



KCI Airport Area Plan: Existing Transportation Conditions Analysis

The study boundary used for the Transportation Conditions Analysis was I-435 on the west, Missouri Route 92 and the Kansas City, Missouri city limits on the north, US 169 on the east and NW Barry Road and its westerly projection on the south.

The Area Plan study area is a large area which includes land uses that need to be served by a comprehensive and flexible transportation network. There are three major destinations in the area that require service via comprehensive roadway infrastructure. The KCI Airport is served through two interchanges on I-29 and one interchange with I-435. KCI Airport served over 9.6 Million passengers in 2005 and has over 23,300 on-airport parking spaces. Each day over 29,000 vehicles travel on Cookingham Drive to access the airport. Zona Rosa, Boardwalk and numerous other commercial centers along Barry Road east and west of I-29 are major shopping destinations for northland residents. The high density commercial development in this area is the cause of peak hour congestion that has led to redesign of the Barry Road interchange area in recent years. An additional destination within in the Area Plan boundary is the office development near the I-29 and Tiffany Springs Parkway interchange. The concentric circle design of the office complex on the east side of the interchange presents unique challenges to updating the roadway infrastructure near this complex. As the surrounding area developments these Area Plan destinations will likely require transportation system improvements to handle future traffic volumes.

These destination areas and all of the other development in the area generate traffic volumes in the moderate range. The current volumes on I-29 are comparable to daily traffic volumes on I-70 near Grain Valley. The volumes on I-435 east of the airport are around 25% of the volume on I-470 near Lee's Summit. The following table illustrates the traffic volumes on the highway system within the Area Plan boundary.

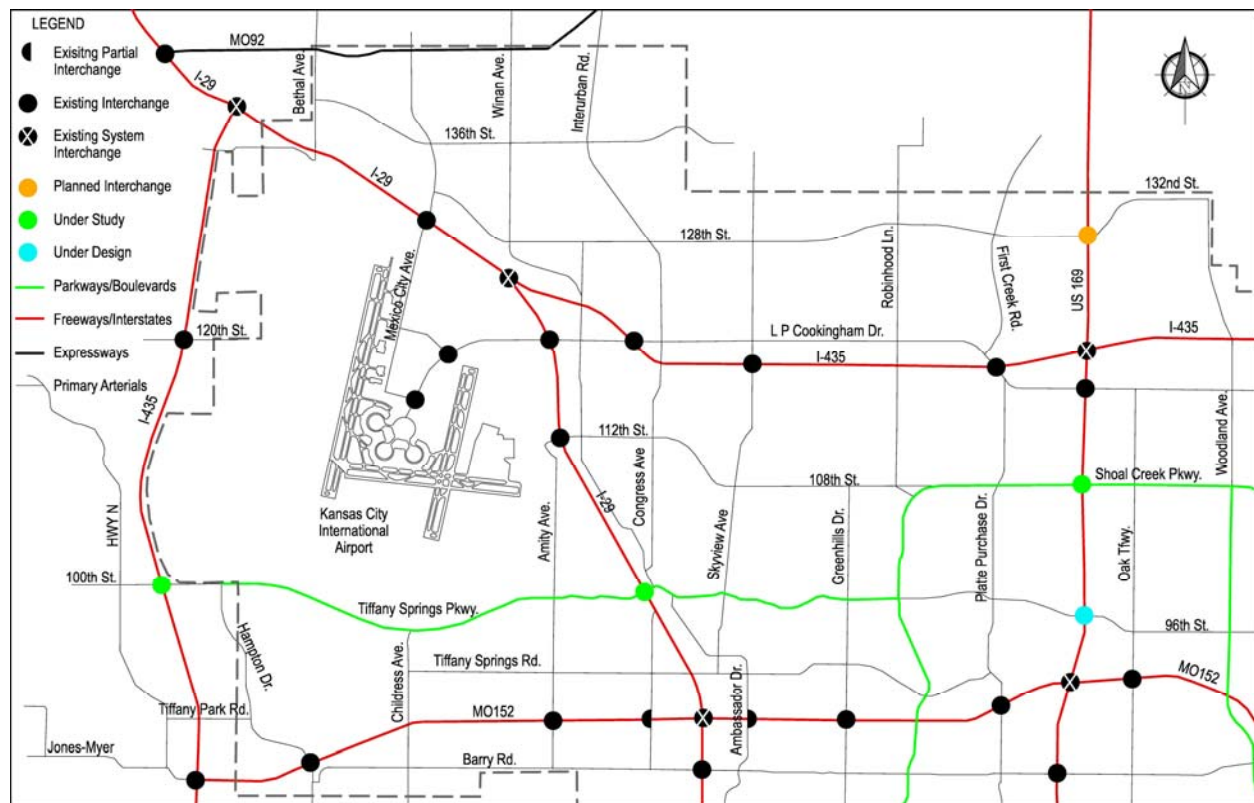
Exhibit 1. Daily Traffic Volumes		
Location	Daily Traffic Volumes	Daily Truck Volumes
Interstate 29 South of KCI Airport	42,900	N/A
Interstate 435 East of KCI Airport South of I-29	16,963 N/A	1,949 N/A
US 169 South of I-435	13,824	1,331
MO 152 East of I-29 West of I-29	19,502 15,084	1,280 N/A
Cookingham Drive West of I-29 (KCI Airport access)	29,148	N/A
Route 92 East of I-29	N/A	N/A

Source: Missouri Department of Transportation 2004 District 4 Traffic Volume Map.

The roadway infrastructure within the Area Plan Boundary is at the high end of the functional class system and is fairly comprehensive in comparison to the remaining study area. The majority of the land within the Area Plan boundary is relatively undeveloped with some new residential subdivisions under construction. Development has mainly focused at the major roadway nodes in the study area because the arterial and collector system has not been developed.

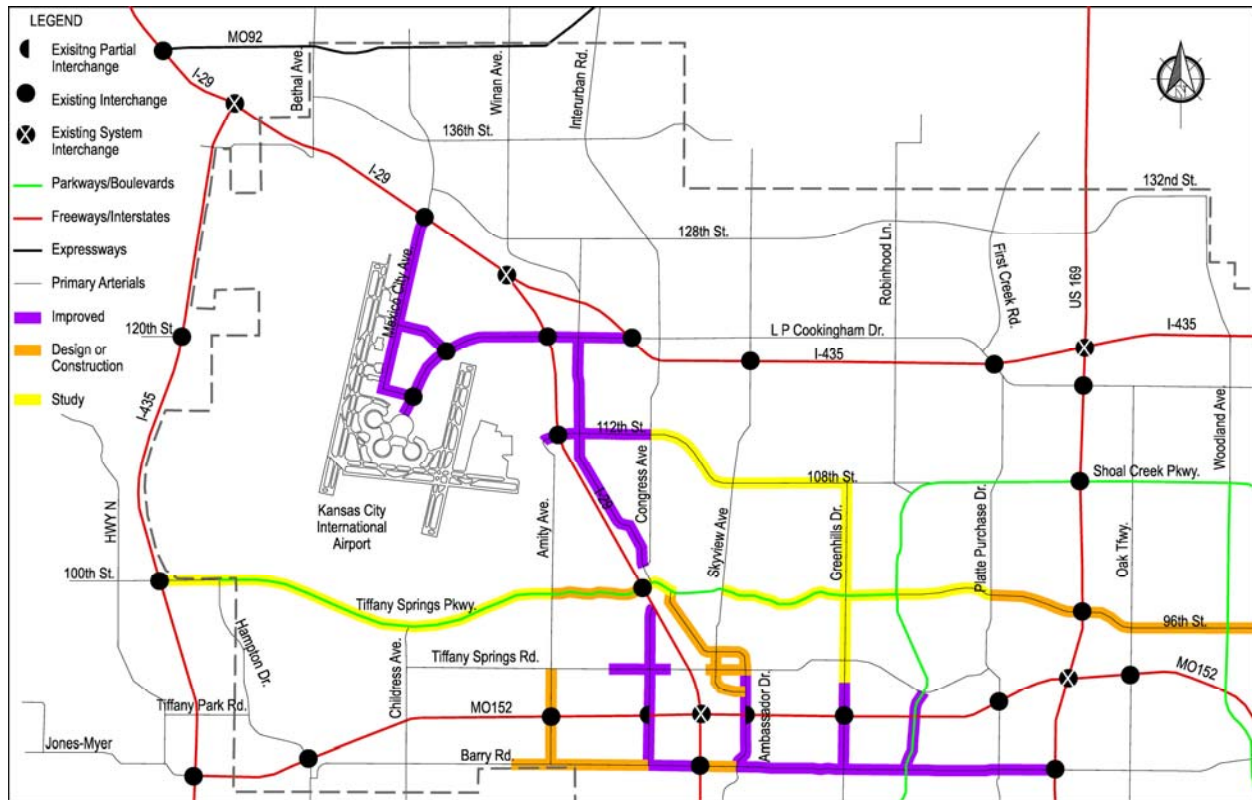
Exhibit 2 identifies the system and service interchange nodes within the Area Plan boundary. A system interchange is between two freeway or controlled access roadways, like the interchange at I-29 and I-435 near KCI airport. A service interchange is between a freeway or controlled access roadway and a lesser class roadway or arterial street, like the I-29 and Tiffany Springs Road diamond interchange. Currently on US 169 the three at-grade intersections (96th Street, 108th Street/Shoal Creek Parkway, and 128th Street) are under design or study and will become service interchanges when funding is identified for construction. The Tiffany Springs Parkway and I-435 interchange is also under study and is needed to complete the node network. These interchanges will complete the comprehensive higher classification roadway network in the Area Plan boundary.

Exhibit 2. Existing Interchange Node Network



Although the interchange nodes are comprehensive, the connectivity to the undeveloped land beyond the interchange influence areas is lacking. Exhibit 3 shows the degree to which the Kansas City Major Street Plan has been implemented in this area.

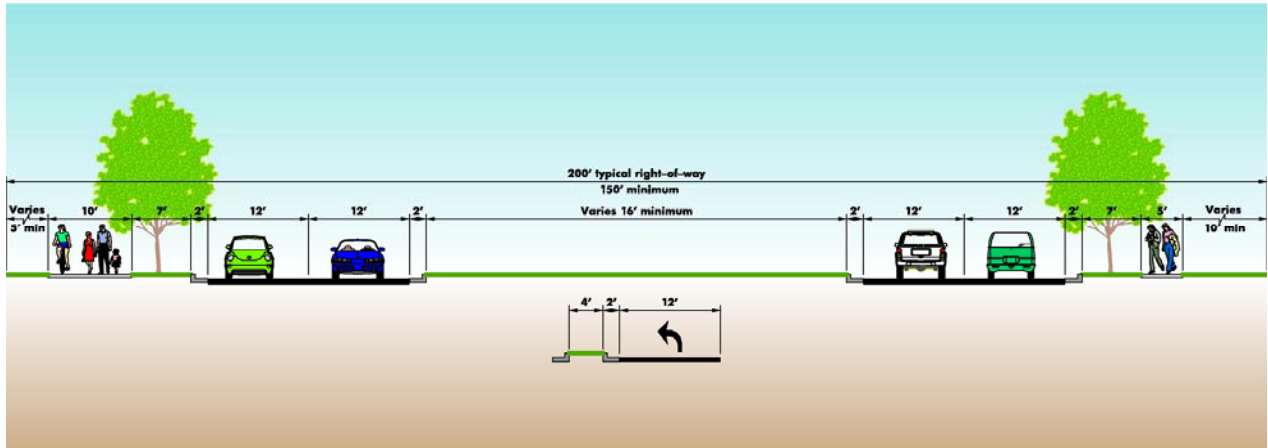
Exhibit 3. Kansas City Major Street Plan



The Major Street Plan identifies five freeways/interstates, two parkways/boulevards and numerous arterial roadways. Many of the arterials and sections of the Parkways are planned and not currently developed to their ultimate cross section. The existing Tiffany Springs Parkway extends only 500 feet west of the I-29 interchange although it is shown on the Major Street Plan to extend for nearly 5 miles to I-435. These gaps in the major street plan do not always take the form of unbuilt roadway, as in the case of Tiffany Springs Parkway, but the gaps may surface as inadequate capacity or substandard geometrics. As in the case of Skyview Road and Tiffany Springs Road northeast of the I-29 and MO 152 system interchange. These two roadways have narrow lanes with open drainage and limited sight distance due to substandard horizontal geometrics.

At these specific locations gaps are being addressed through design projects. Tiffany Springs Parkway is currently under design west of I-29 to Amity Avenue. A typical section for a parkway is illustrated in Exhibit 4. For Tiffany Springs Parkway this typical section is being utilized with an approximately 50-foot median. A similar roadway section is planned for Shoal Creek Parkway on the east side of the study boundary area.

Exhibit 4. Parkway Typical Section



At Skyview Road and Tiffany Springs Road a new roadway alignment using current geometric standards is being developed while addressing access issues with nearby planned and approved development along Ambassador Drive. This design project has been a cooperative effort between the City of Kansas City, the KCI Area TIF, and local developers. Exhibit 5 shows the local roadway network and the changes that are being incorporated to eliminate the transportation gaps and allow this area to develop.

Exhibit 5. KCI Area TIF Transportation Improvements.



The typical cost of constructing one lane-mile of new arterial roadway is around \$1.5 Million and for improving an existing roadway around \$2.5 Million. The total cost of all the KCI Area TIF projects on Exhibit 5 is estimated at \$80Million. Each year the KCI Area TIF generates around \$2.5 to \$3 Million for transportation infrastructure projects which equates to only one to two miles of construction each year. Considering the size of the KCI Area Plan and the amount of infrastructure planned, funding will become an important consideration in the timing of construction and project prioritization.

The functional issues that exist in this area are different if it is a developed or undeveloped area. In the developed areas, the overall freeway levels of service are acceptable but interchange ramp intersections and signalized intersections along the major street corridors, like Barry Road, experience long delays. Capacity improvements on Barry Road and recently completed interchanges on Route 152 have alleviated some of these deficiencies by providing more travel lanes and alternative routes. Generally, in undeveloped areas delay is not a concern because traffic volumes have not reached levels that will exceed the roadway capacity provided.

Another common functional issue within the study area deals with close intersection spacing. The side road intersections and the I-29 interchange entrance/exit ramps on Tiffany Springs Parkway are an example of this issue. When intersections are too closely spaced it is difficult to provide efficient traffic signal progression and queuing or congestion results. These issues can be addressed by implementing good access management techniques as directed by documents like the Missouri Department of Transportation's [Access Management Guidelines](#). At this time, no specific high crash locations have been identified by the study team because crash data has not been provided. High crash locations are not a specific functional issue identified in the study area but general safety issues do exist that should be considered. Most safety issues like limited sight distance, no clear zone and narrow travel lanes in the undeveloped areas are addressed when roadways are improved to city or state design standards. In improved areas crash concerns are mainly addressed through enforcement and capacity improvements or traffic signal modifications.

Conclusions

The existing roadway infrastructure is focused around the interstate and state highway systems with little emphasis on the arterial or collector street network. Projects are currently planned, being designed or under construction that expand the roadway infrastructure from its current boundaries. This infrastructure will be built over time and will follow acceptable design standards and good access management practices to reduce future functional issues related to delay, congestion and safety.

The Major Street Plan generally provides for a comprehensive street network. Modifications to the Major Street Plan may be necessary to adjust the final alignment of Tiffany Springs Parkway and to allow local access to areas west of KCI Airport between the airport and I-435, if this land is planned for higher intensity development.

Generally, development follows roadway improvements because developers will have fewer infrastructure upgrade costs and it is more attractive for residents or costumers to travel on improved roadways. Generally, the City takes on the construction of the streets outlined on the Major Street Plan and developers will build the local and collector streets that connect to the arterials. If development occurs in areas outside of planned improvements, greater functional issues on the unimproved roadways will result. An effort should be made to encourage development near improved roadways.

Some transportation issues identified in this memo related to the study area:

- The limited arterial street network concentrates traffic and causes congestion, delay and safety issues.

- Existing roadways were not constructed to handle today's traffic volumes, especially near interchanges where side road spacing is too close.
- The high cost of roadway construction will require careful planning and prioritization to provide the roadway network improvements to support development.