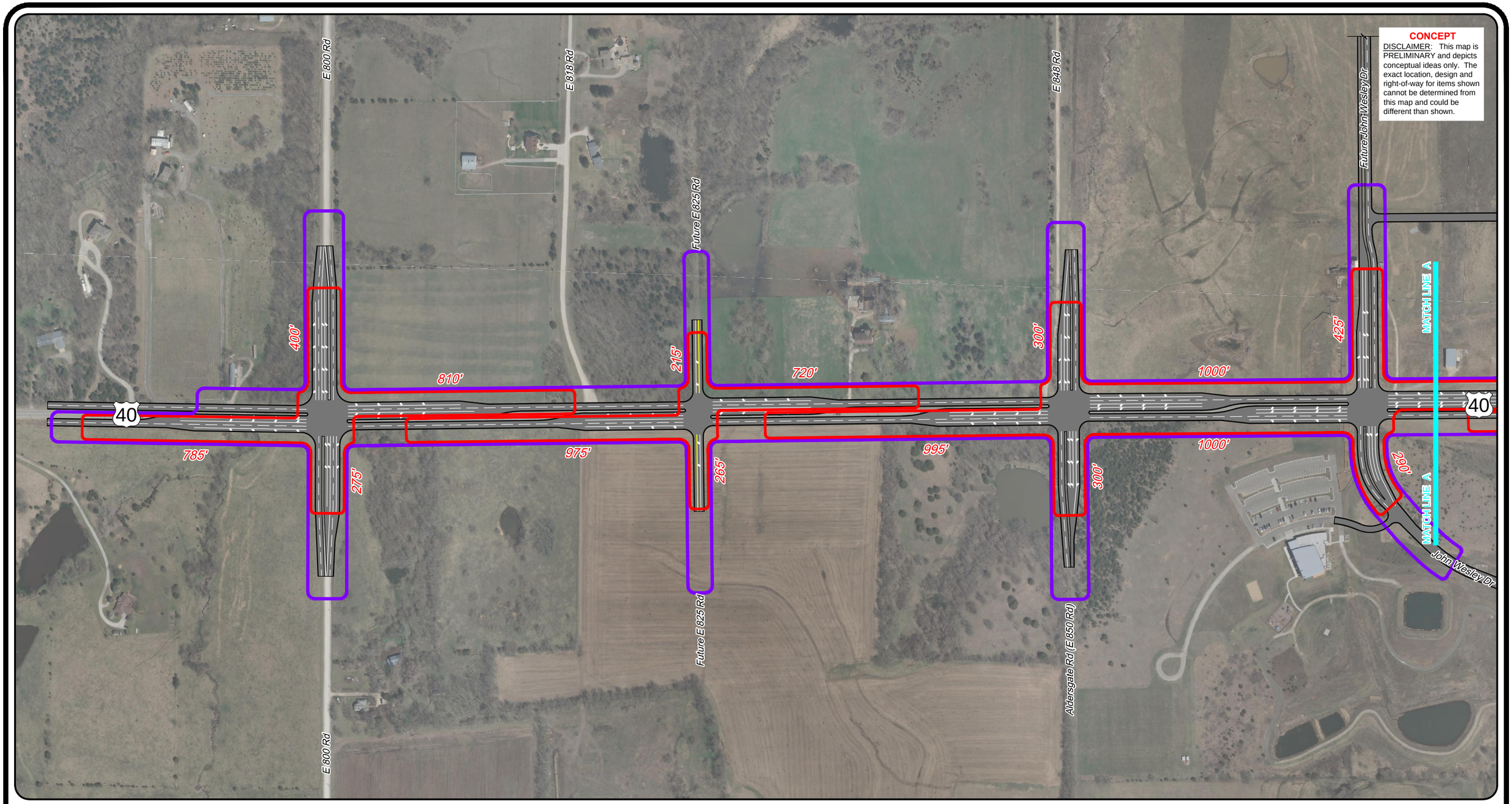

N
W E
S

330' 0 330' 660'

1" = 1/16 mile

Intersection Functional Area

Storage and Deceleration Area

1000' Estimated Storage and Deceleration Length

The Upstream Intersection Functional Area for all highways and streets includes the Estimated Queue Storage + Deceleration + Perception/Reaction

The Upstream Storage and Deceleration Length includes:

- *US-40: Estimated Queue Storage plus 340' Deceleration*
- *K-10 Off-ramps: Estimated Queue Storage plus 700' Deceleration*
- *City Side Streets: Estimated Queue Storage*

The Functional Area information shown on this Exhibit requires the intersections to be interconnected to operate as a coordinated system.

Exhibit 6.6: Functional Area Map 1 of 2

AREA TRANSPORTATION PLAN

US-40/West 6th Street and K-10 Interchange

Kansas Department of Transportation

City of Lawrence KANSAS

BG CONSULTANTS

WilburSmith ASSOCIATES

KDOT Project: 40-23 KA-1869-01

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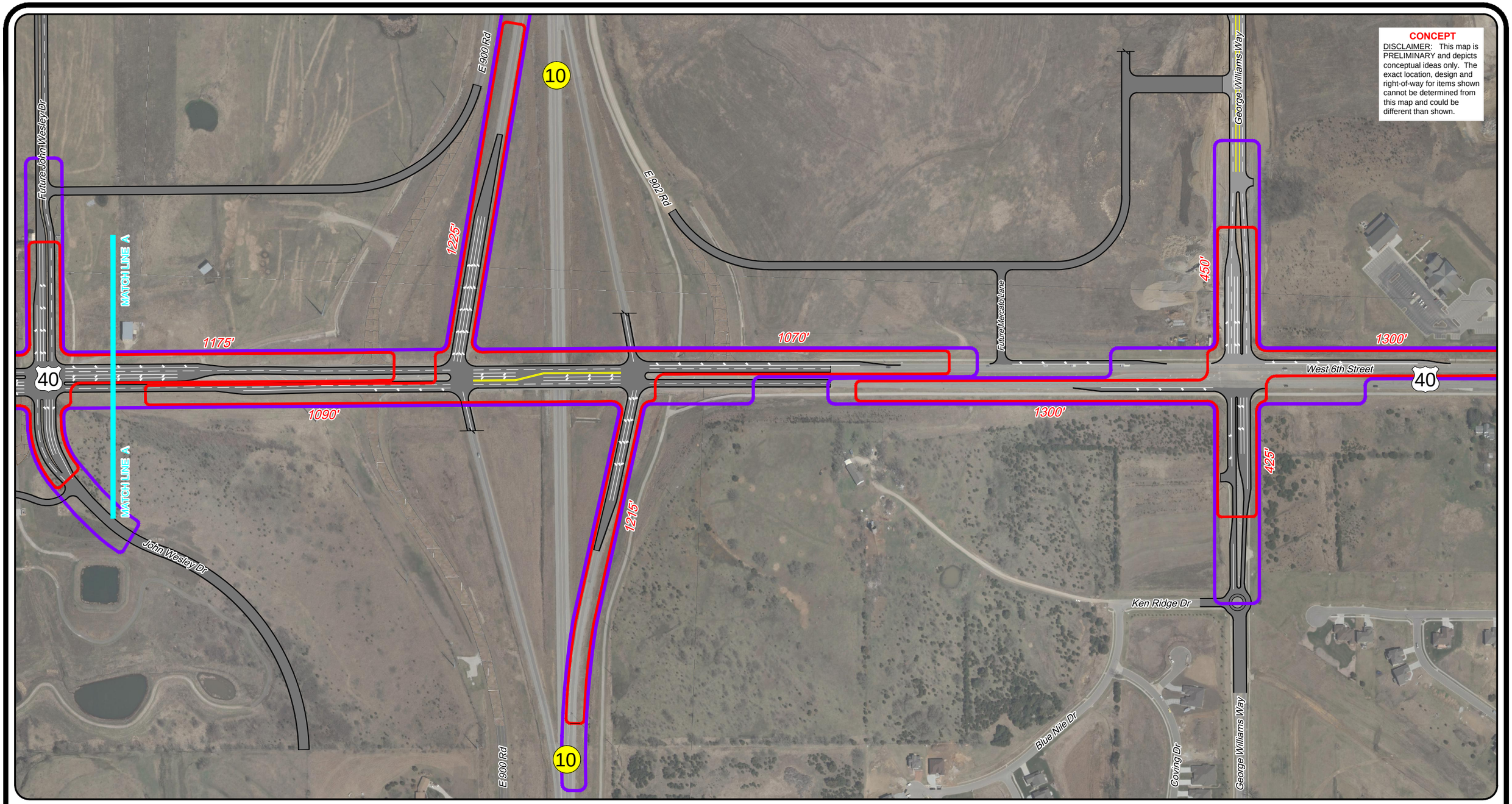

N
W E
S

330' 0 330' 660'

1" = 1/16 mile

Intersection Functional Area

Storage and Deceleration Area

1000' Estimated Storage and Deceleration Length

The Upstream Intersection Functional Area for all highways and streets includes the Estimated Queue Storage + Deceleration + Perception/Reaction

The Upstream Storage and Deceleration Length includes:

- *US-40: Estimated Queue Storage plus 340' Deceleration*
- *K-10 Off-ramps: Estimated Queue Storage plus 700' Deceleration*
- *City Side Streets: Estimated Queue Storage*

The Functional Area information shown on this Exhibit requires the intersections to be interconnected to operate as a coordinated system.

Exhibit 6.7: Functional Area Map 2 of 2

AREA TRANSPORTATION PLAN

US-40/West 6th Street and K-10 Interchange

Kansas Department of Transportation

City of Lawrence KANSAS

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