K-7 Corridor Management Plan

223rd Street in Miami County to
K-5/Muncie in Leavenworth

February 2006

PREPARED FOR

Kansas Department of Transportation

Corridor Management Plan
K7 Corridor
Connecting State and Local Transportation Investment

PREPARED BY

HNTB

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The City of Leavenworth
The City of Lansing
The City of Basehor
The City of Bonner Springs
The City of Shawnee
The City of Lenexa
The City of Olathe
The City of Spring Hill

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K-7 Corridor Management Study
Miami, Johnson, Wyandotte and
Leavenworth Counties

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K-7 Corridor Management Study

Executive Summary

The K-7 Corridor Management Study began in January of 2004 in response to a decision by the Kansas Department of Transportation (KDOT) and the local communities that a more comprehensive study of the corridor was needed. The study needed to address more areas than just the technical elements of K-7, it needed to address local concerns and identify necessary improvements for the total transportation system well into the future. Since that time study team partners which included KDOT, Kansas Turnpike Authority (KTA), Mid-America Regional Council (MARC) and the communities of Miami County, Spring Hill, Johnson County, Olathe, Lenexa, Shawnee, Bonner Springs, Unified Government, Basehor, Leavenworth County, Lansing, and Leavenworth worked together in a collaborative effort to arrive at recommendations for an achievable K-7 Corridor Plan.

Unlike previous studies, this new study focused on (1) the K-7 mainline and the local street network, (2) more community involvement, and (3) concrete recommendations and implementation responsibilities through Memorandums of Understanding (MOU). Specifically, the primary objectives of the study were as follows:

- **Determine Facility Type (freeway vs. urban arterial)**
- **Develop Access Requirements and Street Network System**
- **Determine Right-of-Way Preservation Needs**
- **Develop a Phased Implementation Plan Given the Lack of Current Funding**
- **Execute Memorandums Of Understanding**

Through development of a comprehensive travel demand model and future land use plan crafted through input from each community, traffic forecast information was developed. From this information, a recommendation was made for a freeway facility type along the entire corridor. Given the communities vision for future land use, an arterial facility would ultimately be unable to accommodate the anticipated traffic resulting in significant congestion and unacceptable levels of service for the corridor. While not every community agreed in total with the recommendation of a freeway, every community did agree that it would be prudent to preserve the right-of-way needed for a freeway with interchanges in order to not preclude the ability to build a freeway in the future. As a result, a series of meetings were held to determine the future locations of interchanges and overpasses as well as to layout the local street system to ensure the total transportation system worked together in the future. Conceptual interchange configurations and local street requirements were then used to establish a conceptual right-of-way preservation footprint for the entire corridor. While additional design will be performed to refine the improvements. The right-of-way footprint is a good first step.

It was also recognized that given the lack of funding to build the freeway today, interim improvements would be needed to accommodate the growing traffic demand. Examples of interim improvements included adding traffic signals and turn lanes at future interchange and overpass locations knowing that these would need to be converted into interchanges and overpasses in the future. Other examples of interim improvements included reducing access to K-7 and preserving important tracts of land for future improvements. Given the uncertainty of the timing of future development, it was impossible to predict the priority and order of implementation of the interim and ultimate improvements over time. The report's purpose was to provide guidelines for interim improvements that could occur and the expectations for what would ultimately need to occur.

Finally, Memorandums of Understanding (MOU's) were developed with each community to establish roles and responsibilities for KDOT and the local communities in implementing the K-7 Corridor Management Plan. These MOU's formalized the continued collaborative environment initiated by the study and created a moral framework for implementing the recommendations of the study. The MOU's also established a K-7 Corridor Review Committee made up of representatives from KDOT and the local communities. The committee's purpose will be to meet periodically to review the corridor plan, assess development issues, and evaluate compliance with the K-7 Corridor Management Plan.

In summary, this study was just the first step in what will be a long term effort to ensure effective development along the K-7 Corridor through safe and efficient management of traffic and access. With the K-7 Corridor Management Plan and MOU's in place, it will be up to KDOT and the local communities to collaboratively work together to implement the Plan and carry out the "next steps".

Study Introduction and Approach

History of the K-7 Corridor Study

K-7 has long been recognized as a vital north-south travel corridor in the western side of the Kansas City metropolitan area which has experienced on-going rapid development. The study area's nearly 40-mile length from 223rd Street in Miami County to K-5/Muncie in Leavenworth, links local cities in the south like Spring Hill to cities in the north like Leavenworth (refer to Figure 1 – Study Area Map in the ***Limits*** section). In addition, K-7 experiences statewide travelers extending as far south as Oklahoma and north to Nebraska.

A Technical Report was completed for the K-7 Corridor in 2002. It examined what the impact would be of allowing the corridor to develop as it had been with the limitation of only looking at a 20 year future time horizon. The report's focus was strictly technical to give a better idea of the magnitude of the issues along the corridor and a potential range of solutions.

Throughout the development of the 2002 Technical Report and continuing to this day, there has been a lot of pressure from development along the corridor. There was a need to provide communities with an answer on what the future of the K-7 Corridor would be. Given the development pressures and communities' need to plan their future, Secretary Miller held a workshop on November 4, 2003 to discuss the future of the K-7 Corridor. The overwhelming consensus from the workshop was that a more comprehensive corridor master plan needed to be developed immediately. As a result, Secretary Miller made a commitment to fund a more comprehensive study and asked the communities to provide staff time and assistance in support of the study.

The K-7 Corridor Management Study which began in January of 2004, has addressed more areas than just the technical elements of K-7. It has addressed local concerns and identified needed improvements well into the future. Since the beginning of the study, KDOT and the stakeholders which included Miami County, Spring Hill, Johnson County, Olathe, Lenexa, Shawnee, Bonner Springs, Unified Government, Basehor, Leavenworth County, Lansing, Leavenworth, KTA and MARC have worked together in a collaborative effort to arrive at recommendations for an achievable K-7 Corridor Master Plan. For the purposes of this study, the K-7 Corridor has been broken into segments for analysis. The three segments are defined in Figure 1.

Purpose and Objectives

The purpose of the K-7 Corridor Management Study was to identify the ultimate traffic demands that would be placed on K-7, be responsive to communities' need to plan their future, and create a mutually agreeable ultimate plan for K-7 that KDOT and the communities would embrace and implement over time. The study looked at what type of improvements would be necessary on K-7 and the local street system to handle the amount of traffic and development projected. These elements where accomplished within minimum technical design criteria that included:

- Desired minimum level of service = D (for 2030 traffic projections)
- Desired to have a uniform facility type within logical terminus points
- Freeway interchange spacing of two-miles desired with a minimum of one-mile spacing
- Access will be controlled for a freeway facility

Unlike previous studies, this study focused on the K-7 mainline and the local street network as an integrated system; more community involvement which involved two-way listening, education, and the desire to reach a consensus; and concrete recommendations and implementation responsibilities through Memorandums of understanding. Specifically, the primary objectives of the study were as follows:

- Determine what K-7's facility type would ultimately be (freeway versus urban arterial)
- Identify where access points would be along the corridor and the local street network
- Define what the right-of-way footprint and preservation needs would be for the facility
- Determine acceptable phased implementation opportunities
- Execute memorandums of understanding

Determining the facility type required gaining a better understanding of the local land use and travel demand market. This entailed working with each community to understand their plans and to make sure that each fit into an overall plan for the corridor. It required educating each community on the relationship between land use and traffic. For example, higher land use intensity would generate more traffic and required greater capacity on the transportation network.

Once the recommendation of a freeway facility was made for all three Segments, access requirements and the local street network system needed to be developed. Each Segment team honed in on determining the specific access points which would be allowed along with a solution that included a broader examination of the street network system to support the future plans for K-7. Following the transportation network identification, the right-of-way needs along the corridor and local street system were identified. The goal was to establish a preservation footprint for the areas to allow the construction of the identified improvements in the future.

The next step was the identification of phased implementation opportunities. This entailed interim and ultimate improvements to K-7. Included with this was the establishment of the enforcement mechanisms to regulate access requirements. The challenge with the implementation plan was to recognize the funding limitations, identify the hot spots, and prioritize future efforts along the corridor.

Study Introduction and Approach

Finally, the last step was to sign a Memorandum of Understanding (MOU) between the state and the local communities which summarized the consensus reached from the study. The MOUs outline a collaborative two-way effort where there needed to be commitment, follow through, and communication. Not only would the communities need to work on a variety of guidelines with follow-up implementation, but KDOT needed to do the same. Examples of collaboration were the mutual preservation of right-of-way or working with developers to locate local access and street networks that fit the study plan. MOU's were noted as the last step of the study, but in reality they are the first step of the ongoing process to monitor development of K-7 and implement the recommendations of the study.

In summary, the K-7 Corridor Management Study was needed because:

- Planning was essential – none of the recommendations would get done immediately, because there were currently no funds for construction. Good planning and the identification of the needed improvements was the first step.
- The corridor was growing – the projected ultimate development that the communities envision for the corridor generated travel demand on K-7 that was beyond the current roadway's capacity.
- Future traffic projections – the Average Daily Traffic (ADT) that was projected for the year 2030 along the K-7 Corridor shows that there were large increases in cars and trucks along K-7. With the increase in traffic, travel times would also increase.

Limits

The study limits were from the 223rd Street interchange in Miami County north to K-5/Muncie in Leavenworth, Kansas along K-7 (refer to Figure 1). The corridor was evaluated at a regional level and individually by segments.

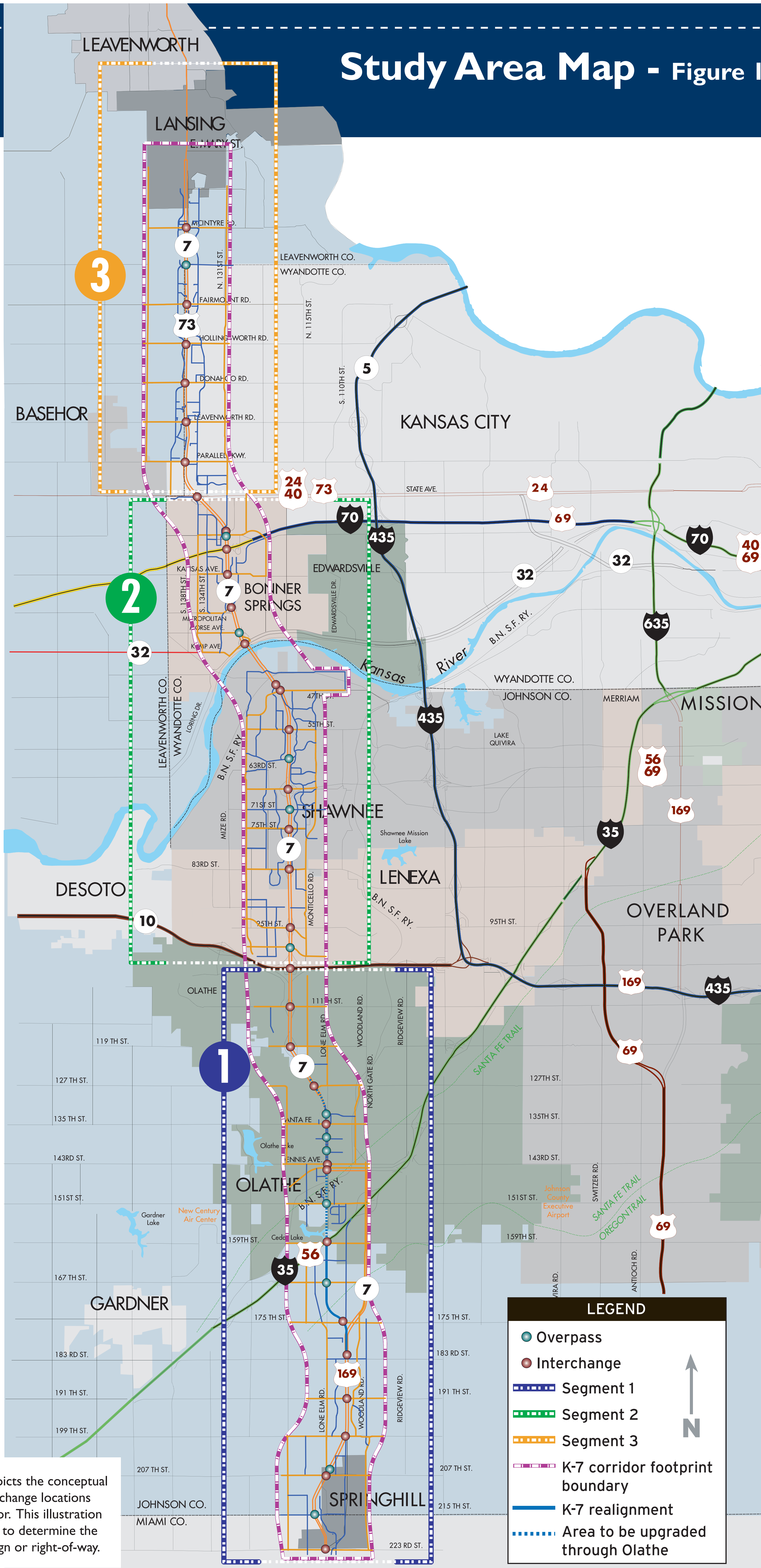
- Segment 1 was from 223rd Street north to K-10. The communities involved included Miami County, Johnson County, Olathe, and Spring Hill.
- Segment 2 was from K-10 north to State Avenue. The communities involved included Lenexa, Shawnee, Bonner Springs, as well as the KTA. The study focused on the stretch of the corridor north of Shawnee Mission Parkway to State Avenue since the section from 119th Street to Shawnee Mission Parkway was and would continue to be a freeway.
- Segment 3 was from State Avenue to K-5/Muncie in Leavenworth. The communities involved included Basehor, Lansing, the Unified Government, Leavenworth and Leavenworth County.

It should be noted that during the study process, three significant modifications to the study limits where requested and accepted by KDOT. In the first, Miami County requested that the 223rd Street interchange be added to the study due to the significant amounts of development occurring and the need for connectivity of the interchange to the local street network system to the north of the interchange that would be within the limits of the original study.

The second study limit modification came from a request by the City of Olathe to include upgrading the stretch of K-7 along the older area of Parker Street to a freeway. Originally, the area was assumed to always be an arterial street due to the existing development and impacts of converting this area to a freeway. KDOT agreed to add the area and a concept was developed with a freeway section and one-way frontage roads on each side for traffic circulation and access to existing businesses. Including this section as a freeway would also mean ultimately converting the proposed interchange at I-35 and Lone Elm Road into a system-to-system, freeway to freeway interchange with free-flow movements.

Finally, the third study limit modification came from the City of Leavenworth to include an extension of the study limits into the city. The city's request was a result of the Phase 1 facility type recommendation to make K-7 a freeway facility the entire corridor length. The city felt it was critical to emphasize the key linkage K-7 provided to their community, strengthen the city's pledge to assist in all ways to work toward the future vision for K-7 through the MOU commitment process, and provide an additional community in future funding and lobbying efforts. The study limit was modified to show the K-5/Muncie intersection as the end point for the study.

Study Area Map - Figure 1



Disclaimer:
This illustration depicts the conceptual alignment and interchange locations for the K-7 Corridor. This illustration should not be used to determine the exact location, design or right-of-way.

Approach and Schedule

As noted previously, the K-7 Corridor Management Study went beyond the prior Technical Study to include an approach that examined the mainline and local transportation system, included more involvement with the communities, and resulted in clear conclusions with signed memorandums of understanding. The study approach is graphically shown in Figure 2.

As Figure 2 shows, the study approach was broken into two primary phases:

Phase I Corridor Analysis – K-7 was evaluated as a regional corridor through a series of workshops and meetings with the local communities along the entire corridor. Initial focus was on regional issues to define a reasonable transportation market by developing a corridor wide land use and traffic model. Through development of a comprehensive travel demand model and future land use plan crafted through input from each community, traffic forecast information was developed. From this information, a recommendation was made for a freeway facility type along the entire corridor. Given the communities vision for future land use, an arterial facility would ultimately be unable to accommodate the anticipated traffic resulting in significant congestion and unacceptable levels of service for the corridor. Phase I took approximately one year to complete.

Phase 2 Segment Analysis – K-7 and the local street network was evaluated on a segment basis through a series of meetings with local communities within each segment. During this phase, the freeway facility type recommendation from Phase I was used as the basis for discussion. While not every community agreed in total with the recommendation of a freeway, every community did agree that it would be prudent to preserve the right-of-way needed for a freeway with interchanges in order to not preclude the ability to build a freeway in the future. As a result, a series of meetings were held to determine the future locations of interchanges and overpasses as well as the layout of the local street system to make every effort that the total transportation system worked together in the future. Interchange configurations concepts and local street requirements were then used to establish a conceptual right-of-way footprint for the entire corridor.

It was also recognized that given the lack of funding to build the freeway today, interim improvements would be needed to accommodate the growing traffic demand. Examples of interim improvements included adding traffic signals and turn lanes at future interchange and overpass locations knowing that these would need to be converted into interchanges and overpasses in the future. Other examples of interim improvements included reducing access to K-7 and preserving important tracts of land for future improvements. Given the uncertainty of the timing of future development, it was impossible to predict the priority and order of implementation of the interim and ultimate improvements over time. This plan's purpose was to provide guidelines for interim improvements that could occur and the expectations for what would ultimately need to occur.

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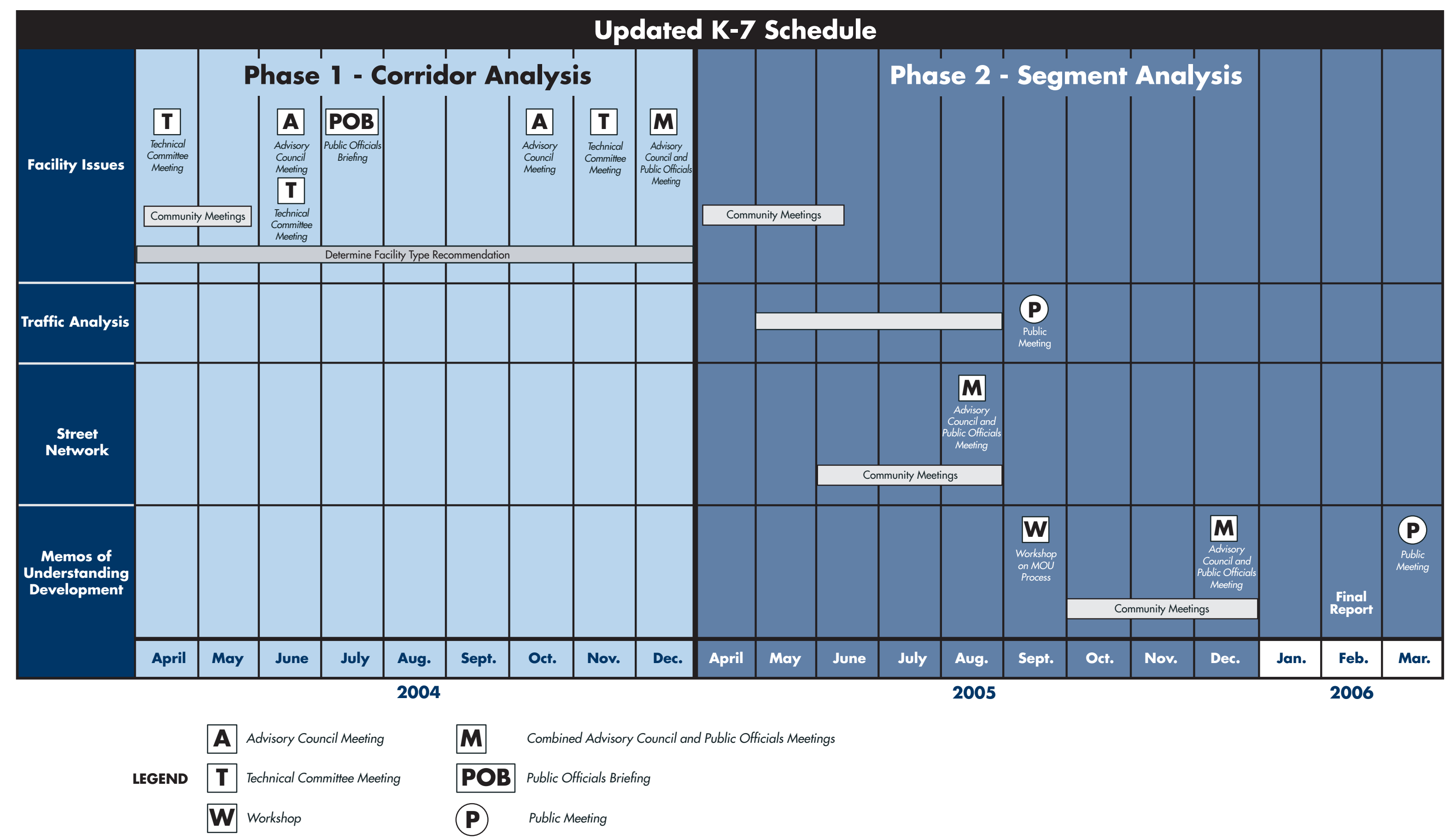


Figure 2

Meetings

Collaboration and communication with the eight cities, three counties, the Mid-American Regional Council, and the Kansas Turnpike Authority along the K-7 corridor required an input process that considered local needs and regional goals. The study team gathered and provided information to develop the corridor recommendations through:

- Meetings and workshops
- Presentations
- Surveys

Meetings and Workshops

Individual meetings with each community throughout the study process encouraged an on-going open dialogue about community needs and concerns. The committee meetings allowed for the opportunity for communities to share information and learn from each other. The Technical Committee, made up of traffic engineers and planners from each community, provided important information and feedback on local traffic conditions, future growth/anticipated land use, and street network/access issues. The Advisory Council, made up of key decision-makers from each community, provided feedback at the highest levels for the study team on recommendations and policy discussions. The Public Official Briefings provided additional coordination with elected officials and provided educational opportunities on several of the study concepts. Finally, the Public Meetings allowed the study team to present the corridor plan and recommendations to the general public as yet another opportunity for input and feedback.

The long-term needs of K-7 will continue after the conclusion of this study. A foundation for communication between KDOT and the local communities has been established through the intensive efforts made through each meeting held to date and through the written Memorandums of Understanding that formalize a partnership to work on K-7 issues together. This communication and collaboration will hopefully continue through the anticipated K-7 Review Committee that will continue to meet and work toward implementation of the commitments made on the K-7 Corridor Plan.

The meeting matrix shown in the following pages (Figure 3 a and b) identifies the communities engaged, purpose and outcomes for the meetings.

Presentations

In order to provide updates and information to local officials and civic interests throughout the region, presentations were made to various groups, including:

- Mid-America Regional Council Total Transportation Policy Committee
- Leavenworth Area Development Council
- Kansas City Kansas Chamber of Commerce Board Meeting
- Spring Hill Chamber of Commerce
- Basehor/Tonganoxie Chamber of Commerce
- Olathe City Council
- Shawnee Public Works Committee
- Basehor City Council
- Leavenworth County Commission
- Wyandotte/Leavenworth County State Legislators
- Wyandotte State Legislators

Surveys

Measurement is an important tool to gauge progress, but it is also important to gauge attitudes regarding transportation issues. During the first two Advisory Council meetings the study team provided surveys to gather information about values, preferences and familiarity with transportation planning. These tools helped the study team measure where there was agreement and where more work through education needed to be done. Each survey had four sections:

- Experience with transportation and land use planning
- Attitudes about land use planning and transportation trade-offs
- Beliefs and attitudes regarding the K-7 Corridor today
- Beliefs and attitudes regarding the K-7 Corridor in the future

The results from the surveys provided the study team with information that assisted in the development of a recommendation for the facility type and helped focus discussion on other areas like access management, the local street network and corridor preservation.

Three important observations from the survey results include:

- Regional mobility is more important than local access.
- Preserving land for future transportation use is needed.
- Coordinating with KDOT and other communities will be essential.

More details about specific surveys can be provided upon request.

Meeting Matrix - 2004 Figure 3a

Technical Committee

Who: Public works officials, engineers and city and county staff who have expertise in the areas of land use, traffic, and local streets. They know the ins and outs of implementation in their community.
Purpose: To work through the details of issues, such as land use and traffic, to gather input and help develop support for approaches and methodology.

Advisory Council

Who: Two representatives from each community that are decision makers (mayors, public works directors, city council members, planning directors, etc.) Two representatives from KDOT and a representative from KTA and MARC also participated.
Purpose: To serve as a sounding board throughout the project and work to understand the study process. The Advisory Council was also a forum to discuss interests and concerns about growth, development and transportation as it related to the K-7 corridor.

Public Officials

Who: Local and state elected officials.
Purpose: To provide information for elected officials on project objectives and progress as well as communicate the importance of planning and corridor preservation.

City/County Meeting #1 Introduction
Purpose: To meet individually with all the cities and counties to explain the purpose of the project and gather input on issues and concerns.
Outcome: The communities shared their information related to growth, land use, traffic plans and the importance of K-7 in their community.

Technical Committee Meeting #1
Purpose: Establish methodology for traffic and land use scenario developments, present information gathered and early model development.
Outcome: Initial reaction to growth scenarios and comment on model development.

Public Officials Briefing
Purpose: To provide information on study status, objective and goals. Also communicate the importance of planning ahead and to introduce the concepts of corridor preservation and access management.
Outcome: Public Officials have better understanding about purpose and goals for the study.

Technical Committee Meeting #3
Purpose: Review preliminary traffic demand model.
Outcome: Refinements and development of 'what if scenarios'.

Section	Community	City/County Meeting #1 Introduction	Advisory Council Meeting #1	Technical Committee Meeting #1	Technical Committee Meeting #2	Public Officials Briefing	Advisory Council Meeting #2	Technical Committee Meeting #3	Advisory Council Meeting/Technical Committee Meeting #3
SECTION 3	City of Leavenworth	April 19, 2004	June 14, 2004	June 23, 2004	July 28, 2004	July 30, 2004	October 11, 2004	November 4, 2004	December 8, 2004
	Leavenworth County	April 29, 2004							
	Lansing	April 21, 2004							
	Basehor	April 28, 2004							
	Unified Government	May 18, 2004							
SECTION 2	Bonner Springs	April 27, 2004							
	Shawnee	May 18, 2004							
	Lenexa	April 30, 2004							
SECTION 1	Johnson County	May 10, 2004							
	Olathe	April 29, 2004							
	Spring Hill	April 15, 2004							
	Miami County								
	KTA	April 21, 2004							
	Mid-America Regional Council (MARC)	TTPC-Presentation March 23, 2004							

Community | City/County Meeting #1 Introduction | Advisory Council Meeting #1 | Technical Committee Meeting #1 | Technical Committee Meeting #2 | Public Officials Briefing | Advisory Council Meeting #2 | Technical Committee Meeting #3 | Advisory Council Meeting/Technical Committee Meeting #3

Advisory Council Meeting #1
Purpose: *Project Kick-off*—review project background, objectives and schedule. Information on land use and traffic was presented. A summary of City/County meetings was provided.
Outcome: Goals, expectations and Advisory Committee role for study established.

Technical Committee Meeting #2
Purpose: Land use information summary to help develop traffic model.
Outcome: Input and feedback on information provided and more refinements to data for the traffic model and build out scenarios.

Advisory Council Meeting #2
Purpose: Project review and status. Right Turns Exercise Part 1—review issues, and constraints in each segment.
Outcome: Update on study and refined information on transportation trade-offs.

Advisory Council/Technical Committee Meeting #3
Purpose: Present preliminary draft facility type recommendation.
Outcome: Gather input/feedback and thoughts on draft recommendation.

Meeting Matrix - 2005 -2006 Figure 3b

Technical Committee

Who: Public works officials, engineers and city and county staff who have expertise in the areas of land use, traffic, and local streets. They know the ins and outs of implementation in their community.
Purpose: To work through the details of issues, such as land use and traffic, to gather input and help develop support for approaches and methodology.

Advisory Council

Who: Two representatives from each community that are decision makers (mayors, public works directors, city council members, planning directors, etc.) Two representatives from KDOT and a representative from KTA and MARC also participated.
Purpose: To serve as a sounding board throughout the project and work to understand the study process. The Advisory Council was also a forum to discuss interests and concerns about growth, development and transportation as it related to the K-7 corridor.

Public Officials

Who: Local and state elected officials.
Purpose: To provide information for elected officials on project objectives and progress as well as communicate the importance of planning and corridor preservation.

City/County Meeting Round 2
Purpose: Opportunity for individual thoughts on draft facility type recommendation.
Outcome: Provide more detail to communities and answer questions.

Advisory Council Meeting/Public Officials Briefing #4
Purpose: Present refinements to draft facility type recommendations and local street network.
Outcome: Review of draft recommendations and information to be presented at Public Meeting.

Phased Implementation Workshop
Purpose: Begin discussion of access management and corridor preservation in a general workshop format with break out sessions.
Outcome: Further reinforce and introduce the access management approach and to the Memorandums of Understanding (MOUs) process.

Individual Meetings for MOUs Round 2
Purpose: Continued discussion and refinement of MOUs.
Outcome: Some meetings with communities or presentations to governing bodies on MOUs.

Advisory Council Meeting/Public Officials Briefing #5
Purpose: Summarize project and celebrate MOU agreements.
Outcome: Signed MOUs and commitment to the K-7 Corridor Plan.

Section	Community	City/County Meeting Round 2	City/County Meeting Round 3-Street Network Meetings	Advisory Council Meeting/Public Officials Briefing #4	Public Meeting #1	Phased Implementation Workshop	MOU Meetings Round 1	MOU Meetings/ Presentations Round 2	Public Meeting #2	Advisory Council Meeting/ Public Officials Briefing
SECTION 3	City of Leavenworth	January 26, 2005	July 13, 2005	August 28, 2005	September 13, 2005	September 14, 2005	October 7, 2005		March 28, 2006	April 13, 2006
	Leavenworth County	June 9, 2005					November 10, 2005			
	Lansing	April 27, 2005					October 12, 2005	February 23, 2006		
	Basehor	May 16, 2005	July 25, 2005				October 20, 2005			
SECTION 2	Unified Government	May 2, 2005	July 28, 2005				October 13, 2005			
	Bonner Springs	June 20, 2005	July 22, 2005				November 15, 2005			
	Shawnee	May 16, 2005	July 13, 2005				October 13, 2005			
	Lenexa	No Meeting Scheduled	July 19, 2005				October 20, 2005			
SECTION 1	Johnson County	May 2, 2005	No Meeting Scheduled				October 19, 2005			
	Olathe	March 23, 2005	July 18, 2005				October 14, 2005			
	Spring Hill	January 30, 2005	July 14, 2005				October 12, 2005	December 15, 2005		
	Miami County						October 17, 2005			
	KTA	No Meeting Scheduled	July 14, 2005				No Meeting Scheduled			
	Mid-America Regional Council (MARC)	January 17, 2005	May 25, 2005							
	Community	City/County Meeting Round 2	City/County Meeting Street Network Meetings - Round 3	Advisory Council Meeting/Public Officials Briefing #4	Public Meeting #1	Phased Implementation Workshop	MOU Meetings Round 1	MOU Meetings/ Presentations Round 2	Public Meeting #2	Advisory Council Meeting/ Public Officials Briefing

City/County Meeting Round 3 - Street Network Meetings
Purpose: Information on the local street network, so that it can support the facility type recommendation and help alleviate traffic concerns on K-7.
Outcome: Information to develop or refine local street network system.

Public Meeting #1
Purpose: To present draft corridor recommendation and facility type for Public Review.
Outcome: Nearly 100 people from all along the corridor attended and provided 19 comments.

Access Meetings - MOU Meetings
Purpose: Individual opportunity to discuss particulars of MOUs.
Outcome: Understand MOUs and gather initial feed back.

Public Meeting #2
Purpose: Present final report and corridor plan for general public.
Outcome: Opportunity for review and comment.

Traffic Analysis

Traffic and Land Use Introduction

In 2002, the K-7 Corridor Technical Report was completed. The report analyzed the technical aspects of existing and future transportation conditions along the K-7 Corridor. Due to study constraints with the original study, changes in peoples travel patterns could not be evaluated. The study analyzed the traffic operational differences between an arterial and a freeway along the K-7 Corridor. Recognizing that the roadway type could change along the corridor, it was important to plan for logical transition points. This resulted in not recognizing that motorists will choose a travel route based on the facility type and travel time which will affect future traffic demand. Also, focusing on a single design year did not consider the full development potential of the corridor. Finally, analysis focused only on K-7 and did not include the surrounding local street network. It is critical to recognize that both K-7 and the local street network system work and function together to serve the total transportation demand.

Since the previous study was technical in nature, it did not strive to achieve political support, therefore a more comprehensive study of the K-7 Corridor was undertaken. From a land use and traffic perspective the primary study goals were:

- Work with the local communities to develop a 2030 and full build out land use database.
- Develop a regional travel demand model that included the K-7 mainline and local street network and considered changes in traffic as a result of the K-7 facility type.

The K-7 study corridor was defined as a two mile wide corridor centered on K-7. Within this area a street network and traffic analysis was performed. The corridor study was separated into two phases consisting of a macro-level and a micro-level analysis. The macro-level analysis focused on identifying what type of facility K-7 should become, a freeway or an urban arterial. The micro-level analysis focused on developing a local street network that was complementary to the identified facility type and created a total transportation system. The primary traffic and land use tasks for each phase included:

- **Facility Type (Phase 1 Macro-Level Corridor Analysis)**
    - Developing a planning level traffic forecasting tool to analyze facility type for each segment of K-7,
    - Collecting 2030 and full build out land use from each community along the corridor to input into the traffic model, and
    - Using the MARC regional model to analyze land use and transportation effects on traffic in the corridor.
- **Street Network (Phase 2 Micro-Level Segment Analysis)**
    - Performing Highway Capacity Manual (HCM) methodology operational analysis of K-7 mainline and intersections,
    - Performing volume threshold evaluations of the local street network, and
    - Developing a simulation model of the K-7 and I-70 Interchange

STUDY METHODOLOGY

Phase 1 analysis represented a macro-level planning understanding at the corridor level. The analysis focus was to assess the ability of K-7 to serve the transportation demand associated with the future land use when the facility was modeled as an urban arterial and a freeway.

Data collected included development plans, traffic counts, accident data and land use plans. Developer plans were collected from local communities to identify recent development along the corridor. Daily traffic counts were collected and used during model calibration. Accident data was collected to review more recent data since the K-7 Corridor Technical Report, 2002. KDOT provided crash data for years 2000, 2001 and 2002.

Land Use

Transportation and land use form a symbiotic relationship. Land use factors such as population density, income, employment and activity centers (which include shopping, recreation and institutional uses) impact travel patterns. A dispersed land use pattern increases the need for high-mobility roadways with minimal turning conflicts to facilitate timely access to goods, services and activities at longer distances. Conversely, a condensed land use pattern provides the ability to support a roadway that serves the needs of local developments at slower speeds by providing convenient access to adjacent land uses. Accessibility reflects the ability to conveniently move from an origin to a destination. Any location is accessible given enough time and safe and functional transportation facilities. Travel time tends to be the dominant measure of accessibility. As traffic increases, congestion occurs and mobility decreases. As congestion increases adjacent land uses are negatively impacted due to excessive travel delay, facilitating the need to make transportation improvements such as widening or construction of new roads and facilities.

Given the relationship between transportation and land use, decisions about transportation facilities should take into account the demands of the local population as well as the community's economic needs. Typically, land use plans at both the local and regional level are used to forecast future transportation demands. Projected population and employment growth translate directly to growth in traffic volumes in specific areas. High-intensity land uses, such as retail and office uses generate significant demands on the transportation system while low density uses such as dispersed single-family residential areas generate less traffic.

To estimate current and future traffic demand, the consultant team developed land use inputs for the Corridor. Three time periods estimated were:

- Existing (2004);
- Future 2030; and
- Ultimate Build Out.

Land uses were delineated by population/dwelling units and employment for industrial, commercial and office. These inputs corresponded with the model currently used by the Mid America Regional Council (MARC), which is a seven county regional model. The land use inputs were aggregated by traffic analysis zones (TAZs). TAZ's represent homogeneous land areas that represent households and employment centers. The TAZs were delineated according to the existing MARC model and refined based upon a more detailed roadway network. This was necessary because the MARC model is used to estimate traffic needs for the regional level, and smaller TAZs with a more detailed road network was necessary for the level of study performed in this corridor plan. Additionally, the current MARC model does not cover the entire Study Corridor. For the purposes of this study, it was necessary to develop additional detail to estimate the local and regional impacts for future facilities along the Corridor.

Existing Land Use

The consultant team reviewed the existing MARC traffic model land use inputs. The existing MARC model's current or base year is 2000. For the purposes of this study, it was necessary to update the base year for the new TAZs to account for development between 2000 and 2004. This update was accomplished by utilizing recent aerial photography provided by MARC and information provided by the counties and communities including but not limited to existing land use inventories, building permit information, recent plats and development plans for proposed developments. The existing land use for the Corridor is illustrated in the following page (figure 4).

Future Land Use for 2030 and Ultimate Build Out

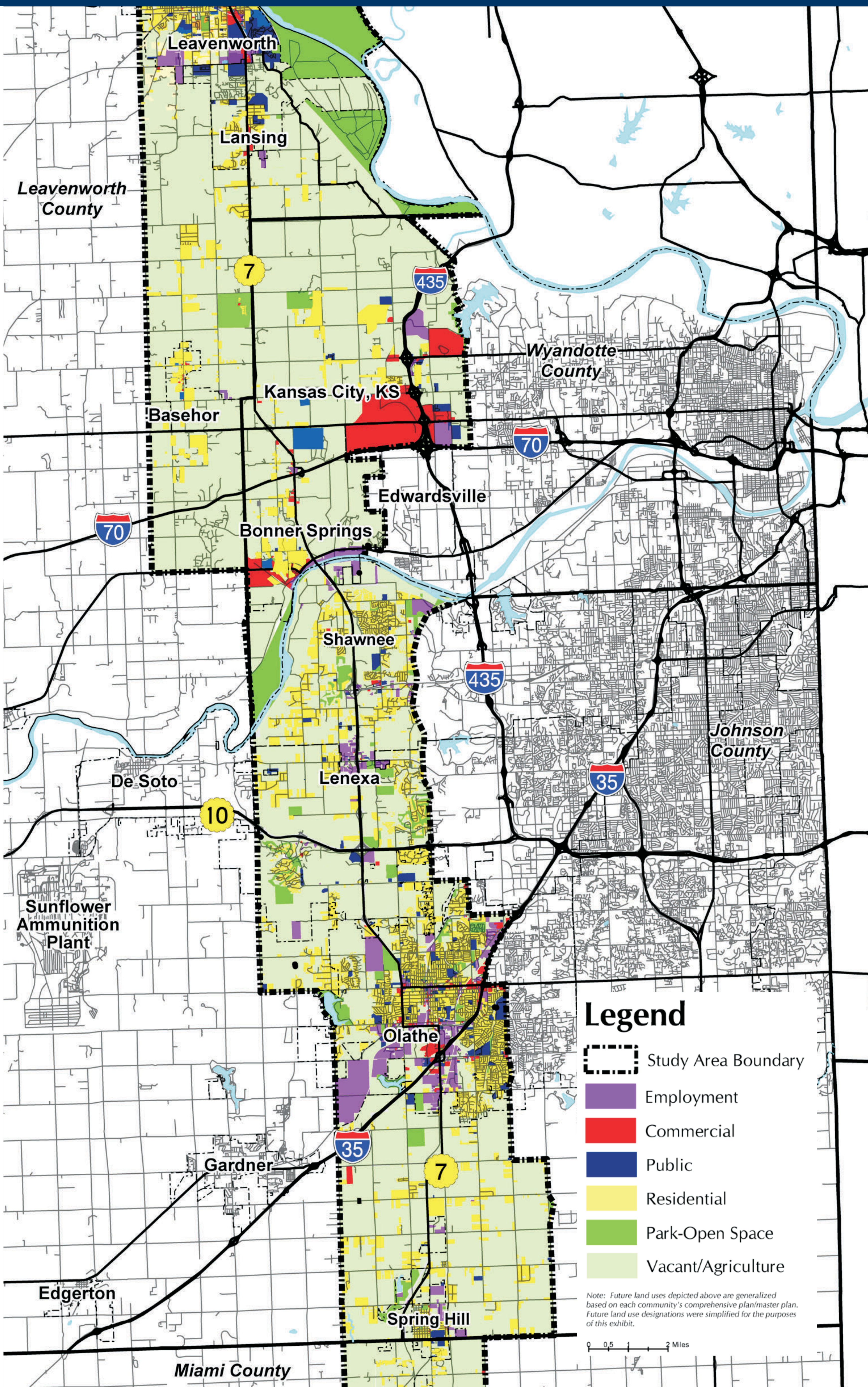
Future land uses were delineated by TAZ for the year 2030 and Ultimate Build Out. The MARC model includes estimates by TAZ for the year 2030. These estimates were used and aggregated by the new TAZs. However, the current MARC model does not have estimates beyond 2030. To estimate Ultimate Build Out by TAZ, the consultant team reviewed applicable comprehensive plans, area plans, corridor plans, annexations plans and major development proposals. These plans include but are not limited to the following:

- Johnson County Rural Comprehensive Plan, March 2004
- Comprehensive Arterial Road Network Plan (CARNP), January 1999
- Spring Hill Comprehensive Plan, December 2002
- Coffee Creek Master Plan, June 2003
- Olathe Comprehensive Plan, October 2001
- Growth Strategies Report (Olathe), October 2001
- (Lenexa) Vision 2020, September 2003
- Shawnee Land Use Guide, July 2004
- Bonner Springs Comprehensive Plan
- (Unified Government) Prairie Delaware Piper Master Plan, February 2004
- (Unincorporated) Leavenworth Comprehensive Plan, June 1998
- City of Basehor, Comprehensive Plan
- City of Lansing Comprehensive Plan, March 2001
- Leavenworth Comprehensive Plan, June 1998

For most communities, the definition of Ultimate Build Out is the full development of their land use plans assuming planned future extension of utilities and services. This does not mean that the plan cannot be changed or refined in the future based upon on improvements to infrastructure and/or changing economic conditions. Therefore, the comprehensive plans were used as the basis for estimates for Ultimate Build Out and refined based on discussions with each community about potential changes that could influence how their area would likely develop in the future. It should be noted that Ultimate Build Out does not mean that the entire Corridor will have the same land use patterns and densities. Future land use patterns along the Corridor will vary based upon the feasibility of providing services, environmental conditions and other factors. A large portion of the Corridor will develop at typical "suburban" densities (three residential units per acre or greater with associated commercial, office and employment). Other areas of the Corridor will remain low-density or rural due to environmental conditions and other factors.

Geographic Information Systems (GIS) were used to overlay all future land use plans over the updated TAZs. During the K-7 Corridor planning process, MARC was in the process of working through future land use updates using Paint the Town for Johnson County. Paint the Town is a software program that allows planners to "paint" maps on a computer screen to match future land use plans (or probable future land uses). As soon as the parcel or area is painted according to its future land use designation an attached table is automatically updated to indicate the applicable population/dwelling units or number of employees. Unfortunately, this process was not complete in time for use within this study.

Existing Land Use - Figure 4



Additionally, Paint the Town was not going to be developed for all parts of the Corridor, including Miami and Leavenworth Counties. Although Paint the Town was not ready and does not include the entire study Corridor, the K-7 Technical Advisory Committee and Policy Committee decided to use the land use density assumptions developed for Paint the Town. In other words, the consultant team used the same assumptions and a similar process to complete the Paint the Town exercise as part of this study.

As part of the Paint the Town process, MARC worked with the communities in the Kansas City Metropolitan Area to develop assumptions based upon generalized future land use designations. This was necessary because each community's land use plans have different use designations with their own assumptions for densities, mix and development patterns. Based on these assumptions, the consultant team developed an Ultimate Build Out map using the generalized land uses similar to those used in Paint the Town. The land use for the Ultimate Build Out is illustrated in the following page (figure 5).

The Economics of Mobility vs. Accessibility

As stated earlier, there is a trade-off between mobility and accessibility (freeway vs. arterial roadway) when deciding what type of transportation improvement best fits an area. Land uses, especially commercial, office and industrial uses need to be visible and accessible to and from the transportation network. However, these uses also need to be convenient to areas where people live. If a transportation corridor becomes too congested with high traffic volumes, a corridor's traffic operations can begin to break down and adjacent land uses will ultimately suffer. Individuals make choices about where they live, work, shop, play and do business in part based on the amount of travel time it takes them to access these destinations. Other factors include quality of life, schools, taxes and amenities.

Where these factors are met, the major difference between freeway interchange development and arterial development tends to be the overall pattern of the development. Freeway interchanges encourage nodal development where all users want proximity to the access point. Arterial development is more spread-out along the road; access points are not as important.

There does not appear to be a measurable correlation between selecting freeway or arterial development and the ultimate economic impact (or benefit) on the community. More important factors would include the availability of public services, existing development policies, and relative size of the existing community, economic incentives, and the overall strength of the real estate market.

Travel Model

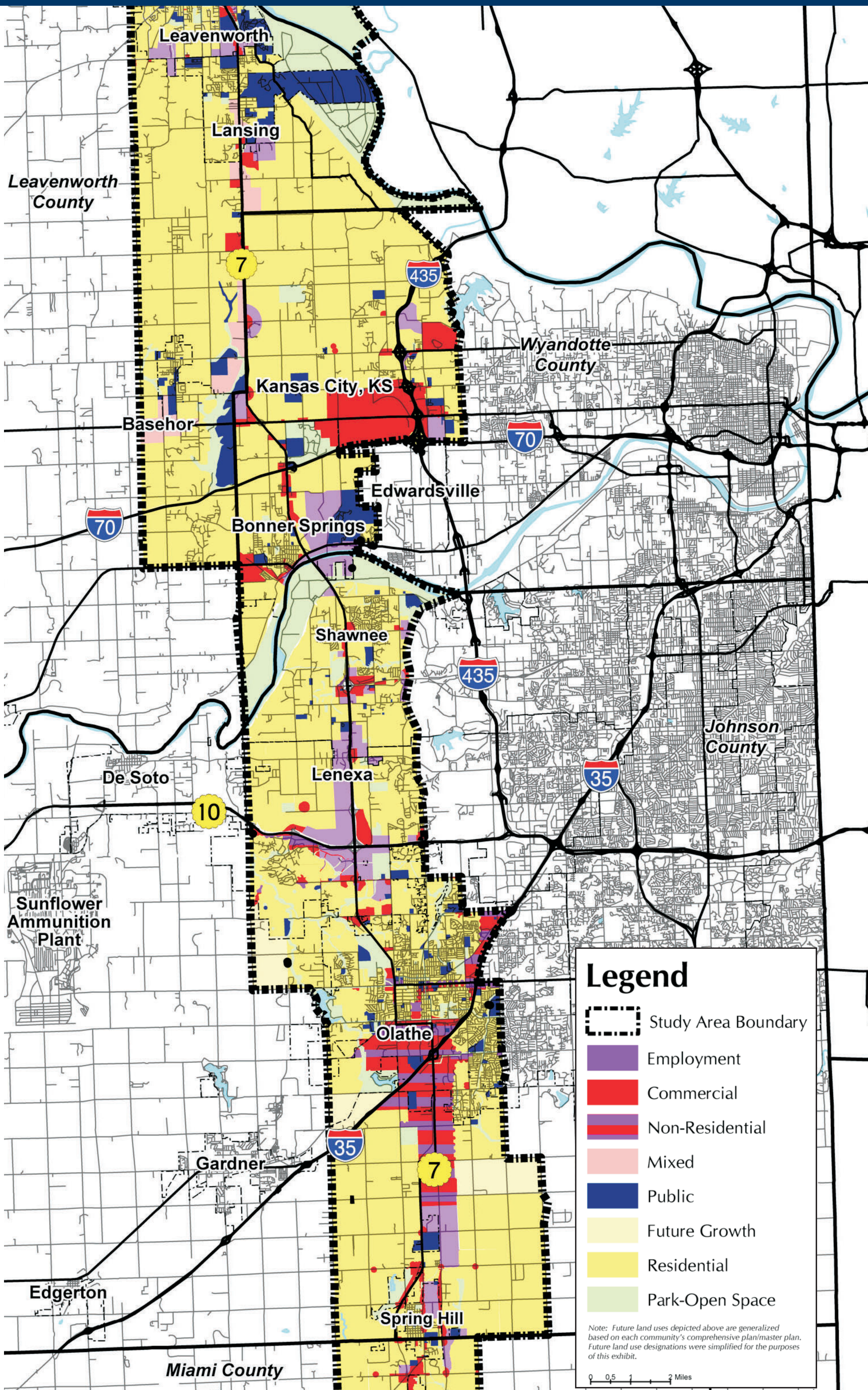
The Mid-America Regional Council's (MARC's) regional travel demand model was used as the base to create the K-7 travel model. The MARC travel model is a daily model. Additional land use and roadway network details were added to the model within the limits of roughly an 8-mile corridor centered along K-7. Data from all available models was used, model data from the Johnson County CARNP (Comprehensive Arterial Network Plan) travel model was integrated into the K-7 model. Figure 6 shows the limits of the study corridor in relation to the MARC and CARNP models. Although the CARNP model is a peak hour model and the K-7 model is a daily model, CARP model parameters were incorporated into the refinement of the MARC regional model. Travel demand models for Wyandotte and Leavenworth counties have not been developed

Future land use data developed was input into the K-7 travel demand model. Areas outside of the 8-mile corridor swath, but still within the MARC model area utilized the region's 2030 Long Range Transportation Plan network and land use.

The K-7 travel model was developed as a tool to analyze the Phase 1 facility type and the Phase 2 street network at a planning level. Caution should be exercised when using the raw model volumes. Using a regional model at an intersection level may present some forecasting limitations.

K-7 Study Corridor and Model Limits - Figure 6

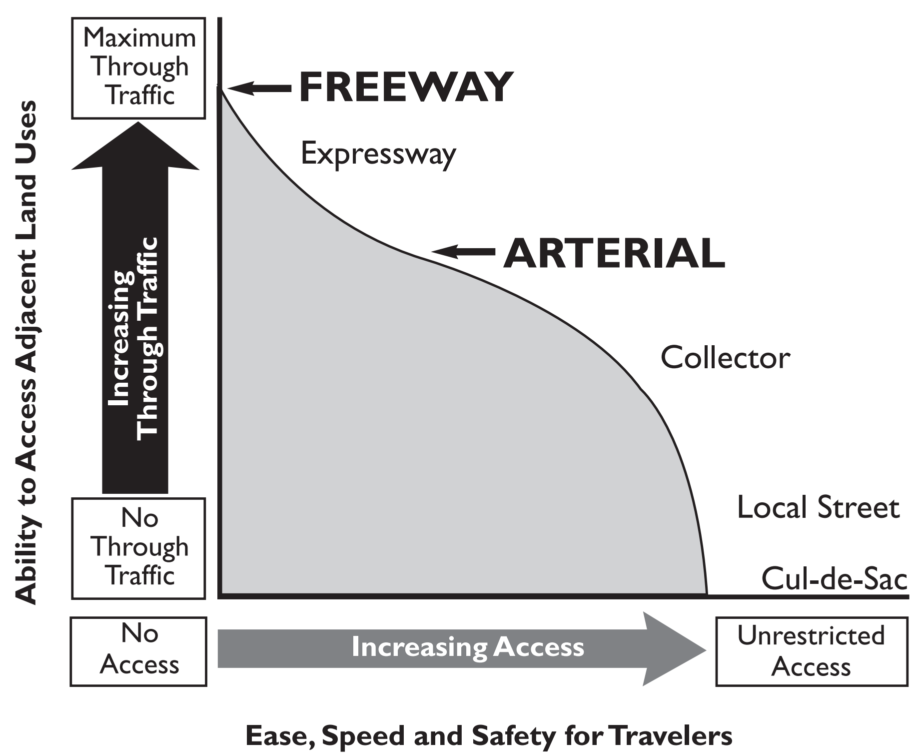
Future Land Use - Figure 7



Alternatives

Phase 1 tested simple planning-level alternatives. Two facility types were developed for K-7 consisting of a freeway and an urban arterial as defined below. Table 1 provides a description of each facility type. Each facility type provides a range of mobility and accessibility to motorists. Figure 8 shows the degree of mobility and accessibility offered by each facility type.

Freeway and Arterial Mobility vs. Accessibility Range - Figure 8



Freeway and Urban Arterial Facility Description - Table 1

	Freeway	Arterial
Function Definition: How do we define road types?	A multilane, divided highway with full control of access and uninterrupted flow of traffic. Access is provided with grade separated interchanges. • Factors that affect traffic operations include interactions among vehicles and roadway geometrics. • 4-lane freeway is assumed with interchange spacing of 1-2 miles.	A street that primarily serves mobility and secondarily serves accessibility. Partial control of access is maintained with interrupted flow at signalized intersections with spacing of 2 miles or less. • Factors that affect traffic operations include spacing of intersections and signal timing. • 6-lane arterial with full intersections every 0.5 miles.
Traffic Volume to be Serviced: How busy is the road?	Typical: 1,800 vehicles per lane per hour at LOS D I-435 between U.S. 69 and Metcalf • Existing is 2,400 per lane WB PM peak • Existing is 2,300 per lane EB AM peak	Typical: 900 vehicles per lane per hour at LOS D 135th Street between U.S. 69 and Metcalf • Existing is 1,000 per lane WB PM peak • Existing is 800 per lane EB AM peak
Performance is Measured by: How do you busy is the road?	Density of vehicles - Number of vehicles within a given space	Average vehicle travel speed - How fast a car can travel
Posted Travel Speed	65 mph.	45 mph
Travel Time	Freeway serves longer trips with a better travel time. (about 1 minute per mile)	Arterial serves shorter trips with a better travel time. (about 3 minutes per mile)

Traffic Analysis

Phase 1 analysis was performed at the segment and sub segment level. Figure 1 (Study Map, page 4) shows the limits of the study segments. Sub-segments represent study segments that cross two segments.

- Segment 1 – Miami/Johnson County Line to K-10
- Segment 2 – K-10 to State Avenue
- Segment 3 – State Avenue to K-5/Muncie Street

Travel model output compared 2030 design year model measures of effectiveness to determine travel efficiencies of the freeway versus arterial facility type.

In addition to the base alternatives, "What-If" alternatives were developed as a means of testing changes in land use and roadway network conditions. What-If alternatives analyzed included:

- 6-lane freeway
- Full Build Out land use
- Northern Connector between K-7 and I-435

TRAFFIC ANALYSIS

Phase 1 traffic analysis used the K-7 travel demand model to analyze traffic demand and travel characteristics. Results from this analysis were used to recommend a facility type for the corridor. Table 2 shows the forecasted daily traffic demand for each study segment by analysis alternative.

Table 3 shows the forecasted travel time for each study segment by analysis alternative. Conclusions from the analysis were:

- 2030 and full build out land use generates more traffic than the K-7 Corridor Technical Report, 2002 had identified.
- Freeway facility type draws more traffic than the arterial facility type.
- Original concept of 4-lane freeway versus 6-lane arterial needs to be 6-lane freeway versus 8-lane arterial.
- No-Build is not an option.
- Travel time is significantly longer for arterial facility type than freeway facility type.

Phase 1 Traffic Forecast - Table 2

		Segment 1 223rd to I-35	**Segment 2** K-10 to I-70	**Segment 3** I-70 to K-5/Muncie
2004 Existing	Daily Traffic	16k - 24k	16k - 25k	20k
2030 No Build	Daily Traffic	17k - 38k	29k - 69k	23k - 36k
2030 Build				
6-lane Freeway	Daily Traffic	20k - 53k	72k - 99k	50k - 67k
6-Lane Arterial	Daily Traffic	20k - 45k	32k - 54k	25k - 36k
Full Build Out				
6-Lane Freeway	Daily Traffic	28k - 75k	107k - 139k	60k - 112k
8-Lane Arterial	Daily Traffic	27k - 60k	53k - 121k	29k - 66k

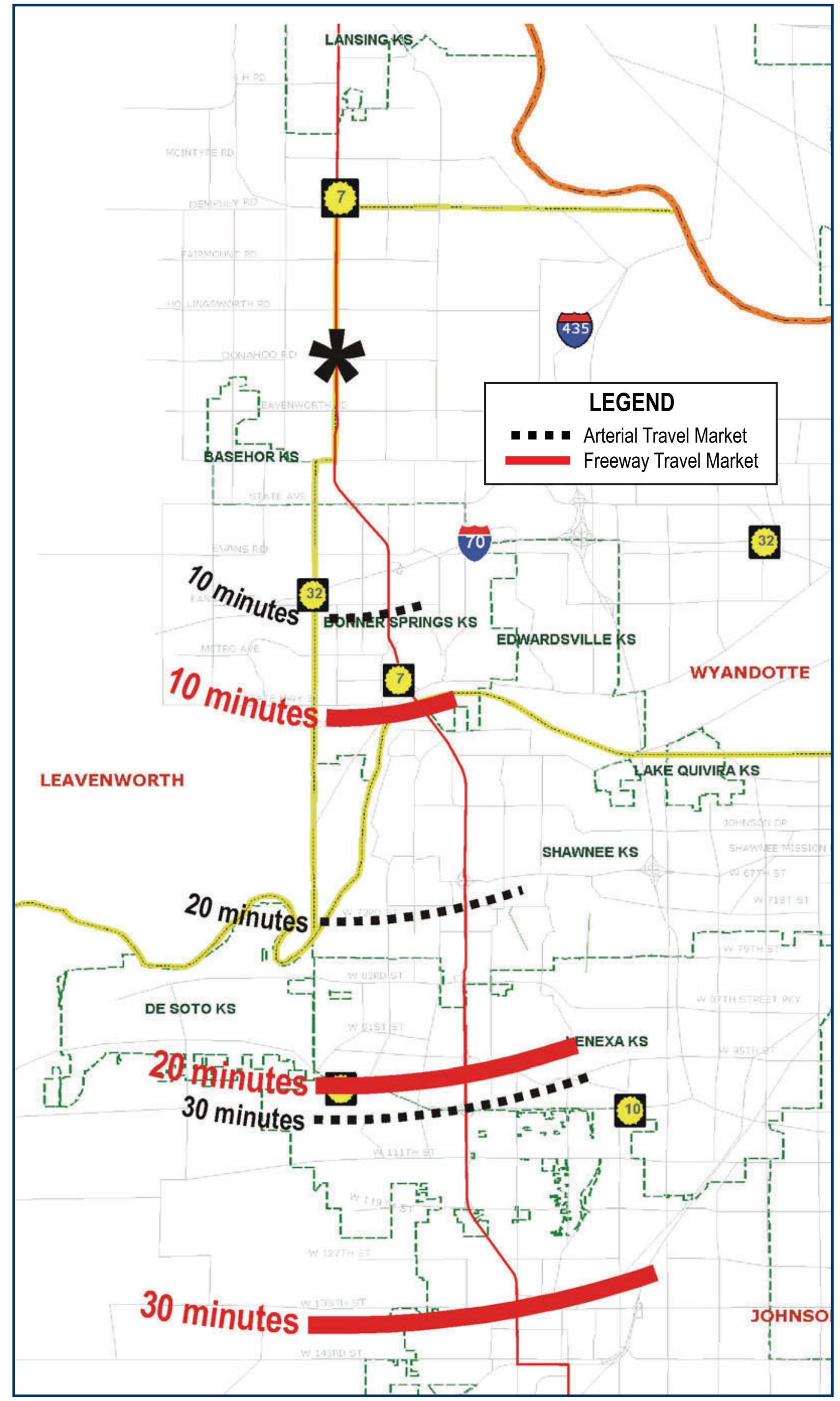
Phase 1 Travel Time Forecast - Table 3

		Segment 1 223rd to I-35	**Segment 2** K-10 to I-70	**Segment 3** I-70 to K-5/Muncie
2004 Existing	Minutes	11.0	10.6	10.0
2030 No Build	Minutes	17.7	36.4	27.6
2030 Build				
6-lane Freeway	Minutes	8.4	13.1	9.3
6-Lane Arterial	Minutes	12.2	19.3	14.0
Full Build Out				
6-Lane Freeway	Minutes	8.7	18.5	11.5
8-Lane Arterial	Minutes	13.5	26.6	16.3

Traffic Analysis

Reductions in travel time for motorists means that motorists will be able to travel further with a freeway than an arterial. Figure 9 shows how the travel demand market expands with a freeway compared to an arterial.

Since motorist travel time improves along K-7 for a freeway compared to an arterial, more vehicles are expected to use K-7 as an improved means of driving between their origin and destination. As a result, traffic volumes are expected to increase in the K-7 corridor with the freeway facility type. Figure 10 shows how travel patterns would change for a freeway along K-7 compared to an arterial. Green indicates an increase in traffic and red indicates a decrease in traffic when a freeway is planned for K-7. Model data also indicted that higher traffic volumes would use the local street network when K-7 is an arterial than when it is a freeway (i.e. there is a greater demand on the local network).



2030 K-7 Travel Market - Figure 9

2030 K-7 Change in Travel Demand - Figure 10

What-If travel model scenarios are changes to either land use or the roadway network from the base condition. Phase 1 What-If scenario results were:

- 6-lane freeway – Previous estimates of a 4-lane freeway in the K-7 Technical Report were proven inadequate by the results of the 6-lane freeway What-If scenario. In Phase 1, a minimum of 6-lanes was shown to be needed in much of the corridor north of I-35 by 2030.

- Full build out land use – Full build out land use represents additional land use and traffic growth beyond the 2030 design year. Additional land use and traffic growth beyond 2030 was high at both ends of the study corridor and lower in the middle. Results indicated that traffic volumes increased by a significant amount from 2030 to Full Build Out conditions to warrant additional capacity.

- Northern Connector between K-7 and I-435 – A four lane freeway between K-7 and I-435 was analyzed with no improvements to K-7 between I-70 and Mary Street. Traffic demand results indicated that the majority of the motorists continued to use K-7 and only a few vehicles were diverted to a new east/west route.

Safety Analysis

The K-7 Corridor Technical Report, 2002, performed a crash analysis of the corridor. The purpose was to analyze the corridors current safety. Five years of crash data was provided by KDOT from 1995 through 1999. The purpose of the safety analysis in this study was to review the more recent crash data to see if any trends had changed since the Technical Report. Crash data was provided by KDOT for years 2000, 2001 and 2002.

Table 4 shows the crash data provided by KDOT for years 2000, 2001 and 2002. As shown in the table, there were a significant number of crashes in the study corridor. In the last three years of available data, there were 1,167 total accidents for an average of 389 accidents per year. Previously, between 1995 and 1999 there were 1,933 total accidents for an average of 387 per year, indicating that the average total accidents per year is similar to previous results. When crash rates were compared to the statewide crash rates for similar facilities, segment 1 shows a higher total crash rate than the statewide average. Other study segments show a crash rate close to the statewide average. As traffic volumes increase in the corridor, the number and crash rate is expected to exceed the statewide average for most of the study segments.

Corridor Study Segment	Technical Report Segment	PDO	Injury	Fatality	Total Crashes	Average Crash Rate [mvm]	Ave. Statewide Crash Rate [mvm]	Statewide Facility Type*
1	1	311	52	2	365	2.1	0.986	4-Partial / Rural
1	2	250	28	1	279	2.6	2.832	4-Partial / Urban
2	3	119	23	2	144	0.7	1.307	4-Full / Urban
2	4	156	26	2	184	2.0	2.832	4-Partial / Urban
3	5	162	31	2	195	1.0	0.986	4-Partial / Rural
TOTAL		**998**	**160**	**9**	**1,167**	*Source: KDOT*	*Statewide accidents for years 1997 - 2001	

K-7 Overall Total Crashes by Segment 2000 – 2002 - Table 4

Street Network (Phase 2 Micro-Level Segment Analysis)
Study Methodology

Phase 2 analysis generated a micro-level understanding of K-7 and the street network for each study segment as opposed to the macro-level corridor analysis performed in Phase 1. A preliminary street network plan was developed for each study segment based on Phase 1 results and discussions with the study partners. The street network plan included identification of lanes and locations where access would be for K-7 and the supporting street network.

In Phase 2, the travel model was taken to a greater level of detail that included a detailed street network concept plan. Based on the revised travel model, 2030 and full build out daily forecasted volumes for each study segment were developed.

Traffic analysis tested traffic results for K-7 and the supporting roadway network. Traffic analysis utilized traffic software that used traditional Highway Capacity Manual, 2000 methods.

Roadway segment and intersection/interchange level of service analysis of the K-7 Corridor street plan was performed for 2030 and full build out conditions. Design level of service D was used for 2030 conditions and design level of service E was used for full build out. Traffic assumptions provided by KDOT for the K-7 Corridor Technical Report, 2002 were also used in this study:

- DHV = 11%
- Directional Distribution = 55/45
- Truck 11% mainline, 3%-5% urban streets

In order to convert daily volumes to a design hour volume, complimentary movements were added together and then multiplied by the 0.55 directional split and 0.11 design hour volume factors. This approach provides a balanced volume that peaks in both the AM and PM directions at the same time, which provides a conservative analysis result.

K-7 mainline and local street network capacity was analyzed using urban arterial and freeway level of service capacity thresholds from Table 5 (below) and Table 6 (on the following page).

Lanes	LOS-A	LOS-B	LOS-C	LOS-D	LOS-E
2	NA	NA	10,800	13,700	14,300
4	NA	NA	23,700	27,400	28,700
6	NA	NA	36,800	41,200	43,100
8	NA	NA	49,900	54,900	57,500

Source: HCM 2000, Class II

Urban Arterial Thresholds
Daily Volumes Two-Way (vehicles/day) - Table 5

Lanes	LOS-A	LOS-B	LOS-C	LOS-D	LOS-E
2	19,700	32,200	46,500	62,700	80,600
4	30,400	49,800	71,900	96,800	124,500
6	41,700	68,300	98,600	132,800	170,800
8	53,600	87,800	132,800	170,700	219,500

Source: HCM 2000, Class II

Freeway Thresholds
Daily Volumes Two-Way (vehicles/day) - Table 6

TRAFFIC ANALYSIS

Phase 2 traffic analysis used a more detailed K-7 travel demand model to analyze traffic demand and traffic operations for the K-7 corridor and supporting street network. Results from this analysis were used to identify the necessary estimated right of way needs along K-7 as well as the supporting local street network.

Traffic Demand

Existing, 2030 and full build out traffic demand is shown on Figures 11 through 13. Traffic forecasts represent Phase 2 model refinements. (Note: Phase 1 assumed that K-7 between I 35 and K-10 remained in its current configuration, whereas, Phase 2 assumed that K-7 between I-35 and K-10 was upgraded to a freeway.) The number of planned lanes for 2030 and full build out conditions are also shown.

Roadway Network

A large portion of land adjacent to K-7 is undeveloped. This is especially true north of I-70 and south of I-35. Consequently, a plan for the K-7 corridor and supporting roadway network was essential for the entire system to function together. The key features of the comprehensive roadway system are:

- Mainline Facility Type: Based on 2030 and full build out traffic demand, the necessary K 7 freeway through and auxiliary lanes were developed to achieve a reasonable level of service in the respective design years. The number and type of K-7 mainline lanes are shown in Figure 12 and 13 for 2030 and full build out conditions.

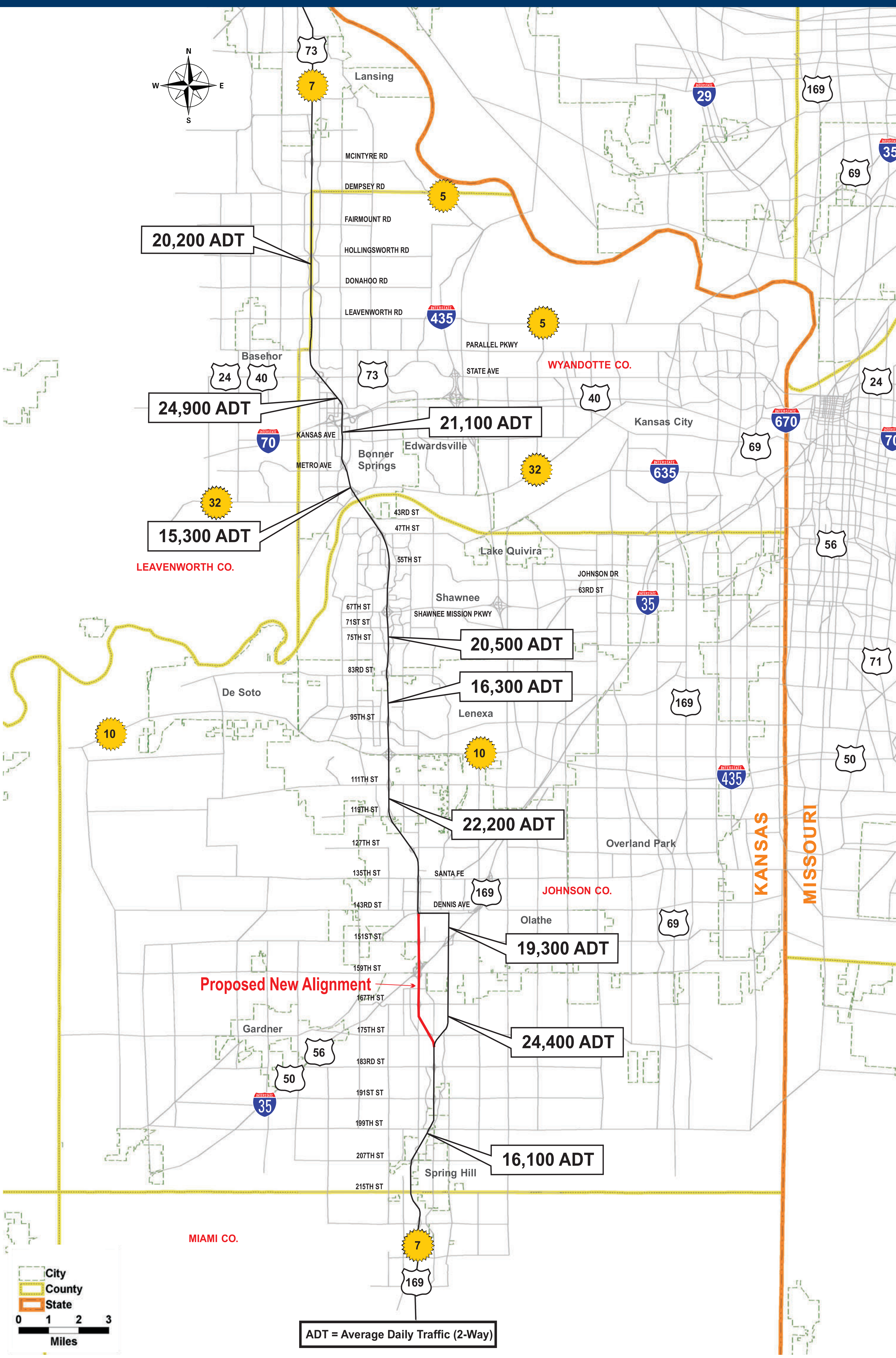
- Interchanges: While KDOT prefers two-mile spacing for interchanges, K-7 interchanges would be located at a minimum of one-mile spacing. Most interchanges were initially laid out as typical diamond configurations, with signalized ramp terminals anticipated. However, due to existing or anticipated physical constraints, interchange configurations were modified. Interchange layouts are shown in plan plates located in Appendix B.

- Frontage Roads: To effectively serve properties adjacent to K-7 in the future, and to conform to access management principles, a network of frontage roads was developed on both sides of K-7 in most areas. An effort was made to offset the frontage roads roughly one-quarter mile from the center line of K-7, in order to maintain adequate spacing between ramp terminals and adjacent intersections. Thus, these parallel facilities would serve as "reverse frontage" roads, with access to properties coming from the "rear". The quarter-mile offset was used as a guide; existing topography, land use, and other features further guided the conceptual horizontal layout. The frontage roads are shown continuous when possible, not only to serve for local/regional circulation needs but to serve as relievers for K-7, reducing the need for short-trip local traffic to use the freeway and providing potential diversion routes during freeway incidents. Frontage road layouts are shown in plan plates located in Appendix A.

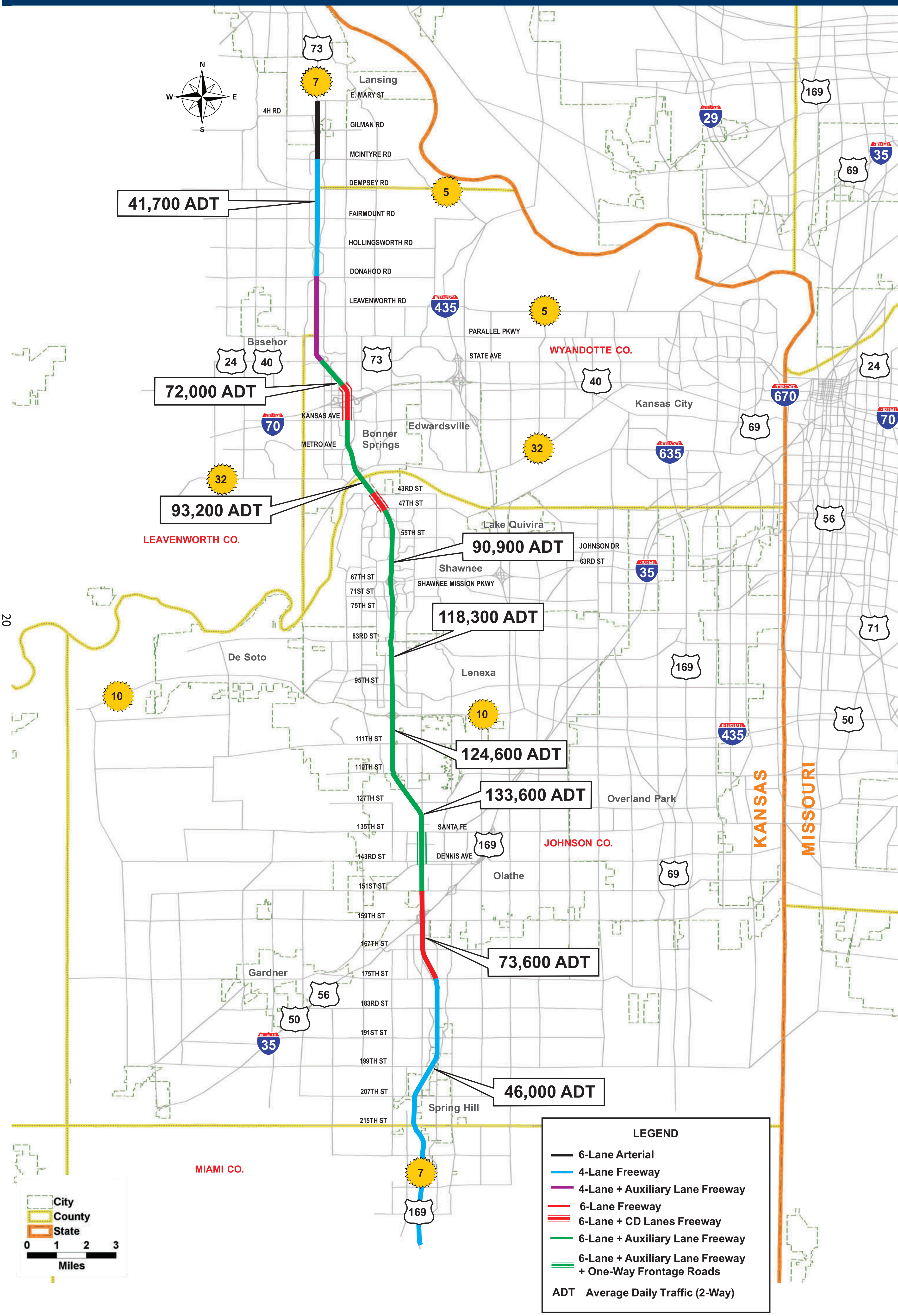
- Supporting Local Arterials: Within the K-7 corridor, future major east-west arterials would fall at approximately one-mile intervals. It is envisioned that the major north-south facilities would be located approximately one mile on either side of K-7. Supporting local arterials are shown in plan plates located in Appendix A.

- Property Access: Many properties currently have direct access to K-7 at points that would need to be closed to convert the facility to a freeway in the future. Therefore, the supporting network concept included access provisions to serve these properties, largely via connections to the frontage roads. The current concept illustrates potential ways to serve these properties if they remain in their current state. As anticipated development/redevelopment occurs along the corridor, these access considerations should be revisited to determine the best configuration for individual developments and the system as a whole.

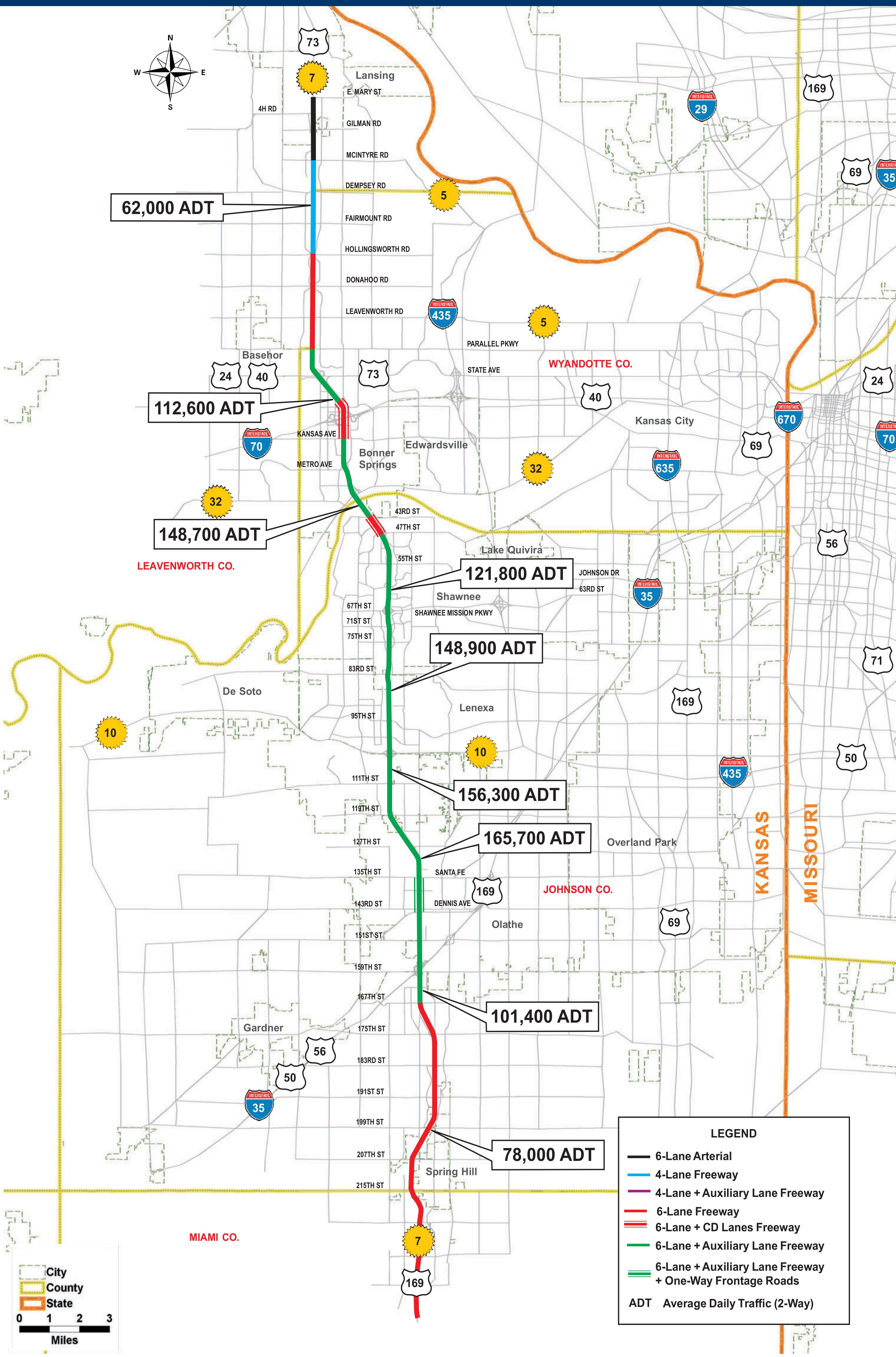
Existing Traffic (2002-2004) - Figure 11



2030 Traffic and Lanes - Figure 12



Full Build Out Traffic and Lanes - Figure 13



Operational Analysis

Based on the Phase 2 forecasted traffic demand from the K-7 travel model, traffic operations analysis was performed. Roadway capacity analysis was performed as described in the study methodology Section. This analysis was used to determine the number of future lanes on the K-7 mainline and supporting roadway network. Intersection level of service and queue analysis was performed to evaluate the number of lanes and operational characteristics for each interchange. Table 7 shows the K-7 Interchange ramp intersection level of service results for full build out conditions at ramp terminal intersections.

Because of their complexity, more detailed analysis was performed at the system to system interchanges of I-70, Shawnee Mission Parkway, K-10 and I-35.

Unique Areas

Based on the operational analysis performed, problem areas were identified. These areas should be analyzed in greater detail as the planning and design process continues.

Segment 1

I-35 Interchange – The conceptual layout of the I-35 Interchange is shown in plan plate B-7 in Appendix B. The I-35 Interchange mainline, ramps, ramp junctions, and weaves were analyzed using Highway Capacity Software; preliminary analysis indicates that operations during 2030 are anticipated to be at LOS D or better and during full build out anticipated to be at LOS E or better. More detailed analysis of the interchange should be performed during design.

	Southbound K-7 Ramp Intersection		Northbound K-7 Ramp Intersection	
Intersection	LOS	Delay	LOS	Delay
Segment 3 - State Avenue to E. Mary Street				
McIntyre Road	A	9.0	B	11.3
Fairmount Road/Polfer Road	B	13.2	B	12.3
Donahoo Road	B	19.0	B	12.5
Hollingsworth Road	B	14.9	B	11.1
Leavenworth Road	B	14.6	C	23.9
Parallel Parkway	B	13.1	B	16.3
Segment 2 - K-10 to State Avenue				
US-24	A	3.9	C	33.4
130th Street	C	22.5	-	-
I-70	-	-	-	-
Kansas Avenue	C	31.4	-	-
Nettleton	D	40.3	D	36.8
K-32	D	42.4	D	35.6
43rd Street	B	11.4	B	11.2
47th Street	D	41.6	C	21.8
Johnson Drive	B	12.9	B	12.0
Shawnee Mission Parkway	-	-	-	-
75th Street	C	23.4	C	31.6
83rd Street	C	34.8	D	53.6
Prairie Star Parkway	C	36.3	D	46.2
Segment 1 - Miami/Johnson County Line to K-10				
K-10	-	-	-	-
College Boulevard (111th Street)	B	11.9	A	6.7
119th Street	A	8.1	B	11.4
Harold (127th Street)	B	31.5	A	0.8
Santa Fe (135th Street)	F	>80	F	>80
Dennis Avenue (143rd Street)	E	70.6	E	56.7
Old Highway 56	B	14.8	C	21.9
151st Street	C	27.4	B	12.6
159th Street	C	23.8	C	22.1
I-35	-	-	-	-
167th Street	B	11.5	B	12.24
175th Street	B	12.2	A	6.9
183rd Street	B	7.4	A	8.6
191st Street	B	12.7	A	3.5
199th Street	A	9.0	B	13.9
207th Street	A	7.8	A	7.8
223rd Street	B	15.5	B	5.2

Full Build Out K-7 Interchange Ramp Intersection Level of Service - Table 7

Old 56 Highway to Santa Fe (135th Street) – The conceptual design of the freeway system between US 56 and Santa Fe is shown in plan plates B-8 and B-9 in Appendix B. K-7 between US 56 and Santa Fe is proposed to have 6 lanes plus auxiliary lanes in each direction with slip ramps to and from one-way frontage roads. Both the northbound and southbound frontage roads will have two lanes in each direction and provide access to property and local streets. The area that presented the greatest traffic operational problems in the K-7 corridor was the K-7 and Santa Fe northbound and southbound intersections. These two intersections were the only locations in the K-7 corridor that had level of service below the desired level for 2030 and full build out conditions.

Level of service problems are a direct result of the high traffic forecasts around the intersections. K-7 model volume indicate 65,000 daily vehicles east of the intersection in 2030 and 84,000 daily vehicles east of the intersection in full build out.

Considering the planning level of this study, caution should be exercised with using the raw model volume output. Using the regional model at the intersection turning level may present some forecasting problems. Although the K-7 model refined the regional model by adding more model detail within the study corridor, limitations in the travel model may present inflated traffic volumes within this section of the study corridor. Some of the model limitations that may have contributed to the higher forecasts along Santa Fe include:

- Turning movements represent both AM and PM peaks occurring at the same time to be conservative, as described in the Study Methodology Section.
- K-7 model is a daily model. Post processing using a uniform peak hour percent (K factor) was used to develop design hour volumes.
- The regional model may not be reflecting true corridor capacity constraints along Santa Fe.
- Caution should be presented when using a regional model to extract turning movements.

In order to develop more accurate turning volumes at the K-7 and Santa Fe intersection, Olathe's new travel demand model should be used which reflects local travel conditions. External model freeway demand from the K-7 model could then be used in the Olathe model.

K-10 Interchange – The conceptual design of the K-10 Interchange is shown in plan plate A-5 in Appendix A. Detailed operational analysis of the K-10 Interchange was performed in the K-10 Interchanges Study. Travel demand for a 2030 (also considered full build out in this area) condition was correlated with the K-7 study. Study recommendations were for a system to system directional interchange and were modeled using VISSIM. Detailed operational results are found in the K-10 study. Based on the proposed design that includes braided ramps on all four segments of the interchange, no levels of service problems are anticipated.

Segment 2

I-70 Interchange – The conceptual design of the I-70 Interchange is shown in plan plate B-22 in Appendix B. The interchange at I-70 with K-7 required many design considerations. This was due to the fact that the existing interchange was designed to serve a toll plaza for the Kansas Turnpike. As such, very high turning movements were created at the intersection of K-7 with the I-70 ramps / Caanan Drive. In the previous K-7 study, a three level single point diamond interchange was recommended at this location. This design was a compromise from a fully directional Maltese cross design that is actually needed to satisfy the high existing and even higher expected movements between K-7 and I-70.

Further analysis has been completed and the results still do not favor the Maltese cross design. The right of way necessary to construct this type of interchange would require purchasing many of the businesses near the existing interchange. Also to construct this interchange, the ramps required to accommodate the projected traffic volumes would extend south past the proposed Kansas Avenue interchange and north past the proposed interchange at 130th Street. This type of interchange would eliminate an interchange at Kansas Avenue as well as at 130th Street without an extensive collector-distributor system with braided ramps to grade-separate the weaving movements. This type of system, which is very similar to what would be required at the interchange of K-7 with K-10 to accommodate the close interchanges at Prairie Star Parkway and College Boulevard, would require the acquisition of almost all existing businesses along K-7 between 130th Street and Kansas Avenue.

Therefore to serve the high turning movements to and from K-7 at the I-70 ramps intersection, a unique layout for the interchange at I-70 with K-7 was developed. The proposed intersection design allows for directional traffic movements without at grade signalized intersections. The interchanges at Kansas Avenue and at 130th Avenue could also be constructed. Finally, the right of way required to construct this interchange would not include purchasing any land currently occupied by a business.

The ramps between I-70 and K-7 most resemble a trumpet interchange in the northeast portion of the interchange. The same idea is mirrored in the southwest portion of the interchange. The unique design of this interchange also includes single-point urban interchanges at Kansas Avenue and at 130th Avenue. A system of collector-distributor roads was utilized to separate all ramp traffic from mainline traffic between Kansas Avenue and 130th Avenue.

One advantage to this design concept is that it could be implemented in phases to address even existing congestion at the K-7 intersection with the I-70 Ramps. The existing interchange could be modified to serve only movements to and from northbound K-7. The mirrored interchange to the west could then serve the movements to and from southbound K-7.

43rd to 47th Street – The conceptual design of the K-7 collector/distributor system from 43rd Street to 47th Street is shown in plan plates B-17 and B-18 in Appendix B. It was determined that interchanges needed to be provided at both the intersections of 43rd and 47th Streets at K-7. 43rd Street serves large areas of developable non residential land that need direct highway access without traveling through residential neighborhoods to connect to 47th Street or Clare Road. 47th Street is an arterial route that connects between I-435 and K-7 and therefore also needs a direct connection to K-7. Construction of interchanges at 43rd Street and at 47th Street poses a variety of problems. Due to the existing 3250-foot spacing of the intersections, it would be very difficult to construct an interchange with direct access to K-7 at each of these locations. The short weave length between the on-ramp of one interchange and the off-ramp of the next interchange would create a safety problem for traffic attempting to enter or exit the flow of highway traffic. The terrain between these intersections also provides a design challenge due to the great elevation change between each existing location.

A split diamond interchange at each of the locations connected by a system of collector distributor roads is recommended. The collector-distributor roads allow traffic to weave between interchanges without mixing with highway traffic creating a safer highway and allowing interchanges to be constructed at each of the existing interchanges. The collector-distributor roads would also provide needed north-south connectors between 43rd and 47th Streets that would be very difficult to construct due to the terrain, railroad, existing developments, and other topographic limitations.

Shawnee Mission Parkway – The conceptual design of the Shawnee Mission Parkway Interchange is shown in plan plate B-15 in Appendix B. This existing small clover leaf interchange can serve the traffic demands today and for a few years into the future. However, the full build out design traffic volumes will require that this interchange be modified to provide a collector-distributor system between the northbound and southbound clover leaf ramps on K-7. Without these collector distributor roads the weaving sections along K-7 will fail.

Segment 3

Donahoo Road Interchange – The conceptual design of the Donahoo Road Interchange is shown in plan plate B-27 in Appendix B. Existing development constrained the potential frontage road alternatives, resulting in the roundabout concepts developed for the ramp terminals. At the western roundabout (southbound on/off-ramps), the overall intersection is expected to operate at level of service B, however, the northbound frontage road approach is expected to operate at LOS F under full build out conditions. As development progresses in this area of the corridor, it will be important to monitor the expected operations of this interchange and continue to refine the concept.

Hollingsworth Road Interchange – The conceptual design of the Hollingsworth Road Interchange is shown in plan plate B-28 in Appendix B. Much like the Donahoo Road Interchange, at the western roundabout (southbound on/off-ramps), the overall intersection is expected to operate at level of service B, however, the northbound frontage road approach is expected to operate at LOS E under full build out conditions. As with Donahoo Road, it will be important to monitor the expected operations of this interchange and continue to refine the concept.

Frontage Road Alignments – The conceptual concept of continuous frontage roads is more important than the exact alignments chosen. To ensure a successful continuous facility on each side of K 7, the communities along Segment 3 will need to collaboratively plan (especially at jurisdictional boundaries) with an eye toward ultimately realizing this concept.

Future Property Access – The local access roads shown connecting to the frontage roads represent one concept of how the local properties could be served. They are by no means firm recommendations as to specific alignments. As the frontage roads are planned, and as properties develop or redevelop along the corridor, the responsible jurisdictions will need to consider how access needs will be met while maintaining adequate traffic flow on the system as a whole.

Traffic Addendum (Available Upon Request)

TransCAD K-7 Model with documentation Synchro, VISSIM, Sidra models Full build out Synchro Output for K-7 Corridor

- Intersections HCM Report
- Queue Report

Street Network

Introduction

The K-7 Corridor Management Study focused on K-7 and the adjacent local street system as contrasted to the 2002 Technical Report which primarily focused on the mainline of K-7. This is because K-7 and the local street network are an integrated system that must work together. The Traffic Analysis section of the report discussed the development of the travel demand model used for the entire corridor and the nexus between land use and traffic. This section describes the significant freeway traffic volumes on K-7 and the required complementary local street system.

K-7 and the local street network function as an integrated system that serves different destination and travel purposes. The differing destinations are evident in the aerial photography shown with the network and interchange plate drawings provided in Appendix A and B respectively. With the freeway facility type determination made for the entire corridor, K-7's travel purpose will be to serve the higher traffic demand volumes and faster travel times. The local street network will provide access to final destinations and the ability to provide a reverse frontage road system to distribute traffic and facilitate development opportunities.

Laying out an effective street network will enhance the capacity of K-7 and make the most use of the surrounding land, both developed and undeveloped. To accomplish an effective layout of the street network around K-7, City and County existing long range transportation plans were used along with input in the form of City/County meetings. Three of these meetings were held with each city and county along the corridor over the course of the project.

K-7 Corridor

As stated previously, the recommendation is for K-7 to be developed to an access controlled freeway its entire length. While there isn't total agreement that a freeway is ultimately going to be needed, there is agreement that it would be prudent to plan and preserve right-of-way for a freeway. The Traffic Analysis section describes in detail how the recommendation was made and justified, but fundamentally the decision was driven by the future land use plans the communities and counties along K-7 provided to KDOT.

Appendix A presents the plate drawings at a scale that allows the proposed local street network system to be shown. Appendix B presents the interchange plate drawings at a larger scale to be able to see details and right-of-way preservation needs near the interchanges more clearly. For K-7, the drawings are developed with the following basic criteria:

- K-7 will be an access controlled freeway with primarily six through lanes.
- Long term goals are to eliminate any existing at grade access points along K-7 and provide access only at interchanges.
- K-7 will require approximately 300 feet of right-of-way for the mainline.
- KDOT will continue to have primary responsibility for maintaining K-7.
- Interchanges are typically laid out as standard KDOT diamond interchanges with standard right-of-way needs preserved where feasible.
- Desirable interchange spacing is every two miles to allow for safe weaving associated with ingress and egress to the freeway. However, more frequent access was uniformly desired by most communities along K-7 and the plate drawings in Appendix A and B generally show a minimum of one-mile spacing.
- One-mile spacing of interchanges will require additional auxiliary lanes between interchange ramps.
- Complex system to system interchanges at I-35 and I-70 have been laid out to serve the maximum amount of traffic possible but also be sensitive to socioeconomic considerations.

A typical section of the K-7 mainline is provided in Figure 14 (in the following page). Individual interchange configurations are summarized with the Segment Summaries given below and unique traffic challenges discussed within the Traffic Analysis section of the report.

Local Street Network

Through local input and the use of general traffic planning principles, the following guidelines were established for the local street network:

Arterials:

1.) The primary function is to distribute traffic away from the interchanges, serve as medium to long range travel on the local street network, and distribute traffic to the collector road system.

2.) Existing arterials are generally laid out in a one-mile grids.

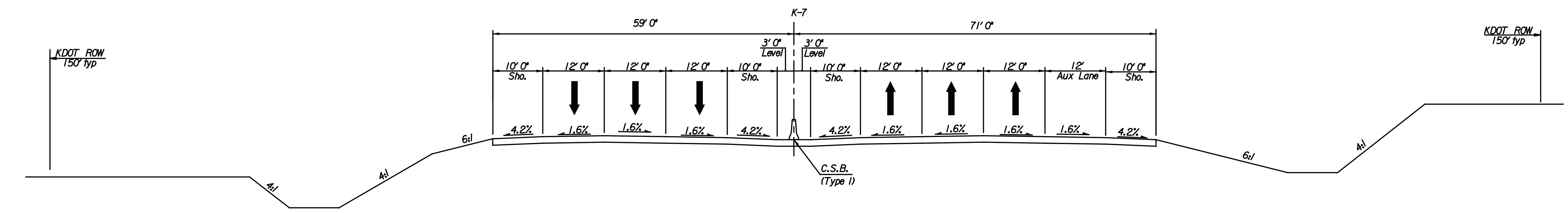
3.) Arterials should be planned as 4-6 lane facilities with additional intersection turn lanes as dictated by turning movement volumes.

4.) Arterials should be planned to provide control of access as much as possible to facilitate the longer range nature of the travel trips.

5.) Access control is especially critical at interchange locations to more safely and effectively distribute the traffic desiring to enter and exit the K-7 freeway and to avoid adverse operations on the K-7 mainline. **Desired guidelines include having major intersections spaced a minimum of 1000 feet from the ramp intersections.**

6.) Arterial streets are recommended to have a minimum proposed right-of-way of 120 feet.

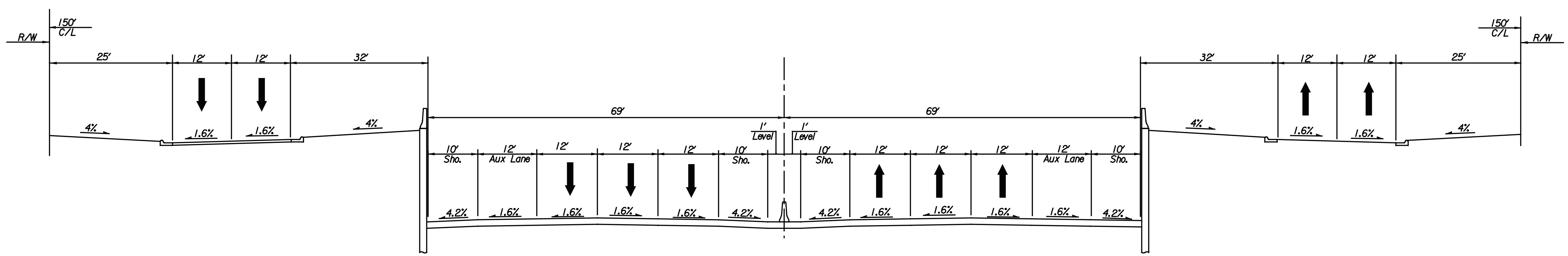
Mainline Typical Section - Figure 14



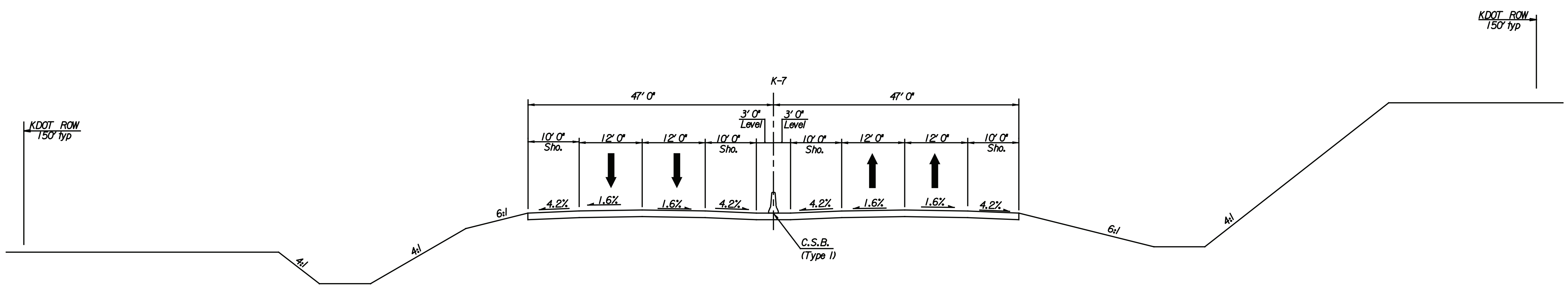
FILL SECTION

K-7
(6-lane section)

CUT SECTION



K-7 CLOSED MEDIAN
WITH ONE WAY FRONTAGE ROADS
(6-lane section)



FILL SECTION

K-7
(4-lane section)

CUT SECTION

Collectors:

1.) The primary function is to distribute traffic away from the arterials, provide short range trips to final destinations, and provide access into developments.

2.) Collectors should be planned as 2-3 lane facilities with the third lane being a continuous turn lane as warranted.

3.) The collectors immediately adjacent to K-7 act as reverse frontage roads to distribute traffic and provide access to properties for economic development.

4.) Collector streets are recommended to have a minimum proposed right-of-way of 80 feet.

5.) Access points should be a minimum of 600 feet from the collector and arterial street intersection.

Typical sections of the arterial and collector characteristics are provided in Figure 15 (in the following page).

Implementation

This report only shows approximate locations of the local street network. As development occurs, there may need to be changes to the local street network shown. As these developments occur however, the cities and counties should seek to preserve the right-of-way for both K-7 and the local street network.

It will be important to incorporate the local street network into the city's and county's long range plans through updating their master plans. These long range plans should contain more detail about the exact location of the street network. The intent of this report is to show the right-of-way preservation needs that should be secured as development happens.

Segment 1 Summary

With the exception of the section through Olathe, this segment is largely undeveloped and already a high level expressway. Appendix A and B provide plate drawings showing the integrated K-7 freeway and local street system. The following is a brief summary of issues primarily focused on the interchanges:

- 223rd Street is a rapidly developing area and good connectivity to the local road system was desired. Future capacity enhancements to the existing interchange bridge are also desired.

- 215th Street was reviewed as a potential interchange location but eliminated due to the constrained 215th Street roadway section traveling east into Spring Hill. Capacity enhancements to 215th Street to serve the interchange traffic would be detrimental to the existing homes east of the interchange.

- 207th Street provides good connectivity to Spring Hill's industrial developments but requires the grade separation of the at-grade intersection at Lone Elm Road.

- 199th Street is a significant east-west arterial in Johnson County with substantial capacity enhancements programmed along its entire length.

- 191st and 183rd Streets are shown as one-mile interchange spacings due to the ultimate development anticipated north of Spring Hill and south of Olathe.

- 175th Street like 199th Street is a significant east-west arterial. A future interchange location to the west is needed to allow for the realignment of K-7 to provide a freeway through Olathe.

- 167th and 151st Street were initially examined as interchange locations but dropped since they were too close to the I-35 system to system interchange.

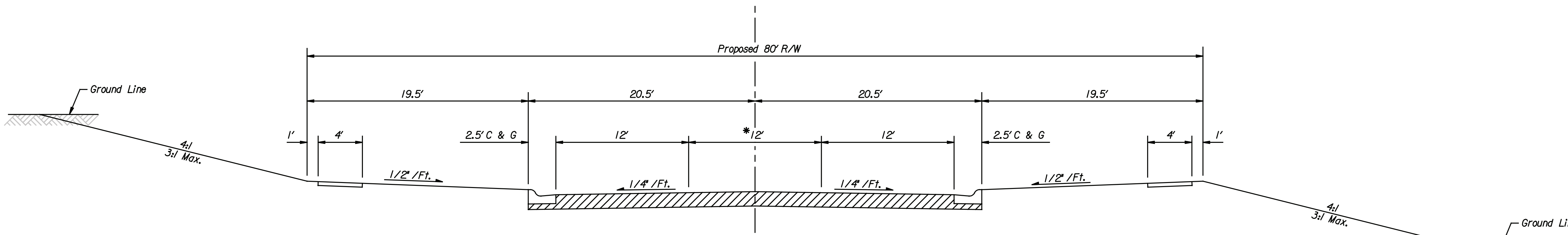
- The ultimate I-35 interchange concept will be a very large system to system fully directional interchange, but will also provide local access from K-7 to 159th Street. The I-35 interchange will utilize as much as possible of the bridges and right-of-way currently being acquired for the 159th/Lone Elm Road service interchange. Impacts to the Cedar Lake Park are recognized but it is also noted that the lake has siltation issues and may not be a viable lake in the future when the system to system interchange is needed.

- An option was looked at to provide a freeway link between I-35 and approximately 119th Street on new alignment. Due to new development, terrain, and cost issues the existing K-7/Parker Street alignment was selected.

- The recommended K-7/Parker Street alignment will require converting an existing arterial street into a freeway. It impacts residences and businesses but achieves the goal of a continuous K-7 freeway with less impacts and constraints than a comparable western alignment. This conversion of K-7/Parker will be similar in character, concept, and impacts as Wichita experienced with the conversion of Kellogg/US 54 to a freeway. Old 56 Highway, Dennis Avenue, and Santa Fe Avenue would all be connected to the freeway by ramps and connected to each other by one way frontage roads. These frontage roads would provide access to local properties and to the local street system.

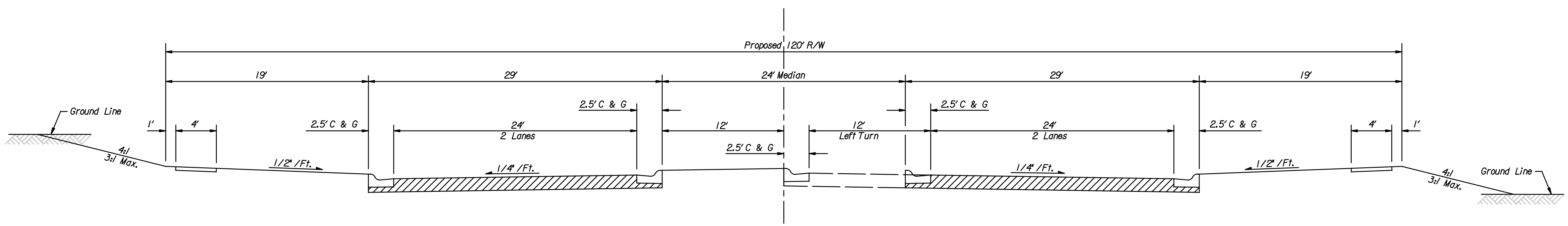
- The 127th Street interchange is immediately adjacent to Ernie Miller Park. To lessen the impact to the park but still provide access to it and 127th Street, a single roundabout is proposed. This will provide the capacity needed at this location, lessen the footprint of the interchange, and provide area for landscaping the entrance to the park.

Street Network Typical Section - Figure 15



* 12' Left Turn at Intersections.
Street will be 36' Back to Back Normal.
Turn lane is optional, and used where traffic warrants.

2 - Lane Street
80' Right of Way



4 - Lane Arterial
120' Right of Way

- North of 127th Street is essentially a freeway to the end of Segment 1, at K-10. There are currently interchanges at both 119th Street and College Boulevard and these interchanges will remain in place and be largely unchanged. However, the mainline traffic will go from 4 lane divided highway to a 6 lane closed median as shown in the typical sections.

- The College Boulevard and K-10 interchange configuration was studied in detail as part of the K-10 Corridor Study and referenced into this study without modification.

Segment 2 Summary

This segment is experiencing rapid development. K-7 is essentially a freeway from K-10 to 83rd Street with the exception of access closure needed at 91st Street. North of 83rd Street K-7 acts as an expressway with the exception of existing interchanges at Shawnee Mission Parkway, K-32, and Nettleton Avenue. Appendix A and B provide plate drawings showing the integrated K-7 and local street system. The following is a brief summary of issues primarily focused on the interchanges:

- The Prairie Star Parkway interchange configuration was studied in detail as part of the K-10 Corridor Study and referenced into this study without any modification.

- The 83rd Street, Shawnee Mission Parkway, K-32, and Nettleton Avenue interchange configurations remain the same with the notation that the pavement is assumed to be replaced in the report's cost estimates.

- The access point on the east and west side of K-7 at approximately 91st Street does not meet access control requirements for a freeway and will be removed with access provided to the properties via a collector street system.

- A new diamond interchange is proposed for 75th Street to provide one-mile access.

- An overpass of K-7 is proposed at 71st Street to provide local road network continuity.

- Clear Creek Parkway will become an overpass of K-7 once the interchange at Johnson Drive is constructed.

- The Johnson Drive interchange layout will be as it is currently designed by KDOT for construction.

- Due to their proximity to each other, the 47th Street and 43rd Street interchanges will be designed as a split diamond interchange with a collector distributor connection system.

- Due to right-of-way issues the Kansas Avenue and 130th Street interchanges are laid out as tight urban diamond interchanges with a single point at Kansas Avenue.

- The I-70 system to system interchange has complex geometrics that are a result of the desire to serve traffic demand, minimize impacts to existing businesses, and maximize the economic development opportunities on land vacant near the interchange.

- The US 24/US 40 interchange layout will be as it is currently designed by KDOT for construction.

Segment 3 Summary

The existing land use in Segment 3 is generally more rural in character and just beginning to experience development pressures. This segment of K-7 is currently an expressway. Appendix A and B provide plate drawings showing the integrated K-7 and local street system. The following is a brief summary of issues primarily focused on the interchanges:

- Given the limited physical constraints and the magnitude of the projected traffic volumes, standard diamond interchange configurations are generally proposed in Segment 3. Parallel Parkway, Leavenworth Road, and McIntyre Road interchanges are all standard KDOT diamond interchanges.

- Donahoo Road, Hollingsworth Road, and Fairmount Road are slightly modified diamond interchanges that include roundabouts that will effectively serve the traffic distribution from the ramps and reverse frontage roads.

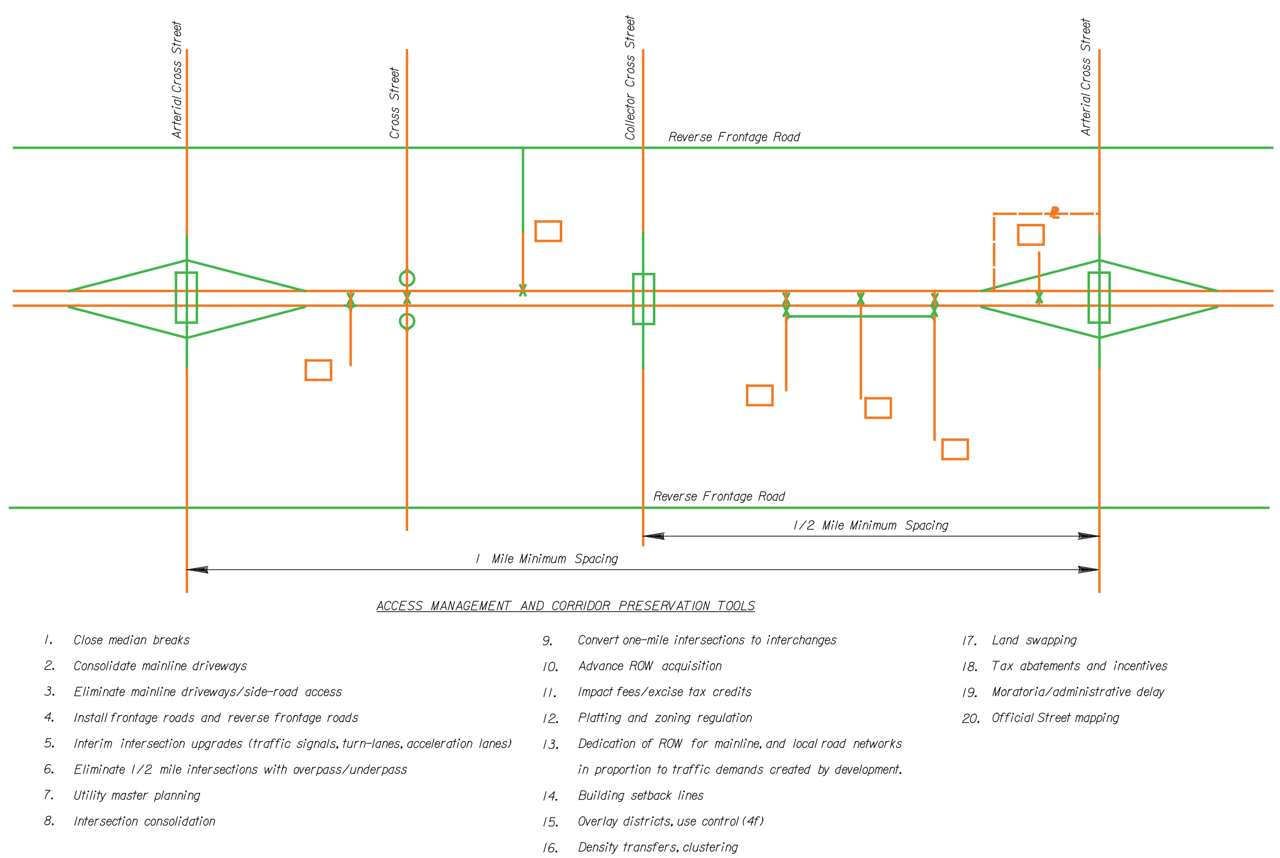
Access Management / Corridor Preservation Tools

Introduction

Access management and corridor preservation tools will be important instruments for KDOT and the communities to use as they implement the K-7 Corridor Plan. While the ultimate objective of an access controlled facility cannot be realized immediately, KDOT and the communities need to look for opportunities to eliminate access at locations other than approved interchange locations.

Access Management Tools

Access management is necessary to protect safety for the motoring public and the operational efficiency of the K-7 Corridor. Effective access management also protects public investment and the continued economic vitality of the corridor as contrasted with uncontrolled access that can impede development and produce high costs if retrofits are needed.



Typical Access Management - Figure 16

KDOT and local communities can undertake access management activities as part of what is known as "governmental police powers" which is the authority used to take action to protect citizens' well-being, safety and health. 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 below or be as simple as prohibiting left turns, prescribing one-way traffic, or restricting speed as examples. 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 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). This difference is a prelude to listing and illustrating a variety of access management and corridor preservation tools. Lists of the tools are provided below and an illustration in Figure 16.

Access Management Tools

1.) Close median breaks
2.) Consolidate mainline driveways
3.) Eliminate mainline driveways/side road access
4.) Install frontage roads and reverse frontage roads
5.) Interim intersection upgrades (traffic signals, turn-lanes, and acceleration lanes)
6.) Eliminate 1/2 mile intersections with overpass/underpass
7.) Utility master planning
8.) Intersection consolidation
9.) Convert one-mile intersections to interchanges
10.) Advance R.O.W. acquisition
11.) Dedication of R.O.W. for mainline and local roads in proportion to traffic demands created by development

Corridor Preservation Tools

Corridor preservation is the application of planning efforts to identify needed right-of-way and control or protect it for a future transportation facility. Frequently the application of corridor preservation also accomplishes access management goals by providing connectivity to alternate transportation facilities for existing access points that are desired to be removed. Access management tools and regulations can be imposed as an overlay district and don't have to be city or county wide. They can be deployed for corridor preservation through a coordinated use of techniques to control or protect right of way for planned transportation facilities. However, they can't be used solely to reduce the cost of the facility; in such a case they could be construed as a compensable taking. Benefits of corridor preservation include:

- Preventing incompatible development
- Minimizing environmental/social/economic impacts
- Reducing displacements
- Fixing the location of the facility which allows communities to make future plans with orderly development
- Reduction in project costs

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

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. 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. Jurisdiction: KDOT/Local.

2.) **Transfer of development rights** - The transfer or removal of the right to develop or build, expressed in units per acre or floor area ratio, from one lot or parcel to another, or from a portion of a lot to another part of the same lot. This transfer generally occurs in accordance with a legislative established program that allows the relocation of potential development (that authorized under applicable zoning regulations) from areas where proposed land uses or environmental impacts are considered undesirable (the donor site or sending zone), such as at locations where interchanges are to be constructed, to another areas (receiver or receiving zones) chosen on the basis of its ability to accommodate additional units of development beyond that for which it was zoned, with minimal environmental, social and aesthetic impacts. Jurisdiction: Local.

3.) **Density transfers** - The transfer of all or a part of the permitted density on a parcel to another parcel or to another portion of that same parcel at higher density that would be allowed under the existing zoning regulations. A way of retaining open space or land for future improvements by concentrating densities usually in compact areas at other locations while leaving unchanged historic, sensitive or hazardous areas. In some jurisdictions, for example, developers can buy development rights of 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. Jurisdiction: Local.

4.) **Cluster Development** - Similar to density transfers. Generally authorized by specific district regulations, such as a cluster subdivision. 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, preservation or historically or economically sensitive areas. Jurisdiction: Local.

5.) **Impact fees** - A payment of money imposed by a public sector entity on development activity as a condition of granting development approval and/or a building permit in order to pay for the planned facilities needed to serve new growth and development activity. Involves the development of a legislative adopted system that provides the calculation methodology for the fee, and a system of credits, exemptions and appeals, etc. Jurisdiction: Local.

6.) **Economic incentives** - Measures that can be taken by a public sector entity to encourage certain types of development, such as: the grant of additional development capacity in exchange for the developer's provision of a public benefit or amenity, an increase in permitted density, tax abatement, and other forms of development subsidies. Jurisdiction: KDOT/Local.

7.) **Development moratorium** - The adoption by a public sector entity of a temporary halt on 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 Supreme Court recently held that a reasonable moratorium fulfills a legitimate public purpose and is not per se a taking. Jurisdiction: Local.

8.) **Subdivision Regulation and Platting** - The control of the division of a tract of land by a requiring development according to design standards and procedures adopted by local ordinance. These regulations usually specific what improvement the subdivider will be required to provide and the standard to which the improvements will 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 streets of a proposed subdivision. The plat generally also shows land to be dedicated to a public sector entity for streets and easements for public utilities. Jurisdiction: Local.

9.) **Zoning** - A process utilizing the police power of local governments classifying land into areas and districts, such areas and districts being generally referred to as "zones" and imposing, in each area and district, regulations concerning 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 restrictions, lot coverage restrictions, impervious cover restrictions and typically allowing for certain uses only by special or conditional use permit. Jurisdiction: Local.

10.) **Overlay districts** - A zoning district that can be either initially mapped or narratively described to be mapped at some later point in time. An overlay district superimposes certain additional requirements that modify or supplement the regulations of the underlying general 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. In the instance of conflicting requirements, the stricter of the requirements apply. Jurisdiction: Local.

12.) **Setback ordinances** - Regulations establishing the requirement that a building or structure be set back a certain distance from a road , street highway or lot line, generally at street-grade level, although it can be at a prescribed height. K.S.A. § 12-765 is an example of legislation that authorizes the adoption of setback regulations from major streets or highways by cities or counties. This statute specifically authorizes the incorporation by reference of an official map and a prohibition on the locations of any new buildings within those established building setback lines. Jurisdiction: KDOT/Local.

13.) **Official Map** - A legally adopted map that conclusively shows the location and width of proposed road or streets, public facilities and public areas and drainage rights-of-way. Jurisdiction: KDOT/Local.

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, 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, 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 side-road intersections with mainline and reconnecting side-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.
Eliminate at-grade local road intersections	Where local roads connect to mainline at at-grade intersections, install overpass or underpass to eliminate at-grade intersections.	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 replacing side-road intersections with overpasses or underpasses at mainline. 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.
Utility Master Plan	This is a plan prepared by a public sector entity specifying the location of utilities within a geographically-described area. The plan should also include the width of the easements necessary to accommodate the utilities and the different utilities located within those easements and specifying which utility provider owns which utilities in those easements.		
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 Mile Roads	Replace mile 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 one-mile at-grade intersections where traffic volumes or accident rates require interim improvement until interchange is constructed.	KDOT	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.
Dedication Of Right-of-Way For Mainline and Local Roads In Proportion To Traffic Demands Created by Development.	The conveyance by an owner or developer of private land for public use and the acceptance of that land for that use by the public sector entity having jurisdiction over the public function for which it will be used. It is common practice for public sector entities to condition approval of a development application, such as site plan, rezoning, special use permit or plat application on the requirement that the applicant dedicate an interest in land, which is needed for the improvements necessary to support the development, to the approving entity. The U.S. Constitution requires that such a permit condition involving a required dedication serve the same legitimate public purpose as a refusal to issue the permit. There must be an essential nexus between the specified state interest and the dedication requirements. The Supreme Court has stated that permit conditions involving a requirement for the conveyance of an interest in land will be strictly scrutinized. The approving entity must make an individualized determination that the required dedication is related both in nature and extent to the impact of the proposed development.		Access Management, Regulation of Traffic Flow and Corridor Preservation Tool Kit

Cost Estimates

Introduction

The programming costs for this project were developed to provide a conceptual level estimate at 2005 construction dollars. These numbers do not include any inflation. With the exception of the section through Olathe, it is generally assumed that the project will be able to be constructed using conventional means without large amounts of temporary pavements or retaining walls. However, the section through Olathe does account for the increased cost associated with assumed retaining walls and a freeway section similar to what is used in Wichita for the Kellogg/US-54 project.

Constructible Sections

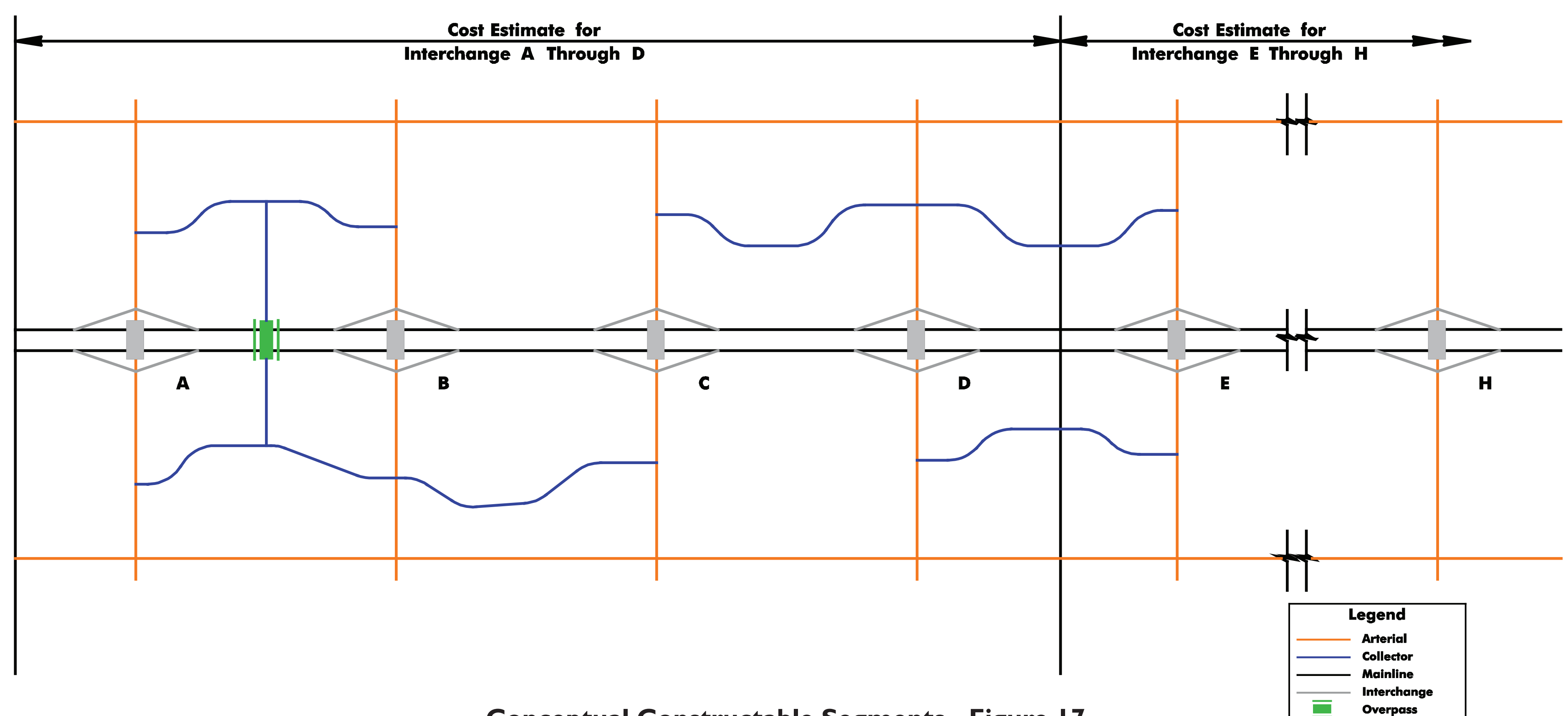
The cost estimate is broken down into constructible sections within each segment. These sections go from one complete interchange to another complete interchange. Therefore the cost includes the interchange and approximately one-half mile of freeway on each side of the interchange including the freeway through the interchange as noted by figure 17. This approach was chosen because it allows for projects that could be completed independently of each other.

Per Mile Breakdown

Each type of roadway was developed by a per-mile basis. The cost of pavement, earthwork, drainage, intersections, interchanges, etc were added up for the one mile section of each of the three roadway types. These totals for the one mile stretch were then compared to current projects being constructed around the metro area. The length of each roadway was measured and the per-mile costs applied to each one within each section. The result is an estimate of the cost of construction.

This method averages together all of the roadways of that type. It does not take into account specific construction complications for one individual piece of roadway, but assumes that those difficulties will be averaged out over the entire length of the project. It is not the intention of this cost estimate to be used in the planning of each individual section of street or highway, it is intended, rather, to be a guide for macro level project budgeting purposes.

The figure below includes those roads and interchanges included in the cost estimates.



Conceptual Constructable Segments - Figure 17

Cost estimates do not include preliminary engineering, right-of-way, or construction engineering.

Cost Estimates

Segment Costs

The following costs are representative of the cost for **constructing** the freeway for the entire length of the study corridor.

	Freeway (Mainline, Interchanges, and Overpasses)	Street Network (Arterials and Collectors)	Total
Segment 1			
223rd Street to 183rd Street	$ 88,600,000	$ 53,680,000	$142,280,000
175th Street to I-35	$ 41,000,000	$ 26,880,000	$ 67,880,000
I-35 / K-7 Interchange	$110,000,000	$ 0	$111,000,000
I-35 to Spruce Street	$111,850,000	$ 12,720,000	$124,570,000
127th to K-10	$ 57,750,000	$ 21,280,000	$ 79,030,000
K-10 / K-7 Interchange	$150,000,000	$ 0	$150,000,000
Segment 1 Total	**$559,200,000**	**$114,560,000**	**$673,760,000**
Segment 2			
K-10 to 83rd Street	$ 48,250,000	$ 45,040,000	$ 93,290,000
75th Street to the Kansas River	$110,500,000	$ 52,160,000	$162,660,000
Kansas River Bridge	$ 11,400,000	$ 0	$ 11,400,000
Kansas River Bridge to Kansas Avenue	$ 40,750,000	$ 20,800,000	$ 61,550,000
I-70 / K-7 Interchange	$109,150,000	$ 22,640,000	$131,790,000
130th Street to US-24/40	$ 6,000,000	$ 10,640,000	$ 16,640,000
Segment 2 Total	**$326,050,000**	**$151,280,000**	**$477,330,000**
Segment 3			
US-24/40 to Fairmont	$ 91,250,000	$ 46,250,000	$137,730,000
Marxen to Mary Street	$ 39,750,000	$ 16,000,000	$ 55,750,000
Segment 3 Total	**$131,000,000**	**$ 62,480,000**	**$193,000,000**
Total Project Cost of Construction	**$1,016,250,000**	**$328,320,000**	**$1,344,570,000**

K-7 Freeway and local Street Network - Segment 1

Segment	Quantity	Unit	Unit Cost	Total
223rd Street to 183rd Street				
Mainline (4 lanes)	5.2	Mile	$ 5,500,000	$28,600,000
Interchanges	5	Each	$15,000,000	$50,000,000
Overpasses	2	Each	$ 5,000,000	$10,000,000
Collectors	12.2	Mile	$ 2,400,000	$29,280,000
Arterials	6.1	Mile	$ 4,000,000	$24,400,000
				$142,280,000
175th Street to I-35				
Mainline	2.8	Mile	$ 7,500,000	$21,000,000
Interchanges	1	Each	$10,000,000	$10,000,000
Overpasses	2	Each	$ 5,000,000	$10,000,000
Collectors	5.2	Mile	$ 2,400,000	$12,480,000
Arterials	3.6	Mile	$ 4,000,000	$14,400,000
				$67,880,000
I-35 / K-7 Interchange				
I-35 Interchange	1	Each	$110,000,000	$110,000,000
I-35 to Spruce Street				
Mainline	1.9	Mile	$ 7,500,000	$14,250,000
Urban Mainline	1.6	Mile	$36,000,000	$57,600,000
Interchanges	2	Each	$10,000,000	$20,000,000
Overpasses	4	Each	$ 5,000,000	$20,000,000
Collectors	2.8	Mile	$ 2,400,000	$ 6,120,000
Arterials	1.5	Mile	$ 4,000,000	$ 6,200,000
				$124,570,000
127th Street to K-10				
Mainline	3.7	Mile	$ 7,500,000	$27,750,000
Interchanges	3	Each	$10,000,000	$30,000,000
Overpasses	0	Each	$ 5,000,000	$0
Collectors	4.2	Mile	$ 2,400,000	$10,080,000
Arterials	2.8	Mile	$ 4,000,000	$11,200,000
				$79,030,000
K-10 / K-7 Interchange*				
K-10 Interchange (from K-10 study)				$150,000,000
			Segment 1 Total	**$673,760,000**

**Includes all improvements for the interchange: College Boulevard to Prairie Star Parkway on K-7 and Clare Road to Lone Elm on K-10.*

Cost Estimates

Construction Cost Estimate - Segment 2

Segment	Quantity	Unit	Unit Cost	Total
K-10 to 83rd Street*				
Mainline	3.1	Mile	$ 7,500,000	$23,250,000
Interchanges	2	Each	$10,000,000	$20,000,000
Overpasses	1	Each	$ 5,000,000	$ 5,000,000
Collectors	7.1	Mile	$ 2,400,000	$17,040,000
Arterials	7	Mile	$ 4,000,000	$28,000,000
**Does not include K-10 interchange*				$93,290,000
75th Street to the Kansas River				
Mainline	5.4	Mile	$ 7,500,000	$40,500,000
Interchanges	5	Each	$10,000,000	$50,000,000
Overpasses	4	Each	$ 5,000,000	$20,000,000
Collectors	13.9	Mile	$ 2,400,000	$33,360,000
Arterials	4.7	Mile	$ 4,000,000	$18,800,000
				$162,660,000
Kansas River Bridge				$11,400,000
Kansas River Bridge to Kansas Ave.				
Mainline	2.1	Mile	$ 7,500,000	$15,750,000
Interchanges	2	Each	$10,000,000	$20,000,000
Overpasses	1	Each	$ 5,000,000	$ 5,000,000
Collectors	2.5	Mile	$ 2,400,000	$ 6,560,000
Arterials	3.7	Mile	$ 4,000,000	$14,800,000
				$69,510,000
I-70 / K-7 Interchange**				
Mainline	1.3	Mile	$7,500,000	$ 9,750,000
Interchanges	1	Each	$99,400,000	$99,400,000
Overpasses	8.6	Mile	$2,400,000	$20,640,000
Arterials	0.5	Mile	$4,000,000	$20,000,000
***Includes Kansas Avenue interchange and 130th Street interchange*				$129,790,000
130th Street to US 24/40***				
Mainline	0.8	Mile	$ 7,500,000	$ 6,000,000
Interchanges	0	Each	$10,000,000	$0
Overpasses	0	Each	$ 5,000,000	$0
Collectors	3.6	Mile	$2,400,000	$ 8,640,000
Arterials	0.5	Mile	$4,000,000	$ 2,000,000
****Does not include US-24 interchange*				$16,640,000
			Segment 2 Total	**$477,330,000**

Construction Cost Estimate - Segment 3

Segment	Quantity	Unit	Unit Cost	Total
US 24/40 to Fairmont				
Mainline	5.5	Mile	$ 7,500,000	$41,250,000
Interchanges	5	Each	$10,000,000	$50,000,000
Overpasses	0	Each	$ 5,000,000	$0
Collectors	11.7	Mile	$ 2,400,000	$28,080,000
Arterials	4.6	Mile	$ 4,000,000	$18,400,000
				$137,730,000
Marxen to Mary Street				
Mainline	3.3	Mile	$ 7,500,000	$24,750,000
Interchanges	1	Each	$10,000,000	$10,000,000
Overpasses	1	Each	$ 5,000,000	$ 5,000,000
Collectors	5.5	Mile	$ 2,400,000	$13,200,000
Arterials	0.7	Mile	$ 4,000,000	$ 2,800,000
				$55,750,000
			Segment 3 Total	**$193,480,000**

Memorandums of Understanding and Next Steps

Memorandums of Understanding

Memorandums of Understanding (MOU's) formalized the continued collaborative environment initiated by the study and created a moral framework to encourage implementation of the provisions of the K-7 Corridor Management Plan. While each MOU was customized to meet the individual needs of each community, every MOU included the same general information:

- Whereas Clauses – Define the study limits and process
- Corridor Purpose – purpose of the corridor plan
- Corridor Parameters – minimum requirements (i.e. interchange spacing, level of service, etc.)
- Establishment of Corridor Review Committee – Representatives of the communities and KDOT to review the progress of implementation of the plan and to evaluate any required changes to the plan
- Roles and Responsibilities of KDOT and the Communities -
- Roles and Responsibilities of KDOT
- Roles and Responsibilities of the Communities
- Miscellaneous Provisions – term, termination, etc.

Within the roles and responsibilities sections of the MOU are provisions identifying corridor preservation, access management tools, and improvements. These provisions essentially outline the "next steps" to implementing the K-7 Corridor Management Plan. Beyond incorporating the K-7 Corridor Management Plan into MARC's Long Range Transportation Plan, several of these "next steps" are highlighted in the following sections.

Corridor Review Committee

The purpose of the Committee is to serve as an advisory body to regularly review, evaluate, facilitate discussions of and provide input on events and developments that may have an impact on the K-7 Corridor and the Corridor Management Plan, and to assist in the development of the K-7 Corridor implementation strategy. The Committee shall not have any authority regarding powers vested in cities and counties pursuant to state law. The Committee shall be composed of one representative from each participating county and city whose jurisdictional boundary includes land covered by the K-7 Footprint Map, a KDOT representative and a representative of the Mid-America Regional Council. The city and county representatives shall be appointed by the chief elected official of that particular city or county for a term to be determined by that official. A KDOT representative will serve as one Co-Chair of the Committee and the members of the Committee each year shall elect one other member to serve as the other Co-Chair. The Committee shall meet whenever the Co-Chairs jointly determine that a meeting is appropriate, but shall, at a minimum, meet twice a year.

Innovative Financing

KDOT currently has very little funding to implement the K-7 Corridor Plan. There is currently a Corridor Preservation Fund ($5-10 million annually Statewide, some portion of which could be utilized for K-7) which could be utilized to preserve strategic parcels of right-of-way. KDOT is also looking into options to establish a specific budget for K-7 which would provide small amounts of money for corridor preservation. KDOT also has Economic Development funds for qualifying projects to construct minor interim improvements. Beyond this, potential for significant funding will have to wait until another highway bill is passed.

Federal dollars through the Mid America Regional Council (MARC) are also available for several of the needed interim improvements. Projects would need to qualify for the various federal funding sources and be included on MARC's list of Transportation Improvement Projects (TIP). KDOT would look for ways to co-sponsor K-7 Corridor Management Plan improvements.

As private development occurs along K-7, developers could be required to dedicate reasonable amounts of right-of-way for K-7 and the local street network. In addition, they could be required to construct improvements needed as a result of their developments (i.e. reverse frontage roads, turn lanes, etc.)

Beyond this, funding will also need to come from the communities themselves. Given that most of the communities have tight CIP budgets with many other needs, the communities have expressed an interest in identifying a new funding source which could be used to help finance the K-7 Corridor Plan. After evaluating a number of options, several funding options show some potential:

a) Excise Tax: method of raising revenue by levying a tax on a certain activity, such as business done, income received, or privilege enjoyed.

Premise: Some activities (such as platting) create extra impacts (e.g., necessitating new or widened roads) and those activities should pay accordingly. Current use: registration on platted lots (e.g., $100 per lot paid at final plat recordation).

Geographic Application: Community wide.

Who Pays: Developer at platting (home buyer at purchase).

Use of Funds: Anything in budget if money is placed in general fund, but good faith and/or adopting ordinance may require use for purpose adopted, e.g., transportation improvements.

Keeping of funds: Permitted in general fund, but may be held in special account

Challenges: Only works where developers are platting.

Used in Kansas: Yes, widely used.

b) Transportation Development District: Form of special assessment district focused on transportation needs. The TDD has authority to raise funds either through special assessment or sales tax in district.

Premise: District should pay for improvements for which it creates the demand. This can be done through assessing property and/or imposing sales tax.

Geographic Application: District identified at project creation.

Who Pays: Property owners or users.

Use of Funds: Extensive list provided in statute.

Keeping of Funds: Special account.

Challenge: Requires approval of all property owners within the district.

Used in Kansas: Yes, authorized by K.S.A. 12-17,141 et seq.

c.) Transportation Utility Fee: Fee collected on residences and businesses within a city's corporate limits tied to the use and consumption of transportation services.

Premise: Local government is responsible for making roadways available to anybody who wants to use them, all potential users should pay for upkeep.

Similar to: Stormwater utility fees (also water and sewer fees).

Geographic Application: Typically community-wide, but may potentially be limited to corridor or district

Who Pays: All users within designated area.

Use of Funds: Transportation improvements identified by utility provider.

Keeping of Funds: Special account.

Challenge: No specific enabling authority or home rule adoptions

Use in Kansas: Not yet. Currently used in Washington and Colorado.

d.) Impact Fees: One time payments assessed against new development to cover the costs for necessary capital improvements proportionate to the demand generated by the new development.

Premise: Existing development has already paid for its infrastructure; new development should pay for its own infrastructure.

Geographic Application: Typically community-wide but has been limited to specific corridors in Kansas.

Who Pays: Depends upon when fee is collected, which ranges from platting to certificate of occupancy.

Use of Funds: New capital facilities and services required by development: roads, sewer, stormwater; sometimes police, fire, EMS, schools, public buildings.

Keeping of Fees: Special account.

Challenge: Amount of fee collected depends on rate of development and the law (community must document that):

- New facilities/services are a consequence of new development;
- There is a proportionate relationship between the fee and the infrastructure demand
- The funds collected will be use to provide a substantial benefit to the new development

Used in Kansas: Yes, but through home rule, no specific authority.

e.) Tax Increment Financing: Capture of future increment in property taxes (and sometimes sales taxes) and then reinvesting that increment in specified projects.

For Example: Blighted building property tax is $100/year. Demo and construction of new building yields $10,000/year. $9,900 increment available for development.

Premise: If local government allows project funds to be reinvested in project to pay for infrastructure costs, more people will be encouraged to redevelop because they will have more money to use.

Geographic Application: District identified at project creation.

Who Pays: Developer, however, some argue that this technique redirects money that would otherwise go to the general fund so the public pays for these projects.

Use of Funds: Improvements within TIF district – sometimes across multiple districts

Keeping of Funds: Special account, to be used for project only.

Challenge: Relies on demand for redevelopment, revenue can be unpredictable; also, property must be blighted.

Used in Kansas: Yes, specific authority.

In evaluating the previously described funding options, the one that shows the most potential is the transportation utility fee. It is essentially a user fee collected based on the number of trips individuals and businesses generate within the K-7 Corridor. It is similar to other utility fees already established in the region with payment and collection systems in place. It may be possible to establish a transportation utility fee to cover the entire corridor; however, consideration will need to be given to political concerns such as intergovernmental cooperation and the movement of funds across jurisdictional boundaries. This may result in the creation of multiple fee districts (e.g., one for each jurisdiction), or the establishment of regional fee sub-districts (such as north, central, and south) to avoid perceived funding inequalities. This is a good example of an initiative for the K-7 Review Committee to tackle.

Parcel Maps

While the plate drawings attached to this report show improvements and general right-of-way requirements, they do not show the detail needed to fully assess the impact to properties. Therefore, parcel maps indicating property lines and ownership information will help identify in more detail the right-of-way required for the corridor. Specifically, they will help to identify who is impacted by any potential right-of-way setback lines and by any of the proposed K-7 improvements.

Corridor Preservation/Access Management

With the general right-of-way needs identified in the K-7 Corridor Plan coupled with the parcel maps, needed tracts of land will be identified for right-of-way preservation. Planning tools highlighted in previous sections of this report should be utilized including overlay zones to assist in the preservation of needed land. As development occurs through the platting process, communities will need to collaborate with KDOT regarding the need for dedication and/or purchase of the required parcels of land, the construction of portions of the street network (i.e. turn lanes, reverse frontage roads, etc.), and in the modifications to local access to K-7. A number of the access management tools identified in previous sections of this report should be used to eventually achieve the access parameters established for the corridor.

Permanent Improvements

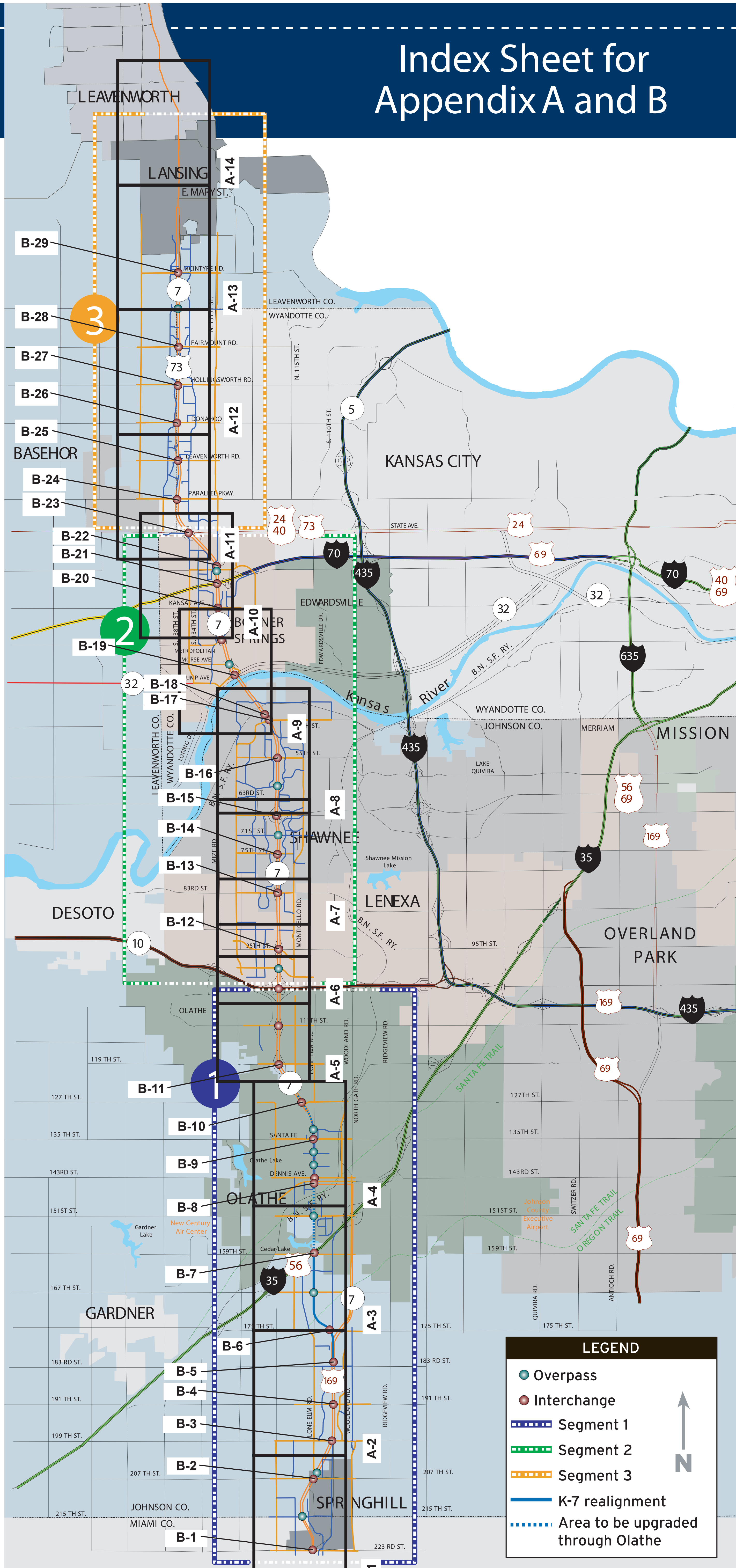
a.) K-7: At some point in the future, preliminary design will need to be performed for the proposed K-7 improvements to further define in more detail the required right-of-way footprint for the corridor. The plate drawings within this plan identify a conceptual right-of-way footprint based on standard interchange templates and conservative assumptions on customized interchange configurations. No vertical information has been analyzed nor any detailed horizontal alignments performed. More detailed traffic analysis along with preliminary horizontal and vertical geometrics, cross sections, drainage, and environmental work will need to be performed to determine grading limits and more accurate right-of-way requirements. Examples of where this is especially important would be the new system-to-system interchanges at K-7 and I-70 and K-7 and I-35 as well as other interchanges which are non-standard diamonds. Another area needing further evaluation would be the section of K-7 in Olathe between 175th Street and 119th Street. This is where a realignment of K-7 and an upgrade to freeway will more than likely require an Environmental Assessment to determine exact location of the alignment before right-of-way can be further defined. Finally, as traffic warrants and as funding becomes available, final design will need to be performed on those sections of K-7 which move forward to construction.

b.) Local Streets: As development occurs and as traffic demand increases, each community will need to make every effort that the identified reverse frontage roads and cross street improvements get constructed in compliance with the K-7 Corridor Management Plan. This can be done through normal CIP improvements or can be accomplished through private development participation.

Interim Improvements

Given the current lack of funding to build the permanent improvements, interim improvements will be needed to accommodate the growing traffic demands and to address safety issues that arise. Examples of interim improvements include adding traffic signals and/or turn lanes at intersections which will eventually become interchanges or overpasses.These minor improvements could be funded from one or several of the following sources: (1) projects which qualify and are placed on MARC's TIP, (2) projects which qualify for special KDOT funding (ie. Geometric improvement funds, economic development funds, etc.), (3) projects which are included on a communities CIP, and (4) projects funded by developers as a result of development impacts.

Index Sheet for Appendix A and B



Appendix - A

Appendix - B