REGIONAL CONTEXT

Regional Transportation System

Defining Regional Context

The purpose of this task was to identify and summarize community specific and regional needs within and adjacent to the influence area. The recent update to the Wichita area's Long Range Transportation Plan was a starting point with its identification of development trends and potential future transportation projects as well as its information on commuting patterns and trends, freight flows and use of all modes of transportation. The needs may include access to recreation/natural areas, development potential, and travel efficiency. System continuity at both a regional and local level was reviewed, including limited opportunities for east-west travel crossing the Wichita Valley Center Floodway commonly referred to as the "Big Ditch". The system needs will take into account the Kansas Department of Transportation improvements to be defined through the on-going South Area Transportation Study as well as any improvements completed or proposed by City or County offices. Access to regionally significant land uses in the immediate vicinity were considered including Towne West Mall, Mid-Continent Airport, Dugan Business area and several aviation manufacturers. The MPO planning area, Sedgwick County, and the Wichita Metropolitan Statistical Area, each of which has a unique boundary, are referenced in the following sections of this report.

WAMPO LRTP Goals and Objectives

The 2030 Long Range Transportation Plan (LRTP) is guided by a set of goals, objectives and strategies that were recommended by the LRTP Advisory Committee and approved by the Wichita Area Metropolitan Planning Organization (WAMPO). The goals and objectives were developed based upon comments received from the public and other transportation stakeholders in the region. A list of strategies was identified to implement the goals and objectives. Each goal and objective is linked to the current federal transportation legislation and seeks to accomplish the following overall purpose:

Develop and maintain a multimodal transportation system that serves regional needs, promotes safety, supports economic development, and provides personal choice in the movement of people and goods.

Federal law requires each metropolitan planning organization (MPO) to consider eight planning factors in the development of a LRTP through SAFETEA-LU (Safe, Accountable, Flexible, Efficient Transportation Equity Act: a Legacy for Users). The eight planning factors are:

- 1. To support economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.
- 2. Increase the safety and security of the transportation system, for motorized and non-motorized users.
- 3. Increase the ability of the transportation system to support homeland security and to safeguard the personal security of all motorized and non-motorized users.
- 4. Increase the accessibility and mobility options available to people and for freight.
- 5. Protect and enhance the environment, promote energy conservation, and improve the quality of life.
- 6. Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.
- 7. Promote efficient system management and operation.
- 8. Emphasize the preservation of the existing transportation system.

The LRTP then developed a matrix table showing the relationship of the LRTP goals and objectives to the Federal planning factors. As an extension of that comparison, a matrix table has been developed for this study as shown in Exhibit 2.1 to illustrate the relationship of the LRTP goals and objectives to the potential for this study to positively affect those goals and objectives. The ratings put forth were developed by TranSystems.

Goals and Objectives		I-235	US-54/400 Interchange	US-54/400	Central Interchange	Central Avenue
1 Transportation System Mobility and Access						
1.1 Improve access for cities		5	5	5	4	4
1.2 Integrate and connect transportation modes		5	5	5	4	4
1.3 Provide a system that meets people's needs		5	5	5	4	4
2 Environment, Energy Conservation and Quality of Life						
2.1 Maintain air quality		3	4	3	4	3
2.2 Minimize impacts to the environment		3	4	3	3	3
2.3 Encourage development of Park & Ride facilities		1	1	1	1	2
3 Highways, Streets and Roads		4	4	4	4	-
3.1 Maintain and optimize existing roadways		4	4	4	4	5
3.3 Develop a network that promotes connectivity		4 3	4 2	4 3	4 3	4 2
3.4 Study and preserve corridors for future roadways		1	1	1	1	1
4 Public Transportation System		•	•			•
4.1 Identify unmet public transportation needs		1	1	1	1	1
4.2 Promote public transportation for all communities		1	1	1	1	2
4.3 Identify long term funding for transit shuttle		1	1	1	1	1
5 Bicycle and Pedestrian Transportation						
5.1 Encourage alternate transportation networks		1	1	1	2	2
5.2 Implement a regional trail plan		1	1	1	1	1
5.3 Promote bicycle and pedestrian safety		1	1	1	2	3
6 Rail and Freight Transportation		-	-			
6.1 Improve and expand freight facilities		3	3	3	1	1
6.2 Improve safety and reduce delay at crossings		1	1	1	1	1
6.3 Promote links to other metropolitan areas		3	3	3	1	1
7 Avidion 7.1 Maximize air travel and freight potential		3	3	3	1	1
7.1 Maximize an itavel and regulations pear airports		2	2	2	1	1
8 Safety and Security		2	2	2		1
8.1 Enhance the safe movement of people and goods		3	4	3	4	3
8.2 Enhance security for all transportation modes		2	2	2	1	1
8.3 Support the Major Medical Response System		3	4	3	4	4
9 Land Use Coordination						
9.1 Coordinate transportation and other infrastructure		1	1	1	1	1
9.2 Evaluate transportation impacts of land use decisions		1	1	1	2	2
9.3 Promote transit-friendly development	-	1	1	1	2	2
10 Regional Transportation Systems Management and Oper	ations	_	^	^	<u>^</u>	0
10.1 Coordinate planning & decision making activities		3	3	3	3	2
10.2 Implement ITS Early Deployment Study		2 1	2 1	2	1	1
		I	I	I	I	I
Rating Opportunity to affect						
5 Very strong potential						
4 Strong potential						
3 Some potential						
2 Limited potential						
1 Very limited potential						
Ratings put forth by TranSystems						

Exhibit 2.1 – LRTP Goals and Objectives Compared to Study Potential to Affect

igs p Jy **y** The intent is to allow an overall assessment of the potential improvements as well as identifying areas to focus upon. Five degrees of impact were identified ranging from very strong potential to very limited potential. The area of impact is further subdivided into:

- I-235 between US-54/400 (Kellogg Ave.) and Central interchange
- I-235 and US-54/400 (Kellogg Ave.) interchange
- US-54/400 (Kellogg Ave.) immediately west and east of I-235 interchange
- I-235 and Central interchange
- Central immediately west and east of I-235

While the study may have little direct ability to affect land use changes, it has a very strong potential to positively affect transportation system mobility as well as the natural and built environment.

Visioneering Wichita – Creating the future for our regional community

This citizen based input focused on several long-term visions including having "adequate infrastructure to support downtown, urban and suburban neighborhoods that will enhance quality of life and promote economic development". The strategies for the infrastructure foundation included:

- Urban and regional development
- Downtown development
- Transportation
- Neighborhoods
- Water, Sewer and Other Utilities
- Housing
- Environment and Natural Resources
- Beautification and Attractiveness
- Historic Preservation
- Facilities

Under Transportation various implementation strategies were identified including:

- 1. Develop and implement a long range plan for highways that connect the Wichita Metropolitan Statistical Area (MSA) internally and externally to the rest of the United States.
- 2. Build a new airport terminal and increase the competitiveness of the Wichita Airport in ticket cost and number of flights.
- 3. Develop a viable public transportation system.
- 4. Optimize air, rail, water and highway passenger and freight capacities to create a multi-modal logistics hub.

KDOT's Long Range Transportation Plan

According to the last plan, "highways are and will continue to be the most widely used mode of transportation." Kansans will continue to rely on the highway system for the foreseeable future. Opinions from stakeholders and internally within the agency are in agreement that the State's first priority should be maintaining and preserving the existing system. Traffic on most Kansas highways continues to grow. As traffic volume grows to near capacity for a highway facility, solutions include demand management, access management, intelligent transportation systems applications, passing lanes, and adding lanes in the form of either expressways or freeways. KDOT is currently in the process of updating its Long Range Transportation Plan. Selected recommendations from various elements include:

Streets and Highways

- Future transportation programs should continue to place the highest priority on preserving the existing highway system.
- KDOT should develop a long-range, systematic vision for key corridors.
- KDOT should continue to partner with local governments and metropolitan planning organizations on corridor/access management issues.
- Roadway improvement project development should routinely include consideration of nonhighway modes, intermodal connections and technology applications.

Aviation

• The State should continue to promote aviation to encourage economic development and provide access to rural areas for emergency and specialized services.

Bicycle and Pedestrian

• KDOT should continue to consider allowing the construction of bicycle and or pedestrian facilities alongside KDOT facilities where such facilities fit in local and state short- and long-term plans.

Public Transportation

• KDOT should coordinate with public transit providers to utilize public transportation as a way to mitigate congestion during large transportation construction projects in metropolitan areas including the possibility of reduced fares.

Public Communications

• Public involvement should be sought in the transportation planning process and throughout project development to ensure the opportunity for input is available before projects are designed.

Environment

• KDOT should continue to assess environmental impacts of solutions to transportation needs early in project development, thus giving environmental concerns consideration in the decision-making process.

These various metropolitan transportation goals and objectives, visions for a regional community with implementation strategies under the heading of transportation, and a multi-modal approach by the Kansas Department of Transportation Summary that includes public communication and environmental considerations are embraced and intrinsically integrated into this study process.

Existing Regional Transportation System

This area includes many transportation facilities, each with a somewhat contribution to the system. The following provides a hierarchical review of the various facilities, their junctions and traffic volumes. The element of capacity for the existing facilities is presented in Chapter 3. Exhibit 2.2 shows the Existing Regional Transportation System.

Interstate System

The interstate system consists of Interstates 35, 135 and 235. The focus of this study is on a portion of I-235.

I-235 begins at its southern junction with I-135 just south of the Arkansas River. I-235 parallels I-135 approximately five miles west. The overall length of I-235 is approximately 16 miles. There are 12 interchanges along I-235. One interchange is with US-54/400 (Kellogg Ave.); three interchanges are with state routes K-42, K-96 and K-254, while the remaining interchanges are with City arterials. Several of the interchanges are system interchanges including the junctions with I-135 (south), US-54/400, K-96, and I-135 (north)/K-254.

Typically I-235 is a four-lane divided freeway with full access control. This is a high-speed facility with a posted speed limit of 65 mph. Traffic volumes range from 34,000 to over 50,000 vehicles per day (vpd). The highest segment for traffic volumes is between US-54/400 (Kellogg Ave.) and Central Avenue at 50,400 vpd.

US Route System

The United States (US) route system consists of US-54/400 (Kellogg Ave.) which is a statewide east-west route. Within the region, this route has been recently undergoing a conversion to a freeway-type facility from an urban arterial with at-grade signalized intersections. The freeway is posted 60 mph and includes grade separations at major crossings. Local access is often provided via a continuous collector-distributor type roadway typically with traffic signal control at the major street crossings. Traffic volumes range from 70,000 to 100,000 vpd. Traffic volumes east and west of the I-235 junction are 82,000 vpd.



Exhibit 2.2 – Existing Regional Transportation System

State Route System

The state route system includes K-42 (Exit 5), K-96 (Exit 13) and K-254 (Exit 16).

K-42 (Southwest Boulevard) is an east-west route serving the southern portion of Wichita. It typically is a four-lane urban arterial facility with a posted speed of 40 to 45 mph. Its junction with I-235 is referred to as Exit 5. The traffic volume on K-42 near I-235 is approximately 27,000 vpd.

K-96 is an east-west route serving the northern portion of Wichita to the west and east of I-235. It typically is a four-lane expressway with a posted speed of 60 mph. Its junction with I-235 is referred to as Exit 13. The traffic volume on K-96 near I-235 is approximately 28,000 vpd.

K-254 is an east-west route serving the northern portion of Wichita to the east of I-235. It typically is a four-lane expressway with a posted speed of 55 to 65 mph. Its junction with I-235 is referred to as Exit 16. The traffic volumes on K-254 near I-235 range from 10,000 to 15,000 vpd.

Principal Arterial Street System

Within the study area, the principal arterial system consists of Central Avenue which crosses the Wichita Center Valley Floodway or "Big Ditch" as well as the Big Slough before continuing easterly into Downtown Wichita. Also discussed are the immediate north-south arterials west and east of the floodway, Ridge Road and West Street respectively. Another east-west crossing of I-235 occurs over Maple Street although without access to Maple Street. Maple Street is classified as a minor arterial.

<u>Central Avenue</u> – is a seven-lane urban arterial including a continuous center turn lane from Ridge to approximately the floodway bridges. East of the floodway bridges, the road is a five-lane urban arterial including a continuous center turn lane. Directly beneath the crossing of I-235, Central Avenue is four lanes. Its posted speed is 40 mph. Central has an interchange with I-235 at Exit 8. Traffic volumes on Central near the I-235 interchange range from 24,000 to 33,000 vpd.

<u>Ridge Road</u> – is a four-lane urban arterial from Kellogg north to 21st Street with a posted speed of 40 mph. Left turn lanes are provided at signalized intersections. At the junction of Central Avenue, dual left turn lanes and an exclusive right turn lane are provided on the approaches. A half-mile south of its junction with Maple, Ridge Road has an interchange with US-54/400 (Kellogg Ave.). Traffic volumes on Ridge Road between Maple Street and Central Avenue are at 23,000 vpd.

<u>West Street</u> – is a five-lane urban arterial including a continuous center turn lane from Kellogg to Maple. North of Maple, West Street is four lanes with turn lanes at major intersections. Its posted speed is 35 mph. A half-mile south of Maple, West Street has an interchange with US-54/400 (Kellogg Ave.). Traffic volumes on West Street north of Central Avenue are at 20,500 vpd.

Existing Multimodal System

The existing transportation system accommodates more than just vehicular traffic. Public transit routes and non-motorized facilities including sidewalks are present throughout the study area network. The following provides a brief review of the multimodal system across and adjacent to I-235.

Public Transit

Wichita Transit (WT) currently operates 51 buses on 18 fixed routes. Annually, WT carries over two million passengers on its fixed routes bus service. Three bus routes utilize the street network crossing or adjacent to I-235 within the study area. Several bus stop locations are identified, yet buses usually will load passengers wherever they may be flagged down. A brief description of these routes is provided below as well as mapping of the routes on Exhibit 2.3. It is interesting to note that two of the routes are along Central Avenue but do not overlap. The routes are within blocks of each other, and consideration may be given to facilitating transfers between the two routes.

<u>*W. Central*</u> – This route uses a portion of Central Avenue that is east of I-235. The route also uses Maple Street traveling westbound, turning north on Elder and then heading eastbound on Central.

<u>Westside Connector</u> – This route does not cross I-235 but it does use Gilda, traveling northbound to 8th Street and making a counterclockwise loop via Arapaho and Boyd. Places identified on the route map for services include Sandpiper Bay and the Catholic Charities located on the north side of Central Avenue. Modifications to circulation along Central Avenue gave consideration to potential effects upon this fixed bus route. It is also noted that there is a physical gap in the transit routes along Central Avenue (between Gilda and Elder). With the potential for transfers between the transit routes, pedestrian mobility beneath I-235 became an important design element in the development of improvement concepts.

<u>*W. Maple*</u> – This route utilizes Maple on both sides of I-235.

<u>S. Meridian and N. Meridian</u> - This route crosses US-54/400 (Kellogg Ave.) and typically stays on West Street from south of Kellogg to north of Central Avenue.

Non-motorized Facilities

No non-motorized facilities are located on or along the I-235 corridor. This is consistent with pedestrian, bicycle and animal restrictions on interstate highways. Consequently the non-motorized issue becomes more of crossing the highway or other barriers (such as the Wichita Center Valley Floodway), as well as facilities on the surrounding local transportation network. It is acknowledged that the Canal Hike and Bike Trail is located alongside I-135. Opportunities for a similar parallel facility may exist.

Within the study area, there are only three crossings of I-235; US-54/400 (Kellogg Ave.), Maple Street and Central Avenue. These three roadways also cross the Wichita Valley Center Floodway. The former Kansas Central Railroad also crosses the Wichita Valley Center Floodway and I-235. This former railroad is now under joint ownership of KDOT and local partners. The purpose of acquiring the railroad corridor was specifically to reduce the costs associated with making improvements to the I-235 and Kellogg interchange by not needing bridges over the railroad. Consequently, this study took the approach that the existing bridge for the former railroad over the Big Ditch should be removed. This also means that the vertical profile along I-235 can be revised, since a 23'-0" clearance for trains will not be required. These details were investigated later in this concept study.

North of the study area, and within the influence area, is the Zoo Boulevard multi-use path that links the Arkansas River bicycle path near downtown to the west and northwest area of the community. The Zoo Boulevard path is approximately 4 miles long and crosses I-235 and the Wichita Valley Center Floodway. The Westdale bicycle lane facility (approximately one mile long) runs parallel to I-235 north from Zoo Boulevard.





Maple Street - A sidewalk is present on the south side, but a sidewalk on the north side stops approximately 100 feet west of I-235. The sidewalk on the north side continues east of Elder Street. A worn path is evident between the two sidewalks indicating pedestrian usage. Further consideration may be given to making the bridge openings of sufficient width to accommodate sidewalks on both sides of Maple Street. No marked bicycle lanes or bicycle route signs (including "share the road" signs) are present, yet Maple Street is shown on the bicycle route map for Wichita, as shown in Exhibit 2.4. Because of limited crossings of the Big Ditch, consideration could be given to a wider curb lane width (suggested 15 feet) to allow for a more bicycle friendly roadway.

Central Avenue - While sidewalks are present on both the north and south sides as Central passes beneath I-235, the signalized intersections of Central and Gilda as well as Central and the I-235 northbound ramps do include pedestrian actuated push buttons and pedestrian signal heads (text version). Recent photography aerial indicates а marked crosswalk across Central on the east side of the ramp intersection. thouah I-235 current observations note that the markings have faded. While pedestrian ramps are provided, they do not include color or texture.

Exhibit 2.4 – Wichita Bike Route Map (Detail)



It is worth noting that while bicycle lanes and paths have been sanctioned by the City Council, the bicycle routes have not been sanctioned.

Proposed Regional Transportation System

Several major transportation initiatives have recently been completed or are under study. These include the Northwest Bypass, Wichita Valley Center Floodway Crossings, and the South Area Transportation Study. A summary figure of these study recommendations or study areas under consideration is shown in Exhibit 2.5. Only the US-54/400 (Kellogg Ave.) upgrade with grade separations is included in the WAMPO Long Range Transportation Plan for Funded or Justified Projects. The region's transportation plan will be financially constrained which may limit the implementation of the projects identified below.

US-54/400 (Kellogg Ave.) Upgrade with grade separations

This project is a series of grade separations along the western and eastern edges of US-54/400 (Kellogg Ave.) approximately within the City limits of Wichita. More than a dozen grade separations and interchanges will replace at-grade intersections, often signalized. These improvements will upgrade US-54/400 (Kellogg Ave.) to a freeway essentially from Goddard to Andover.

Northwest Bypass - KDOT Project No. K-8263-01

(Design Project No.'s 54-87 K-8235-01, 254-87 K-8234-01, and 254-87 K-8234-02)

Commonly called the NW Bypass, this is a completed study that developed a freeway corridor location for US-54/400 through Goddard and a new freeway section of K-254 around the northwest side of Wichita, from US-54/400 northward to K-96. Funds are available only to identify the corridor locations and begin the purchase of right-of-way to preserve it in the future. No funds have been

identified to build the new freeways. Project length is approximately 16.3 miles. The bypass of Goddard is no longer being considered.

The project need and feasibility were established in the Northwest Wichita Major Investment Study (MIS) complete in September 1999. The transportation corridor will provide a safe and efficient transportation alternative to commuter travel around the City of Wichita, help alleviate future traffic congestion and enhance economic development in the region. The proposed project area extends east along US-54/400 (Kellogg Ave.) from 183rd Street to 167th Street and then proceeds north and east to K-96 near the City of Maize. The current commuter roadways in and around Northwest Wichita would not meet future traffic demands; and, the limited transportation systems would likely limit economic development.



Exhibit 2.5 – Proposed Regional Transportation System

Wichita Valley Center Floodway Crossings

In the past, several additional floodway crossings have been proposed and discussed. This study evaluated the need for transportation improvements within its study area from a regional perspective utilizing the agreed upon 2030 network as defined through WAMPO's travel demand model. The 2030 network includes the new 13th Street bridge over the Floodway as well as a new West 25th Street bridge linking 25th Street east of I-235 to West 29th Street. Another project to assist Floodway crossing issues that is included in the 2030 network is the widening of the West Central bridge from four to six lanes.

South Area Transportation Study (SATS)

Communities in the southern portion of the WAMPO planning region are interested in the potential to improve mobility and access to and within this region. The WAMPO South Area Transportation Study (SATS) seeks to assess future mobility needs. The SATS goals will be accomplished by evaluating various transportation improvements from a broad perspective to determine which strategies best address the specific transportation needs.

The study area, shown in Exhibit 2.5, includes all of Sedgwick and parts of Butler, and Sumner Counties; all cities within Sedgwick County plus Andover and Mulvane. The decisions reached by this study can have a significant economic impact on the surrounding area through improving regional access and encouraging new development. The study will focus upon developing cost-effective transportation improvements to assist economic development and improve quality of life for residents and business operators in the southern planning region.

Regional Trends

Demographics

The regional planning area was expanded after the 2000 Census to include the City of Andover in Butler County and the City of Mulvane in Sumner County. The Wichita Area Metropolitan Planning Organization (WAMPO) serves as the regional transportation planning organization (MPO).

Population, Housing and Employment

The LRTP states that "by 2030 the Wichita area can expect the population to increase by 123,000 new residents for a total population of 583,733. The number of households is anticipated to rise to more than 48,000 in the next 25 years, while the anticipated number of jobs is estimated to increase to 328,500." Refer to Exhibit 2.6 for the LRTP Growth Areas.



Exhibit 2.6 – Growth Areas per WAMPO 2030 LRTP

Only four counties in the State have a population greater than 100,000, yet together they comprise 43% of the State's population. In the year 2000, Sedgwick County had the largest population by county throughout the State, although just barely. It is estimated that by 2010, Johnson County will overtake Sedgwick County in terms of population. Sedgwick County's population percentage for the State of Kansas is projected to increase from 16.5% in 2000 to 17.0% in 2040. In terms of population, Sedgwick County would remain a close second. It is also more than twice the population of the third most populous county. The City of Wichita is the major city in Sedgwick County accounting for approximately 75% of the Sedgwick County population.

The 2000 Census reported an increase in the number of households for Sedgwick County of approximately 19,600. This represented more than a 12.5% growth from 1990. This is higher than the percent increase for the State of Kansas which was at just under 10%. The mean number of persons per household stayed the same at 2.53 from 1990 to 2000 as did the mean number of vehicles per household at 1.78. These rates are very similar to the statewide rates in 2000 at 2.51 persons per household and 1.89 vehicles per household. Only 6.3% of the households in both the county and the state do not have a vehicle.

Wichita's metropolitan manufacturing employment is approximately 59,400, representing 21% of all employment which is roughly double the national manufacturing percentage of 11%. According to Industry Week magazine, Wichita ranks number 1 in manufacturing among metro areas with populations under one million, and 13th overall in manufacturing cities in the United States.

Based on place of work data, employment in all industries in the Wichita metropolitan area remained steady in 2004. The two major categories of employment by place of work are the goods producing industries and the service producing industries. Employment in the goods producing industries increased by 1.9 percent, while employment in the service producing industries decreased by 0.7 percent. Specifically manufacturing employment rebounded by 2.5 percent, with employment in the aerospace products manufacturing increasing by 2.2 percent.

The top three employment sectors for the Wichita Metropolitan Area include Manufacturing (58,400), Trade, Transportation and Utilities (46,800), and Government (36,900). These three sectors account for approximately 52% of all employment. Within the manufacturing sector, more than half of the employment is associated with aerospace production.

Travel Characteristics

The Census Transportation Planning Package 2000 (CTPP 2000) can provide accurate and comprehensive data needed to make informed decisions. CTPP provides tabulations of households, persons and workers. It summarizes information by place of residence, by place of work, and for worker-flows between home and work. CTPP 2000 is a set of special tabulations from the decennial census designed for transportation planners. The data are tabulated from answers to the Census 2000 long form questionnaire, mailed to one in six U.S. households. Because of the large sample size, the data are considered reliable and accurate. CTPP provides comprehensive data, in a standard format, across the United States. Transportation planners use CTPP date to:

- Evaluate existing conditions
- Develop or update travel demand models
- Analyze demographic and travel trends.

CTPP Data

According to the 2000 Census, the percentage of people driving alone to work in Sedgwick County is 84.8% in comparison to 81.5% for the State of Kansas. However the percent increase for the number of people who drive alone increased at 15.0% for the state between 1990 and 2000, while Sedgwick County increased at the lesser rate of 13.0%. The mean travel time to work (minutes) increased at a lesser rate for the county. The mean time for Sedgwick County in 2000 (18.7 minutes) is comparable to the State (19.0 minutes) in 2000. For those who drive alone (the majority) the mean times are slightly less at 18.3 and 18.7 respectively for Sedgwick County and the State of Kansas.

The LRTP states that "Currently vehicles travel 11 million miles each day on the planning area's road network. By the year 2030 travel will grow to over 14 million miles per day. As a result, congestion and travel times can be expected to increase."

Traffic Volumes

Graphical displays have been developed from KDOT's permanent count stations along both Interstate 235 (south of Maple Street) and along US-54/400 (Kellogg Ave. – east of West Street). These permanent stations provide information on Average Daily Traffic (ADT) volumes, historic growth, monthly, daily and hourly variations, as well as truck percentages. Information from 2004 data at these stations is shown in Exhibits 2.7 and 2.8.



Exhibit 2.7 – Permanent Count Station Data – I-235 – South of Maple Street









Exhibit 2.8 – Permanent Count Station Data – US-54/400 (Kellogg Ave.) – East of West St.







In the study area traffic along I-235 grew from 35,000 vpd in 1995 to over 50,000 vpd in 2005. This represents a growth rate of approximately 3.6% per year. US-54/400 (Kellogg Ave.) has grown at a 2.4% per year rate for the same period of time. In terms of monthly variation, the busiest month is April for both highways. In terms of weekday variation, Friday is the busiest day for both highways. Weekend traffic is approximately 70% of weekday traffic volumes. In terms of hourly variation, the peak points occur at similar times for the AM and PM, though the PM peak period lasts two to three times longer than the AM peak period. The heavy truck percentage is approximately 8.6% (or 4,300 trucks per day) on I-235 and 3.5% (or 2,800 trucks per day) on US-54/400 (Kellogg Ave.). These commercial truck percentages agree with information presented in a March 2003 Commodity Flow Survey for Sedgwick County. More discussion on truck traffic as it relates to freight mobility is discussed in another section.

Regional Context

One of the purposes of this section is to identify those elements that need consideration in the development of design concepts. Often this may mean the elements are a constraint and may need to be avoided, or it may mean that the element represents an opportunity and consideration should be given to providing such design characteristics.

The order of the following contextual elements is random, yet it tries to begin with a large framework or point of reference and then proceed to more specific or focused elements. A summary of constraints and opportunities from these elements is made at the end of this section and is intended to serve as one of the guidelines in developing potential improvements within the study area.

Contextual Elements

Long Range Transportation Plan (LRTP) Programmed and Justified Projects

Chapter 4 of the WAMPO LRTP identifies a series of programmed and justified projects as part of the 2030 Transportation Improvements. A summary figure illustrated such projects throughout the WAMPO area. The projects within the influence area are repeated in Exhibit 2.9 and are discussed in more detail below. These include improvements along Maple Street, Central Avenue, 13th Street, 21st Street/Zoo Boulevard, Ridge Street and West Street.

<u>Maple Street between Ridge and Hoover</u> - This improvement is identified as a five-lane arterial. Additional improvements are shown east of West Street. As Maple Street passes under I-235 the roadway is four lanes. East of I-235 Maple widens out to five lanes. With the proposed improvements to the west, consideration could be given to widening the I-235 overpasses to allow a five-lane roadway section to pass beneath. A sidewalk is present on the south side, but a sidewalk on the north side stops approximately 100 feet west of I-235. The sidewalk on the north side continues east of Elder Street. A worn path is evident between the two sidewalks indicating pedestrian usage. Further coordination could be given to making the bridge openings of sufficient width to accommodate sidewalks on both sides of Maple Street.

<u>Central Avenue between Ridge and I-235</u> - This improvement is identified as a six/seven-lane arterial. Additional improvements are shown east of Zoo Boulevard. This improvement has a direct and immediate relationship to potential improvements at the Central Avenue and I-235 interchange. West of the Big Ditch, Central Avenue is a seven-lane facility. Consequently, in terms of continuity, it would appear logical to continue that typical section further east. The City Capital Improvement Program (CIP) also has identified widening of the bridges over the Big Slough and Big Ditch. Right-of-way issues and access management issues may need to be addressed with implementing a wider roadway section in an existing heavily developed and commercial area.

<u>13th Street between Maize and Hoover</u> - This improvement is identified as a five lane arterial. The travel demand model includes the floodway crossing at 13th Street as part of the 2030 transportation network.

21st Street/Zoo Boulevard between Tyler and I-235 - This improvement is identified as a five lane arterial until approximately Hoover and then becomes a six/seven-lane arterial to I-235. This

improvement is considered part of the committed network for the travel demand model. No immediate or direct effect is anticipated with developing design concepts along I-235.

<u>Ridge Road between Maple and 13th Street</u> - This improvement is identified as a five lane arterial on an existing four-lane cross section. This improvement is considered part of the committed network for the travel demand model. No immediate or direct effect is anticipated with developing design concepts along I-235.

<u>West Street between Harry and Central Avenue</u> - This improvement is identified as a five lane arterial on an existing four-lane cross section. This improvement is considered part of the committed network for the travel demand model. No immediate or direct effect is anticipated with developing design concepts along I-235.



Exhibit 2.9 - LRTP Programmed and Justified Projects within Influence Area

Wichita Valley Center Floodway

The City of Wichita is located at the junction of the Arkansas River and Little Arkansas River. Prior to construction of flood control, these rivers and their numerous tributaries, and the relatively flat terrain in the Wichita vicinity, had combined to cause flooding problems within the city. Flooding in low-lying areas of Wichita had occurred with relative high frequency during storm events along the Arkansas River, Little Arkansas River, Chisholm Creek, Cowskin Creek, Gypsum Creek, Wichita Drainage Canal and their tributaries prior to the construction of the Wichita Valley Center Floodway.

The *Flood Control Act* was enacted in 1936 and provided authorization and funding for the Wichita Valley Center Floodway Project. The floodway project was under construction by the U.S. Army Corps of Engineers (USACE) from 1950 to 1959. The purpose of the project, along with the West Branch Chisholm Creek companion project, was to relieve flooding on the Arkansas River, the Little Arkansas River, and Chisholm Creeks in the immediate vicinity of Wichita and Valley Center in Sedgwick County, Kansas.

The project is located on the Arkansas River, extending from about river mile 760.0 to river mile 793.0 and consists of levees, floodways, improved channels, and control structures. Storm water runoff from the intercepted areas is diverted and contained in areas reserved for ponding. Storage capacity is provided by fifty interior drainage ponding areas. The required storage is based on a 25-year storm frequency, which is considered by the USACE to furnish a reasonable degree of protection. The project provides flood protection to approximately 49,000 acres of urban and rural lands in and adjacent to the cities of Valley Center and Wichita, Kansas. Protection is provided for flooding from the Little Arkansas River; Arkansas River; Big Slough; Cowskin Creek; and Chisholm Creek and its west, middle, and east branch tributaries.

As indicated in the FEMA Flood Insurance Study, reference 1, "no significant flooding has been observed . . . downstream of the floodway since the floodway was completed."

The Wichita Valley Center Flood Control Project consists of control structures and levees that divert flood waters around the City of Wichita by a system of floodways. The major features of the floodway system include:

- Control Structures I and II to divert Little Arkansas River flooding into the Arkansas River;
- Control Structure IV to divert Arkansas River flooding into the Wichita Valley Center Floodway system;
- Rerouting of the entire flow of Middle Fork, West Fork and Main Fork Chisholm Creeks from the Wichita Drainage Canal into separate floodway systems;
- Diversion of the controlled flow in the Little Arkansas River and the combined flood waters of the Middle Fork and Main Fork Chisholm Creek floodways into the Wichita Valley Center Floodway system; and
- Controlled flow of the main channel capacity for the Arkansas River reach through the City of Wichita.

As an additional design measure, the levee on the left bank (east side) of the floodway was constructed 1.0 foot higher to afford greater protection to the City of Wichita.

The City of Wichita Public Works Department, Storm Water Utility is responsible for the construction and maintenance of the City's storm water drainage system and for implementing the water quality aspects of the City's Storm Water Pollution Prevention Plan. The 2006 budget for Wichita's Storm Water Utility is \$6.8 M, which is funded by approximately \$5.5 M collected from Equivalent Residential Unit (ERU) fees, with the approximate \$1.3 M balance provided from the City's General Fund. ERU fees in support of the storm water utility are paid monthly through residential water bills or twice per year for those residences without a water account.

The Wichita Storm Water Utility also supervises the Flood Control Unit, which is responsible for maintaining the Wichita-Valley Center Flood Control Project in accordance with the U.S. Army Corps of

Engineers requirements. The 2006 budget for the Flood Control Unit is \$1.4 M which is split 50:50 between the City's General Fund and Sedgwick County funds.

The above information was compiled from the *Flood Insurance Study, City of Wichita, KS, Sedgwick County*, Federal Emergency Management Agency, May 15, 1986 and the *Hazards Analysis Plan for Sedgwick County, Kansas*, Sedgwick County Emergency Management, June 2002.

Freight Mobility

With a strong economic base focused on the manufacturing and skilled labor industries, freight movement has always been important in the region. Now as the movement of goods continues to grow due to a healthy economy, the result will be more freight traffic using the transportation system. More trucks on the region's highways will require capacity improvements and route upgrades. Increases in air cargo will mean a need for better facilities and better connections to other modes. Finally, intermodal exchanges, locally and regionally, will need to be enhanced to improve the efficiency of goods delivery.

According to the FHWA's Freight Analysis Framework (FAF), the State of Kansas in 1998 moved 248 million tons of goods worth \$162 billion. These goods were primarily moved on the state's highway system but a large share was carried by rail. By 2020, the Kansas transportation system is expected to carry 410 million tons of goods valued at \$457 billion. Freight will continue to be an important facet in the economic vitality of not only the state of Kansas, but the Wichita area.

According to Federal Highway Administration estimations, trucks moved the largest percentage of the tonnage and value of shipments, followed by rail in the State of Kansas. Exhibit 2.10 show freight flows on highway and rail modes. Truck traffic is expected to grow throughout the state over the next 20 years. Much of the growth will occur in urban areas, such as Wichita, and on the Interstate highway system. The increase in truck volumes will need to be addressed as capacity decreases on truck routes in Kansas, mainly on the interstate system and U.S. and state highways.

Regionally, an effort has been made to improve and expand the Southwest Passage to link major markets, both regional and interstate, through rural areas to enhance the movement of people, products and services in a safe and timely manner. This coalition of local governments, civic groups, and businesses have come together to promote the improvement of US-54/400 (Kellogg Ave.) through SPIRIT, Southwest Passage Initiative for Regional and Interstate Transportation.

In early 2004 Federal environmental studies for both the Oklahoma to Mexico/Gulf Coast (TTC-35) element and Northeast Texas to Mexico (I-69/TTC) began. The first phase of these studies involves areas 20-100 miles wide that will be narrowed down during the process. A final route is not selected during this phase. Since routes have not been chosen at this time, the impact on neighboring states cannot be determined. However, these corridors will have a great impact on neighboring states and the entire region if their full goods-carrying capacity is realized.

It is important to keep abreast of these regional and national efforts to ensure that an influx or a diversion of freight movement mirrors the local efforts being made in the freight arena. Wichita has a strong concentration of transportation modes that serve goods movement. Not only is the transportation network in place and improving, freight facilities are located here to aid in the interchange of modes and distribution of goods to the consumer. Better national connections to the southeast and southwest would help maintain the economic engine for agriculture and manufacturing in the Wichita area.



Exhibit 2.10 – Estimated Average Annual Daily Truck Traffic: 1998 and 2020

Source: Freight Analysis Framework, FHWA, November 2002.

The area's economic focus on manufacturing and skilled labor means that parts and finished goods transport is highly dependent on a strong highway network to serve trucking. Wichita is located on Interstate 35, which connects to nearby Interstates 70 and 40. The area is also served by Interstate 135, US-54/400 (Kellogg Ave.), and numerous state highways. I-35 connects Wichita to Texas and the southern border of the United States as well as the Kansas City region and the upper Midwest. US-54/400 (Kellogg Ave.) is an east/west route connecting the Wichita area to Western Kansas and the southwest states via US-54/400 (Kellogg Ave.). Sixteen national and regional interstate common carriers have local terminal facilities.

There is currently no water transport in the Wichita area, however, much of the area's agriculture products (i.e., grain, fertilizer) are carried by truck to the Port of Catoosa in Tulsa, Oklahoma. 40 percent of the wheat from the area is transported by truck or rail to the Port of Catoosa with fertilizer being transported on the backhaul. Kansas is the number one wheat producer in the nation and Sedgwick County produces greater than 5 million bushels per year.

Air freight movement in Wichita is unique due to the large number of aircraft manufacturing companies. The Wichita area is home to Onyx, Raytheon, Cessna, and Bombardier Aerospace Learjet, among other aviation-related companies that have their own airport facilities or commonly use the Mid-Continent and Colonel James Jabara Airports. According to Airport Master Plan, Wichita's Mid-Continent Airport currently carries approximately 35,000 tons of air freight per year and will grow to approximately 78,000 tons in twenty years.

Located approximately five miles south of the airport is the 280-acre Sedgwick County, Kansas foreign trade zone. A Foreign Trade Zone is a general purpose zone where foreign and domestic goods are not within U.S. Customs Territory and users are exempt from paying duty or federal excise tax while the goods remain in the zone or are exported. This facility has 800,000 square feet of warehouse and assembly space, as well as building sites for new manufacturing facilities. The site is served by rail and located near the highway system. Facilities like these are hubs of freight movement and provide for efficient operations through transportation connections that support their activities.

Intermodal refers to the movement of goods by two or more modes of transportation. Typically, these moves involve truck and rail transfers. The nearest truck-rail intermodal facilities to Wichita are in the Kansas City area. Another intermodal transfer that occurs is between truck and air modes. To support these moves the route from US-54/400 (Kellogg Ave.) south to the Mid-Continental Drive and Air Cargo Road to the Mid-Continent Airport is designated as a National Highway System (NHS) Intermodal Connector. NHS freight connectors are public roads that connect intermodal terminals, the airport in this

case, to the highway network. These routes are considered critical elements of the transportation system for efficient goods delivery.

It is important to recognize that infrastructure improvements not only provide benefit to passenger vehicle travel but these same improvements can greatly impact the movement of freight. When bridge clearances are raised or weight restrictions corrected, more routes are open to freight carriers potentially reducing travel times for delivery. This may not be viewed as a direct capacity investment but opening a new route to truck travel indirectly increases capacity because the new route, and its capacity, is now an available option. Truck route designation and significance could help to justify investment in such improvements as pavement upgrades, bridge replacements, and/or capacity improvements.

To assess freight issues, the planning effort requires a basis for making comparisons, determining needs and the role that public agencies can have in private business affairs. Consequently, the establishment of the Freight Zones and Corridors was created to allow review of proposed freight mobility improvement projects, by determining whether the project is located within a freight zone or along a freight corridor. Exhibit 2.11 presents criteria that could be used to categorize roadways based on their freight benefit potential. Higher scores can be given to projects within the freight zone and along freight corridors depending upon their level of significance. This table means that I-235 in the study area would be classified as national significance and that US-54/400 (Kellogg Ave.) would be classified as statewide significance. This system also connects to the NHS Intermodal connector to the Wichita Mid-Continent Airport.

Level	Truck Volume	Functional Classification	Other
National	> 2,000 per day	Interstate or State Highways	Mainly designated/supported by Federal authorities
Statewide	> 1,000 per day	State Highways, County Roads	Mainly designated/supported by State authorities
Regional	> 500 per day	State Highways, County Roads	MPO, region wide support to industrial areas or freight zones
Local	> 250 per day	State Highways, County Roads, Major Arterials	Connects local industry or freight facilities to regional or national routes or local origins/destinations

Exhibit 2.11 – Truck Route Significance Criteria

A major freight-related project includes the recent completion and on-going grade separations for vehicles (including over 1,000 trucks per day) along US-54/400 (Kellogg Ave.). These projects will have significant benefits to the freight community in terms of reduced congestion that will likely result in increased productivity and reduced transportation costs. The City of Wichita, in partnership with the Kansas World Trade Center, has received federal funding to conduct a feasibility study and work plan for implementing an international trade processing center. The study includes determining the feasibility of an inland port, identification of key partners, facility and infrastructure needs and costs, and other related work. As part of that study, a schematic map illustrating freight zones identifies a triangular shape south of US-54/400 (Kellogg Ave.) to K-42 and extends three miles west and east of I-235.

Institutionally, it is important to continue monitoring transportation improvement projects related to freight mobility. The Freight Zone and Corridor concept should allow for a greater accounting of benefits to the freight community from the numerous roadway improvement projects that come forth from other sources, yet nonetheless benefit the freight community. For instance, when a capacity improvement is done on a roadway near a top industry, the freight delivery to that industry will benefit as much or more than the passenger cars that likely pressed for the improvement. This will help to assist in taking "freight credit" for non-freight projects, while also recognizing that other specific freight-related projects may need to be developed on their own, such as targeting weight and height restrictions on truck routes and freight corridors.

Airport Accessibility

Wichita Mid-Continent Airport is a small hub air carrier and general aviation complex, providing accommodations for all aircraft, as well as the latest innovations in passenger convenience, safety and efficiency at Kansas' largest airport. The airport consists of 3,316 acres of which 691 acres are available for aviation-related development. The airport is bordered on the north by US-54/400 (Kellogg Ave.) and on the south by K-42, with easy access to Interstate 235. The largest commercial and general aviation complex in Kansas, the facility has three runways (10,300 ft. / 7,300 ft. / 6,300 ft.).

The practical annual airfield capacity is 500,000 operations. Current operations are at 43 percent of capacity. The terminal is comprised of nearly 195,000 square feet with a \$6 million renovation completed in 1989. Mid-Continent has been identified as one of the fastest growing airports in the nation, serving 1.5 million passengers in 2004.

The Wichita Airport Authority is responsible for directing the management of Wichita Mid-Continent Airport. The governance of the airport is under a 13-member advisory board with the Wichita City Council being the Authority Board. WMCA continues to be an integral part of the total economy of south-central Kansas. Over 70 tenants include various agencies of the federal government as well as the airlines. The current operating budget is just under \$10 million, and the net revenue budget is \$14 million.

General aviation is served by specialized retailers, who provide aircraft-related accessories, service, rental, storage and flight training. Two general aviation manufacturers are located adjacent to the airport and maintain access agreements for the use of public facilities as well as provide customer service at their respective locations. Fixed-base operators provide a complete range of services, including aircraft repair, refurbishing, maintenance, sales, fueling and charters. There are approximately 270 general aviation aircraft based at Mid-Continent.

The Terminal Area Plan for Wichita Mid-Continent Airport was prepared to evaluate improvement or replacement of the existing terminal and concourse building. A plan for a new two-level terminal, located immediately west of the existing facility has been selected. This plan was presented to the Wichita City Council on October 12, 2004. Construction of the new terminal is expected to begin in early 2008. Annual enplanements in 2003 were nearly 718,000. Projected enplanements in the year 2023 are to 950,000 per year.

An elevated roadway would provide departing passengers access to the upper level for ticketing. Arriving passengers would leave the gates and descend to a lower level to baggage claim and rental cars. There would be a separate lower roadway for arrivals and ground transportation. The new terminal will better accommodate future expansion as air service increases. The new terminal can be designed specifically to accommodate new security requirements. Adequate space can be provided for both passenger and baggage screening. The two-level design of the new terminal will separate vehicular and pedestrian movement for a more efficient and convenient operation. The existing elevated ramp from westbound Kellogg Avenue provides excellent views south to the airfield. This entrance will be maintained and enhanced with new signage, landscaping and public art.

The new terminal can be constructed while the existing facility remains in operation and disruption is significantly less than renovating existing building while in use. The facility will have ten gates all equipped to accommodate both commercial aircraft and regional jets. If the percentage of regional jets increases, the number of gates can be increased to 12. When the level of use approaches 900,000 enplanements per year, a parking structure with 1,000 spaces is proposed to the east of the new terminal. Exhibit 2.12 provides an illustration of the proposed expansion as well as the airport diagram of existing conditions. The total estimated project cost including design and project contingency is approximately \$147.5 million.

As with all airports, the Wichita Mid-Continent Airport has a designated horizontal surface elevation, 150 feet above the airport elevation, for an area roughly defined by a 10,000 foot radius from the end of each runway. This surface should not be exceeded with any obstructions, including roadways, lighting, etc. I-235 and Kellogg Avenue do cross within this designated area.



Exhibit 2.12 – Wichita Mid-Continent Airport and Expansion

Westar Utility Corridor

An electrical transmission line carrying a 138 kV is located along the east side of the I-235 corridor often in a separate corridor that typically is 25 feet wide from Douglas south to US-54/400 (Kellogg Ave.). Several steel tower structures are located within this utility corridor and typically include an approximate 30 foot by 50 foot rectangle around the tower's base. Typically the sag of the wires provides a 27.5 vertical clearance at the lowest point. The height of the towers is approximately 75 feet. The transmission line was apparently constructed simultaneously with the highway in 1958.

An electrical substation is located on the east side of I-235, immediately north of Douglas. A maintenance facility is located on the west side opposite the substation. Here the overhead lines cross I-235 and continue westerly across the Wichita Valley Center Floodway. Another electrical substation is located on the east side of I-235 immediately north of the K-42 interchange. Exhibit 2.13 shows schematically the Westar electrical utility corridor and property along and adjacent to the I-235 corridor.

Congestion Management Process Network

WAMPO adopted a Congestion Management System (CMS) (now Congestion Management Process (CMP)) in



- System Monitoring
- Performance Measures
- Congestion Identification
- Mitigation Strategies
- Implementation of Strategies
- Monitoring of CMP effectiveness

The current (February 2005) CMP coverage area and a system wide CMP network (shown in Exhibit 2.14) were developed and are monitored based on performance measures such as the amount of time it takes to travel a defined distance and how many vehicles a road is designed to carry versus the number of vehicles actually using the road. A Performance Monitoring plan was developed and the MPO currently maintains a database of traffic volumes, travel time and capacities and will develop the travel time database in the future.

The facilities of I-235 and US-54/400 (Kellogg Ave.) and Central study area are within the CMP coverage area. CMP routes with in the coverage area include; I-235, US-54/400 (Kellogg Ave.), Maple Street, Central Avenue, as well as West Street, Ridge and Zoo Boulevard.

Five specific evaluation strategies were identified as part of the policy. The MPO developed a process to implement and manage selected strategies. Monitoring the effectiveness of strategies will be done as areas are identified, mitigation techniques are applied, and the areas are observed over time for change.



Exhibit 2.13 – Westar Electrical



Exhibit 2.14 – CMP Coverage Area and Network

Identification of Opportunities and Constraints

With the above defined contextual elements and in consideration of potential future design concepts it is recognized that several of these elements represent opportunities or constraints. A preliminary listing of such potential opportunities and constraints could include:

- Removing the former railroad bridge crossing the Wichita Valley Center Floodway (WVCF) and utilizing the former right-of-way, east of the (WVCF) to and through the West Street intersection, for vehicular transportation use only
- Recognizing the importance of the WVCF and minimizing as practical potential grading adjacent to the levee system
- Reviewing potential grading and drainage impacts of potential improvements and develop means to remain as much as is practical within the existing right-of-way
- Reviewing potential impacts to major adjacent utility lines and coordinating on appropriate measures to adjust
- Coordinating the I-235 and Central Avenue interchange improvement with the City of Wichita's identified long-range projects
- Providing joint City and KDOT review of proposed development along Central Avenue from Eisenhower to Flora
- Continuing to provide system continuity along the region's transportation facilities
- Preserving and enhancing emergency response
- Reviewing incident management techniques as part of the Congestion Management System
- Maintaining connectivity of transit routes, and enhancing transit accessibility
- Reviewing the need for enhancing pedestrian and bicycle crossings of I-235
- Reviewing freight mobility elements such as vertical clearances or weight limitations and coordinating truck traffic projections consistent with national forecasts and the regional travel demand model
- Coordinating with potential Intelligent Transportation Systems (ITS) based improvements to facilitate traffic flow and improve safety
- Maintaining and providing easy access to and from the east to the airport