

Chapter 1:

PURPOSE & NEED



This chapter of the Planning and Environmental Linkages (PEL) study provides an overview and description of the corridor and identifies the transportation problems in the Study Area to be addressed by the proposed improvement strategies. The Purpose and Need identified in this chapter will be carried forward in subsequent National Environmental Policy Act (NEPA) studies prior to the determination of a final preferred alternative(s).

PROJECT OVERVIEW

The Mid America Regional Council (MARC), in cooperation with the Federal Highway Administration (FHWA); Missouri Department of Transportation (MoDOT); City of Kansas City, Missouri (KCMO); Kansas Department of Transportation (KDOT); and the Unified Government of Kansas City, Kansas and Wyandotte County, KS (UG) is conducting a PEL study for an area that includes US-169/I-70/I-35/29/I-670 in Jackson and Clay Counties, Missouri and Wyandotte County, Kansas.

MARC, with its partners, are conducting the PEL to assess the existing conditions, identify anticipated problem areas, and develop and evaluate transportation improvements to reduce congestion, enhance connectivity, and improve the safety of US-169 and I-70 within the Study Area. MARC is preparing this PEL study in accordance with FHWA guidance for improving and streamlining the environmental process for transportation projects by conducting planning activities before the start of the NEPA process.

The PEL study will focus on the development of a strategic plan that identifies and evaluates reasonable alternatives for the US-169 corridor including access connections to the Charles B. Wheeler Downtown Airport, replacement or reuse of the Buck O’Neil Bridge (O’Neil Bridge), and the connection to the 5th/6th Street interchange. The study will also focus on the I-70 corridor from US 71 on the east to I-670 on the west including its connection to the US-169 corridor and downtown loop, improvement of traffic flow and better connection of the street grid between River Market and downtown Kansas City. Additional issues being considered as part of this study include:

- Access to the Port of Kansas City,
- Airspace use and potential airspace obstructions around the Downtown Airport,
- Missouri River navigation,
- Bicycle and pedestrian accommodations on major bridges,
- Impacts to transit and railroads,
- Recommendations and plans from KDOT’s Lewis and Clark Viaduct Study, and
- Potential downtown interstate access and routing.

The proposed improvements will address issues associated with future access, mobility, safety, system preservation, and redevelopment.



This study is following the FHWA guidelines for conducting a Planning and Environmental Linkages (PEL) study. Conducting a PEL allows the study sponsors to answer key questions related to potential improvement strategies prior to starting the NEPA process without having to revisit these decisions once project funding has been identified.

SUMMARY OF PURPOSE & NEED

In 2015, MARC formally adopted their metropolitan transportation plan for greater Kansas City - Transportation Outlook 2040. The updated transportation plan provides a policy framework for the investment of federal, state, and local funds based on anticipated needs and regional goals and objectives.

The regional transportation vision established in the plan and carried forward into this PEL study is:

A safe, balanced, multi-modal transportation system that is coordinated with land-use planning, supports equitable access to opportunities, and protects the environment.

From that transportation vision and in-line with the overarching transportation objectives of the region, the Beyond the Loop PEL study needs have been identified and include:

- **Improve Physical Conditions** - Ensure that existing and new transportation assets in the Study Area better serve the region and are maintained in a state of good repair.
- **Optimize System Performance** - Manage the operations of the existing transportation facilities to achieve reliable and efficient performance.
- **Improve Safety & Security** - Identify reasonable improvements to ensure the safety and security of the affected area.
- **Improve Transportation Choices** - Provide viable, accessible, multi-modal transportation options.
- **Improve Economic Vitality and Placemaking** - Improve transportation and land-use linkages in the Study Area.
- **Improve Sustainability** - Protect and enhance the region’s natural, cultural, and social resources. Explore ways to mitigate the adverse impacts of the existing system and proposed alternatives.

Vibrant

Economic vitality
Support an innovative, competitive 21st-century economy.

Placemaking
Coordinate transportation and land-use investment along the region’s corridors and centers as a means to create vibrant places and strengthen the quality of the region.

Equity
Ensure all people have the opportunity to thrive.

Connected

Transportation choices
Expand affordable, accessible, multimodal transportation options in order to better connect residents and visitors to jobs and services.

Safety and security
Improve safety and security for all transportation users.

System condition
Ensure transportation systems are maintained in good condition.

System performance
Manage existing systems to achieve reliable and efficient performance and maximize the value of existing investments.

Green

Public health
Facilitate healthy, active living.

Environment
Protect and restore our region’s natural resources (land, water and air) through proactive environmental stewardship.

Climate change and energy use
Decrease the use of fossil fuels through reduced travel demand, technology advancements and a transition to renewable energy sources.

In 2015, MARC adopted their long-range transportation plan, Transportation Outlook 2040, that set the policy framework for the overall Purpose & Need for this PEL study.

STUDY PURPOSE

The study purpose is to seek the most effective approach to improving the transportation facilities in the Study Area, including the development of alternative strategies, which, when implemented, will meet the identified current and future needs while balancing the interests of the various stakeholders.

For this study, the interests of the stakeholders can be grouped into three distinct groups:

- **Federal/State** – The federal interest includes maintaining the viability of the interstate highway system for long-distance travel. The state interest includes improving the condition of the transportation assets on the state highway network in both Missouri and Kansas, providing opportunities for improved goods movement, and improving the travel conditions for long-distance travel.
- **Regional** – The regional interest includes improving the ability of the traveling public to access the Central Business District (CBD) and other regional destinations for work, services, recreation, or commerce, as well as maintaining access to critical infrastructure and industry.
- **Local** – The local interest includes improving the economic viability of the downtown core in both Missouri and Kansas, including adjacent neighborhoods and economic centers, through improved accessibility, modal options, and environmental sustainability.

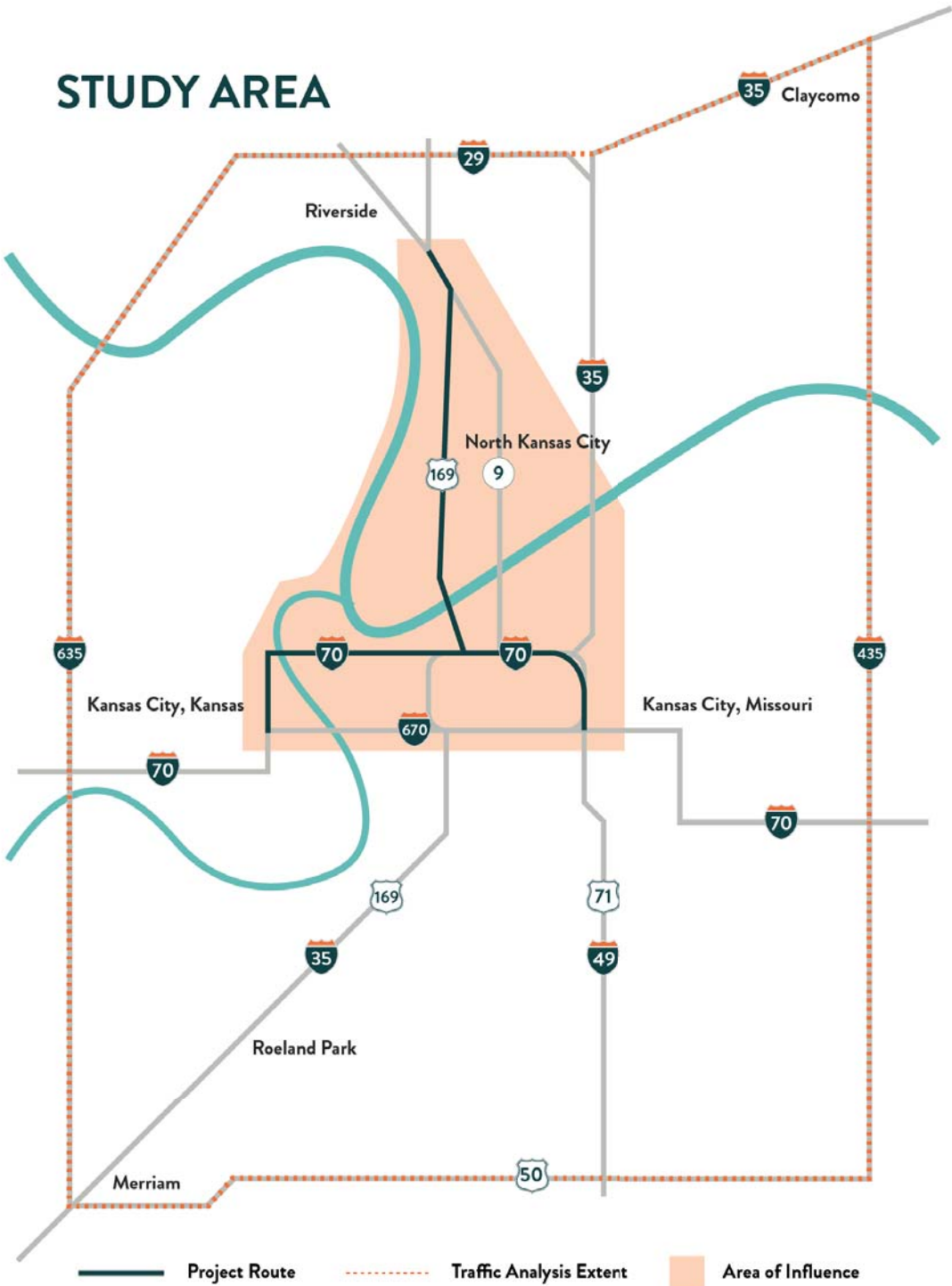


PROJECT STUDY AREA

The Area of Influence (Study Area) is generally defined by the US-169/MO Route 9 interchange to the north, I-670 to the south, the I-70/670 interchange in Wyandotte County, Kansas to the west, and the I-70/ I-670/US 71 interchange in Jackson County, Missouri, to the east. The project Study Area extends to areas immediately adjacent to these corridors that are directly benefited/impacted by the corridors.

TRAFFIC ANALYSIS AREA

Because several of the proposed improvement strategies could potentially influence travel patterns outside the primary Study Area, the boundaries were extended for the traffic analysis to include I-635 on the west, I-435 on the east, US 50/ Shawnee Mission Parkway on the south, and I-29/I-35 on the north.



Project Need #1:

IMPROVE PHYSICAL CONDITIONS



THE O’NEIL BRIDGE

History of the Bridge

The US 169 Bridge is a triple-span tied through-arch bridge carrying four lanes of traffic over the Missouri River providing access between the Kansas City, Missouri CBD and areas north of the river including the Charles B. Wheeler Downtown Airport, the City of Riverside, and Clay and Platte Counties in Missouri. Construction was completed and the bridge was opened to traffic on September 9, 1956 as the Broadway Bridge at a cost of \$12 million. Originally owned and maintained by the City of Kansas City, Missouri as a toll bridge, the structure was taken into the MoDOT system in 1991 as part of US 169 and the toll removed at that time.

The bridge lies just west or upstream of the Second Hannibal Bridge, a railroad bridge constructed in 1917 which carried a second level for auto traffic above the rail deck. Upon completion of the US 169 bridge, traffic was switched and the upper level of the Hannibal Bridge was decommissioned.

On June 24, 2016, the Bridge was officially renamed from the Broadway Bridge to the Buck O’Neil Bridge after the Kansas City Monarchs player and manager John Jordan “Buck” O’Neil.



The existing O’Neil Bridge was originally opened to traffic in 1956 making it two years younger than the Paseo Bridge which was replaced in 2011.

Bridge Condition

MoDOT recently completed an extensive inspection of the O’Neil Bridge. The inspection identified numerous structural deficiencies in need of rehabilitation. Significant deterioration of structural elements such as steel stringers and bearings has occurred due to roadway drainage exposure. These elements need to be repaired or replaced, and deck replacement will be required to minimize this type of damage in the future. In addition, hanger cable retainers are missing, gusset plates and structural members are exhibiting pack rust, expansion joints need to be replaced, and some fatigue cracking is evident. Approach spans have fatigue cracking and similar pack rust and corrosion issues. Repainting the entire bridge, repairs to the tie beams, lower laterals, floor beams and bridge railings have been proposed. Scour countermeasures have been suggested at the center river pier to protect against further undermining.

Committed Projects

In March 2017, MoDOT completed a conceptual study of the repair and rehabilitation of the O’Neil Bridge. The study included a detailed inspection of the bridge and its approach structures. Four improvement scenarios were evaluated: a short term repair option, a long term repair option, a “hybrid” of short and long term, and a second “hybrid” that included some span replacements. An evaluation of replacement in-kind was also evaluated to serve as a baseline. Based on the result of this conceptual study, MoDOT recommended the long term rehabilitation option as the preferred approach. MoDOT is in the process of updating their Statewide Transportation Improvement Program (STIP) with a total of \$49 million in Fiscal Year 2019 to start the long-term rehabilitation option. This option will also require a two-year closure of the bridge to accommodate the proposed rehabilitation.

Project Need

The project need is to determine the appropriate solution to improve the physical condition of the O’Neil Bridge, including either rehabilitation based on the current MoDOT plan, replacement in-place, or replacement in another location.



MoDOT recently completed a detailed inspection of the Bridge, including the main span and the approach structures, and identified significant structural deficiencies that need to be addressed through either replacement or a long-term rehabilitation.

History of the Corridor

The Second Hannibal Bridge, opened in 1917, originally carried both vehicular traffic on the top deck and rail traffic on the lower deck. After construction of the new O’Neil Bridge was completed in 1956, vehicular traffic was removed from the top deck and switched to the new bridge. The bridge was originally built to provide access to the Downtown Airport and later extended to provide an important access to northern Kansas City. The corridor continues to provide regional connectivity for the Northland, including access to Kansas City International Airport. In addition to the Bridge, there are several additional facilities in need of improvement in the US 169 corridor.

4th, 5th, 6th Streets and I-70

When the original O’Neil Bridge was constructed, the approach spans were retrofitted into the existing street network at 4th, 5th, and 6th Streets, including an interchange with I-70. In fact, access from 4th Street to Broadway is accomplished through a southbound lane in between the two approach structures (upper left picture). This geometric deficiency coupled with the tight spacing between 5th, 6th and I-70 create a need to improve the overall configuration of this segment of Broadway Boulevard.

Harlem/Downtown Airport Interchange

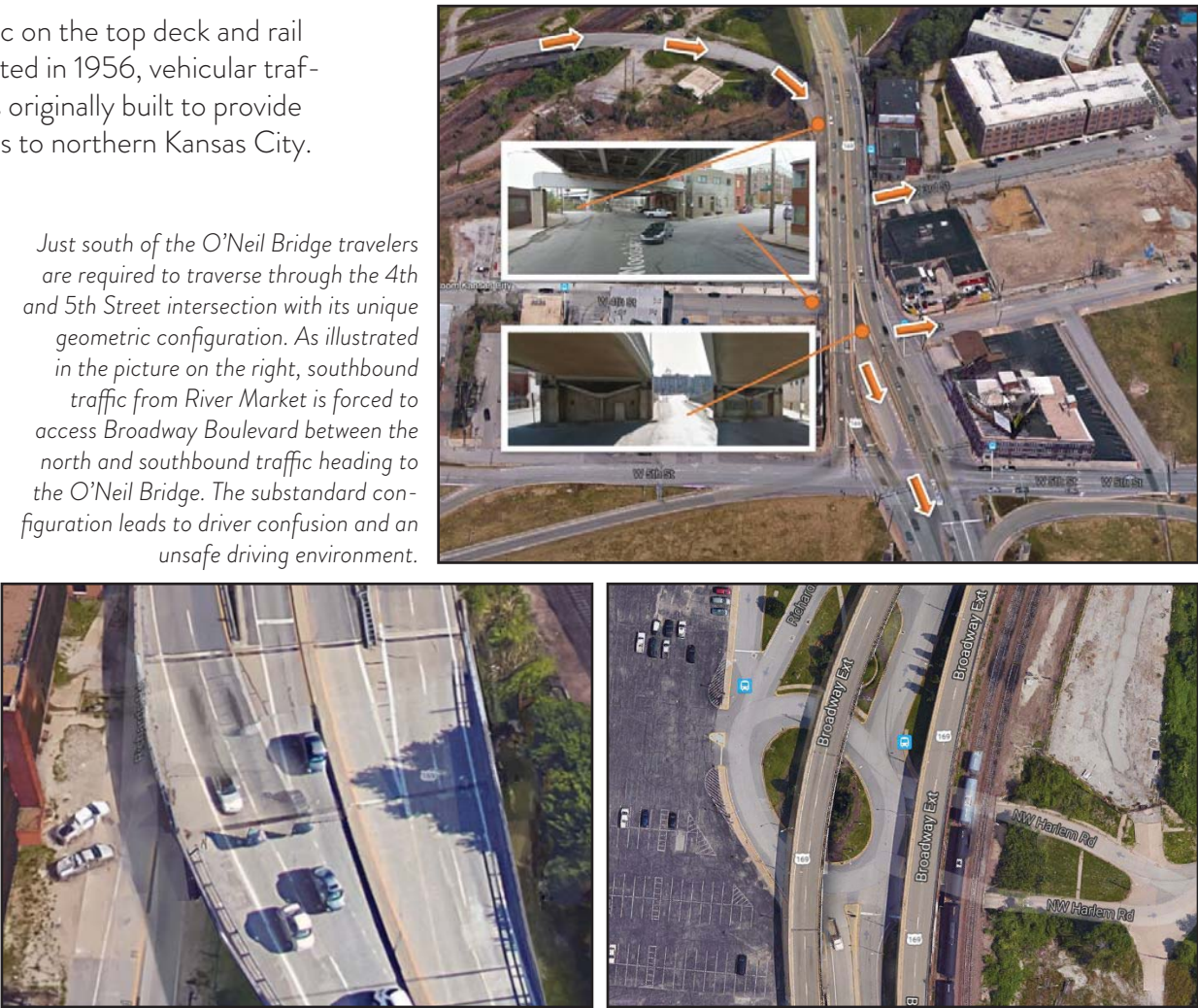
The original O’Neil Bridge provided needed access to the Downtown Airport. Later improvements to extend US 169 to the north were retrofitted into the existing airport intersection. The intersection also provides access across the rail yard into the Harlem area. The existing interchange functions similar to a roundabout interchange with a large traffic circle beneath the main through lanes. The interchange has several geometric deficiencies that need to be addressed to improve accessibility to both the airport and the Harlem area. Those deficiencies include: left-hand entrance and exit ramps with limited sight distances, inadequate merge distances, and substandard structures under the railroad.

Woodswether Bridge

Under the existing O’Neil Bridge, the Woodswether Bridge provides important access between the River Market and the industrial West Bottoms District. The condition ratings for this structure is poor and needs to be replaced. The City of Kansas City, MO has a small rehabilitation project programmed to enable the bridge to stay open in the short term pending a decision on the future of the O’Neil Bridge.

Project Need

The project need is to improve the geometric deficiencies at the Harlem/Downtown Airport and 4th/5th/6th Street/I-70 interchanges, and improve, rehabilitate or replace the Woodswether Bridge..



Just south of the O’Neil Bridge travelers are required to traverse through the 4th and 5th Street intersection with its unique geometric configuration. As illustrated in the picture on the right, southbound traffic from River Market is forced to access Broadway Boulevard between the north and southbound traffic heading to the O’Neil Bridge. The substandard configuration leads to driver confusion and an unsafe driving environment.

Just north of the O’Neil Bridge, a modified roundabout interchange (above right picture) provides access to both the Downtown Airport and the Harlem neighborhood. This interchange has numerous geometric deficiencies, including left hand exit and entrance ramps, poor sight distances, and limited merge distances. The picture on the above left illustrates the sight distance and merge distance deficiency for the southbound on-ramp..



Underneath the existing approach span for the O’Neil Bridge is access to the Woodswether Bridge. This bridge provides important access to the West Bottoms Industrial District.



I-70 NORTH LOOP



History of the North Loop

The original Downtown Loop, named the “Intercity Freeway”, was designed and constructed in the 1950s prior to the development of detailed design criteria for interchanges, ramps, lane configurations, etc. A lot has been learned over the last sixty years on how to design urban interstates to be more efficient and safer. The original intent of the design of the I-70 North Loop was to provide accessibility to the destinations in the Kansas City downtown area for those living in the suburbs and to get them there as fast as possible. This goal led to the development of numerous interchanges spaced close together. In fact, the I-70 North Loop contains five interchanges including two system-to-system interchanges in the 1.2 mile segment between the two I-35 splits (east and west). That’s an interchange every quarter mile, well below the minimum distance required to today for urban interstates - no closer than one per mile.

Bridge and Pavement Conditions

The roadway and bridges along the I-70 North Loop were originally built in the 1950s and have undergone semi-routine maintenance over the last 60 years. MoDOT attempts to keep the pavement surfaces in fair to good condition but the realities are that all the bridges are nearing the end of their useful life and the I-70 pavement is in need of a full-depth replacement.

- **Bridges** - Of the 21 bridge structures on the I-70 North Loop, fourteen are listed as “fair” condition with the remaining seven listed in “good” condition. None of the structures are listed in “poor” condition.
- **Roadway** - 75-95% of the pavement along I-70 between the northwest corner and the southeast corner of the downtown loop is in good condition. The connections into this segment of I-70 fare much worse from a pavement condition perspective. For example, sections of I-35 in good condition on the west side of the loop ranges from 47-100% ; I-29/35 north of the loop ranges from 0-60%; and US 169 ranges from 7-40%. In addition, these percentages merely reflect the condition of the pavement surface. Underlying pavement conditions, considering the age of the facility, are expected to be significantly worse.

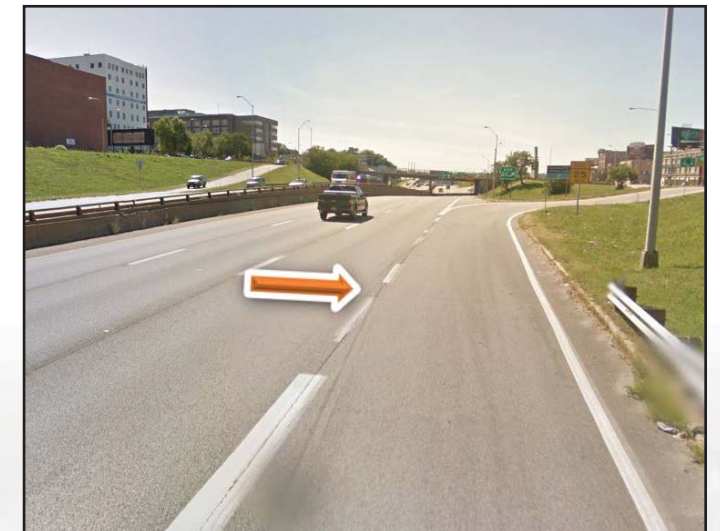
Geometric Deficiencies

The I-70 North Loop was built in the 1950s and does not meet FHWA geometric standards for urban interstates. Existing geometric deficiencies along this section of I-70 include:

- **Shoulder Widths** - Narrow inside and outside shoulder widths inadequate to safely accommodate stranded motorists.
- **Exit and Entrance Ramps** - Exit ramps that are too short to safely allow motorists to exit and short merge distances from the entrance ramps insufficient to allow safe merging with mainline I-70 traffic.
- **Lane Continuity** - The corridor lacks reasonable lane balance forcing vehicles to merge across lanes adding to driver confusion and reducing safety.

Project Need

The project need is improve the geometric deficiencies, as well as improving the overall condition of the roadway and bridges, on the I-70 North Loop.



Five interchanges located within a 1.2 mile stretch of I-70 creates significant merge and diverge issues as vehicles are accessing I-70 from either direction. Sub-standard distances of 200’ to 300’ between ramp gores are common.



The original I-70 North Loop was built in the 1950s and does not meet FHWA design standards. The Missouri section of I-70 has five interchanges including three system-to-system interchanges in a 1.2 mile stretch. The aerial to the left identifies each of the ramp movements required to accommodate these five interchanges.

LEWIS & CLARK VIADUCT



History of the Viaduct

The Lewis & Clark Viaduct is a series of bridges that span the floodplain of the Kansas and Missouri Rivers. The Viaduct provides a vital link for I-70 between downtown Kansas City, MO and downtown Kansas City, KS, including providing freight access to the Fairfax Industrial District. The eastbound viaduct was originally built in 1907 as a four-lane two level deck truss. The eastbound viaduct was upgraded and a new westbound viaduct was added in 1962.

Viaduct Conditions

KDOT conducts biennial inspections of the two viaduct structures. Several elements of existing structures are currently rated in fair or poor condition and are in need of rehabilitation and/or replacement.

- **Westbound Viaduct** -This bridge carries westbound I-70 from the State Line over the UP railroad and across the Kansas River. It consists of seven units and portions of an eighth at the State Line. The concrete deck girders are in fair to poor condition with several locations of spalling, efflorescence, leaching, delaminations, map cracking, exposed reinforcement, and vertical cracks. The steel truss members are also in fair to poor condition with several areas of rust and section loss.
- **Eastbound Viaduct** - This bridge carries eastbound I-70 traffic from Minnesota Avenue to the State Line. The bridge was originally constructed in 1907 for both vehicles and streetcars with modifications in 1936 to remove the streetcar tracks and 1963 to upgrade it to interstate standards. The steel girder/stringer spans are in poor condition with several areas of rust and section loss. The steel deck truss is in fair to poor condition also with rust and section loss. In 2004, several of the piers were encased in concrete to prevent further section loss.
- **Ramps** - Several of the ramp structures are in fair to poor condition. The steel girders and floor beams on the westbound ramp to Fairfax Trafficway are in fair condition with several areas of retrofitted fatigue cracks, rust, and section lost. The expansion joints and bridge rails on the westbound ramp to Washington Boulevard are in fair condition with damaged glands and rust in the joints.



The Lewis & Clark Viaduct comprises the western half of the I-70 North Loop and provides an important connection between Kansas City, MO and Kansas City, KS.



I-70 Curve

In addition to bridge condition issues, the viaduct also has geometric deficiencies. The most notable deficiency is just west of the Kansas River where I-70 turns to the south near the entrance to Kansas City, KS. Both the northbound and westbound directions require motorists to merge to one lane and traverse sub-standard curves, both directions posted at 35 mph.

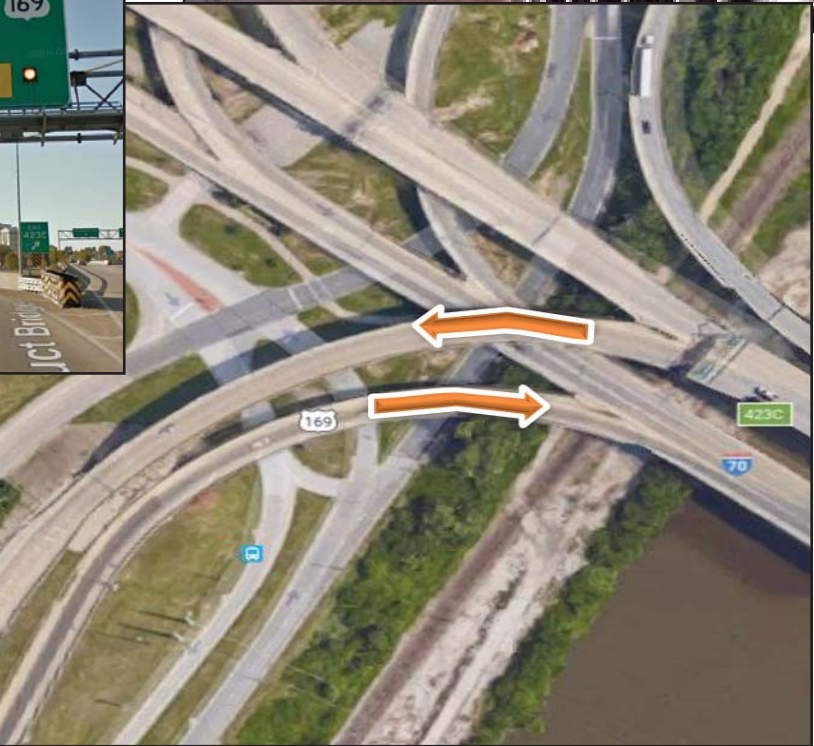
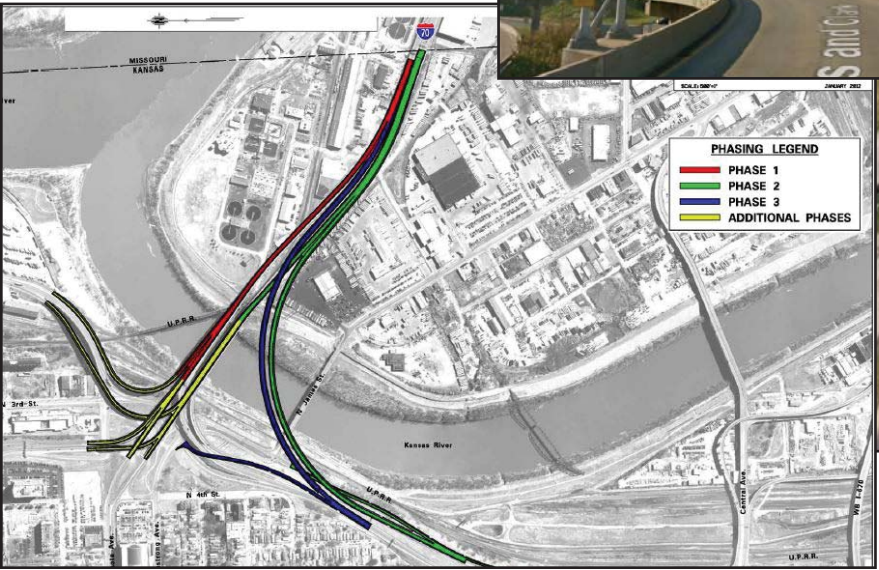
Committed Projects

KDOT conducted a study in 2012 to examine the condition of each of the nine bridges making up the Viaduct and developed a prioritized phasing plan for the rehabilitation and/or replacement of the existing bridges. The improvements for the initial phase, replacement of the westbound viaduct, have been designed and are currently awaiting funding for construction. The project includes the integration of the Lewis & Clark Urban Design Guidelines that were jointly developed to guide future aesthetic considerations. Future phases, including the realignment of the interchange on the west end, will be designed and constructed after funding has been identified.

Project Need

The project need is to determine the appropriate solution to improve the physical condition of the Lewis & Clark Viaduct, including replacement based on the current KDOT plan.

KDOT has a plan in place to phase improvements to the Lewis & Clark Viaduct pending available funding.



Existing I-70, on the west end of the Lewis & Clark Viaduct, requires travelers to traverse a substandard curve in both the westbound and northbound directions.

Project Need #2:

OPTIMIZE SYSTEM PERFORMANCE



REGIONAL CONNECTIONS

The Kansas City, Missouri CBD continues to be a major regional destination for employment, recreation, arts/ culture, entertainment, and dining. Access to Downtown is currently accomplished through a network of urban highways, including I-35 to the northeast and southwest, I-70 to the east and west, US 169 and Route 9 to the north, and US 71 to the south. The performance of this network of highways accessing the Downtown Loop has become increasingly congested. Access to the Downtown Loop will need to be maintained for the continued viability of the region.

Kansas City Northland

The Kansas City Northland, including both Clay and Platte Counties in Missouri, has experienced a significant amount of growth over the last several decades, including numerous large scale residential developments. The growth has resulted in an increase in vehicular traffic entering the Kansas City CBD on a daily basis. Access to the Northland from the CBD occurs either across the O’Neil Bridge and up US 169, across the Heart of America Bridge and through North Kansas City, or across the Kit Bond Bridge and up I-35/29. The majority of the Northland traffic, about half, uses the Kit Bond Bridge while the O’Neil Bridge and Heart of America Bridge comprise about 25% each.

Wyandotte and Johnson County

To the west, Wyandotte County and northern Johnson County are accessed via I-70 and southern Johnson County is accessed via I-35. Significant developments in western Wyandotte County, such as the new Amazon Distribution facility and the Legends, have resulted in a continued increase in traffic along I-70. The continued growth in Johnson County has resulted in traffic volume increases on both I-70 and I-35. About half the traffic heading west on I-70 take the I-70 North Loop to the merge with I-670, while the other half uses I-670. For those heading south to southern Johnson County, the primary route is I-35. This southerly route along I-35 represents the largest traffic movement in and out of the CBD on a daily basis, followed closely by I-70 to the east.

Jackson County

To the east, residents living in Jackson County utilize either I-70 or US 71. Continued growth in Blue Springs, Grain Valley, and Lee’s Summit have put pressure on the I-70 corridor to the east and growth in western Lee’s Summit, Belton, and Raymore continue to add traffic to the US 71 corridor. About 40% of the traffic coming in and out of the CBD from Jackson County are headed south on US 71 with the remaining 60% heading east on I-70.

Project Need

The project need is to improve the regional connectivity to the Study Area through reduced congestion and travel delays along the primary highway facilities serving the CBD.



Maintaining accessibility to downtown Kansas City provides needed access to jobs, entertainment, cultural events, etc.



Traffic enters the CBD in the morning and exits in the evening via eight primary routes. Traffic volumes are fairly evenly distributed across all eight routes.

TRAFFIC OPERATIONS



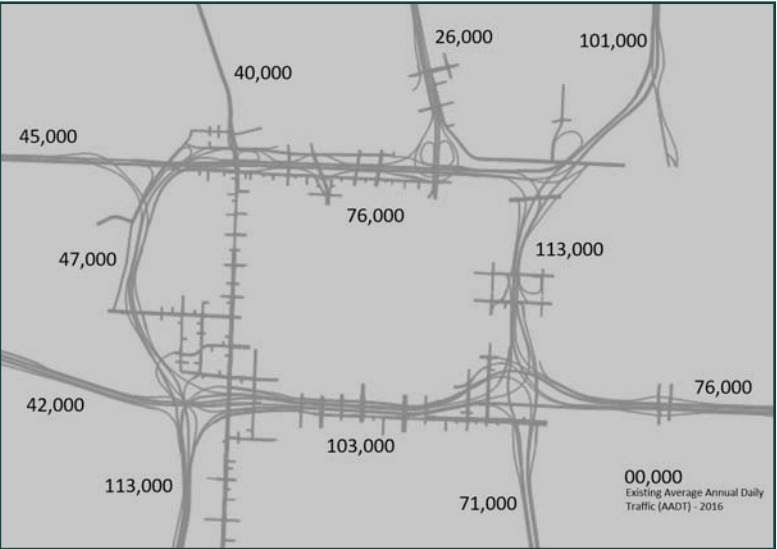
The large volume of traffic utilizing the existing Downtown Loop on a daily basis coupled with a freeway system designed and constructed over fifty years ago has resulted in a significant level of traffic congestion, large traffic queues trying to access the CBD, long delays, and poor levels of service. Typical sources of congestion in the Study Area are high traffic volumes coupled with transportation system restrictions. Existing Study Area restrictions include:

- **Weave Areas** – Where two or more roadway paths cross resulting in the need for traffic to merge across multiple lanes in relatively short distances
- **Merge** – Where one or more lanes are eliminated requiring traffic to occupy a reduced number of lanes
- **On and Off Ramps** – Several ramps located in close proximity resulting in short distances to enter and exit these ramp locations
- **Lane Continuity** – The inability of traffic to stay in the same lane through the Study Area requiring a driver to change lanes to stay on a given route
- **Substandard Design Criteria** - The original facility was designed with criteria that is over fifty years old when requirements for certain elements (curvature, site distance, super-elevation, etc.) didn’t take into account higher speeds and larger volumes of traffic.

Operational Deficiencies

Traffic congestion is traditionally evaluated based on the Levels of Service (LOS) criteria where LOS A refers to free flow, unimpeded traffic and LOS F refers to gridlock. The roadway corridors in the Study Area were evaluated from both a LOS perspective as well as using the average travel speeds. The heat map on the bottom right shows the LOS hot spots located within the Study Area. The physical characteristics of the Downtown Loop, many of which were designed 50 years ago, are both the source of congestion as well as the source of safety issues. The facilities with poor service levels during either the morning or afternoon peak period include:

- **US 169** - The US 169 interchange with I-70 currently accomodates two differing purposes: getting US 169 taffic to the interstate system via either I-35 or I-70 and providing access to and from downtown. Traffic is evenly split between these two purposes, but the overall volumes are large and they are both competing for the same space. The competition results in daily congestion in several different directions:
 - Southbound US-169 queues, from 5th Street north across the Broadway Bridge, regularly exceeding ¾ of a mile.
 - Northbound I-35 queues, on the off-ramp to Broadway, regularly extend well beyond the 6th Street and I-35 off-ramp gore at Washington Street.
 - Northbound Broadway queues regularly extend from 5th Street south through 6th Street and well into Downtown.
 - Westbound 5th Street queues, at Broadway, regularly extend beyond the 5th Street/Independence Avenue, I-70 off-ramp merge point.



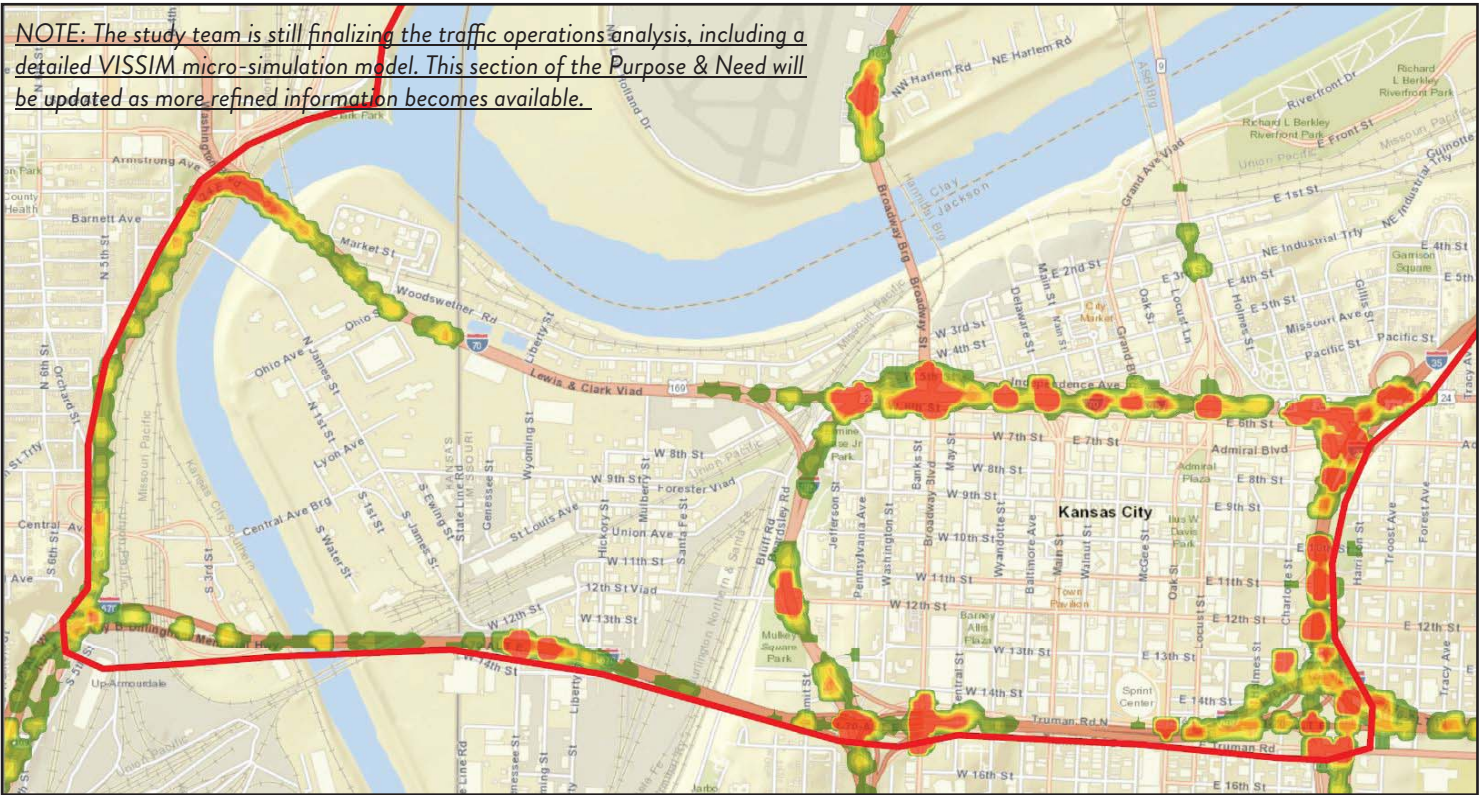
Based on the regional travel demand modeling, there is a significant “pent-up demand” for use of the interchange. Based on the model, if additional capacity were added to the interchange, for example additional lanes, traffic will divert from other major roadways. If the current delays at the interchange are reduced, significant volumes of traffic will divert from I-635, Route 9, I-35/I-29 and the east side of I-435.

- **I-70** - In the evening peak period, the east side of the downtown loop experiences backups in the northbound direction that often extend all the way southern I-670 leg of the loop. Backups also occur in the southbound direction in the morning commute as travelers cross the Kit Bond Bridge and enter the CBD. In addition, individual ramps along the north loop of I-70 experience backups in both the morning and evening peak periods because of substandard storage and merge distances.
- **I-670** - During the morning commute, westbound I-670 experiences poor levels of service due primarily to the merge requirements to access Broadway and to position to head south on I-35 or west on I-70. Similarly, the afternoon peak shows poor level of service in the eastbound direction, especially under Bartle Hall where mainline I-670 narrows to one lane.

Project Need

The project need is to improve the traffic operation, through improved levels of service and reduced delay, along both US 169 and I-70 in the Downtown Loop.

A large number of vehicles utilize the highway network in the CBD on a daily basis contributing to the high levels of congestion, travel delays, and poor levels of service. The top map shows the total volume of traffic that use each roadway link on a daily basis (AADT - 2016). The heat map to the right identifies specific locations where traffic experience a poor leel of service within the Study Area.



Project Need #3:
IMPROVE SAFETY & SECURITY



SAFE OPERATION OF VEHICULAR TRAFFIC

Historical Traffic Safety Issues

The large volumes of traffic traveling on sub-standard urban interstates creates a hazardous driving environment for the traveling public. Short merge and diverge distances between ramps results in drivers taking unnecessary risks to enter the flow of traffic. Poor sight distances limit a driver’s ability to react to oncoming traffic. Requiring drivers to continually change lanes because of poor lane continuity results in a high percentage of side-swipe in-cidents. And, as traffic backs up on ramps with insufficient storage and congested intersections it creates a higher than average number of rear-end collisions.

Over the last five year period where data was available, from 2010 to 2014, the roadway segments in the Study Area experienced 27 fatality crashes, 1,353 disabling or minor injury crashes, and 5,898 total crashes.

Safety Hot Spots

Several areas within the Study Area stand out as key hot spots where we see a higher than average number of crashes. As illustrated in the heat map to the right, those areas include:

- 1. US 169 at the Downtown Airport Interchange - Limited sight distance, left hand entrance and exit ramps, and stop-and-go traffic result in a higher than average rate of incidents.
- 2. US 169, 5th Street and I-70 Interchange - The large volume of vehicles coming off the O’Neil Bridge, the center lane access from 4th Street under the bridge, and the closely spaced intersections at 5th, I-70, and 6th Streets result in driver confusion and an unsafe environment.
- 3. I-70 Curve at Minnesota Avenue - This sub-standard curve on mainline I-70 results in a higher than expected rate of crashes as drivers are forced to slow down or take the curve at a high speed.
- 4. North Side of Loop - The close spacing of interchanges in a limited distance, the short merge and diverge distances, and limited storage at most of the off ramps contribute to the higher incident rate in this stretch of I-70.
- 5. East Side of I-70 Loop - This section of I-70 requires a significant number of vehicles to merge in a limited space as drivers are trying to access several different highways.

Project Need

The project need is to improve the conditions contributing to the high crash rate in the Study Area, thereby reducing the number and severity of future incidents.

Traffic incidents along urban interstates are typically clustered in areas where the facility has existing geometric deficiencies, such as poor sight lines or short merge distances. This heat map identifies those key hot spots for the facilities in the Study Area.

Total Accidents (2010-2014)

Incident Type	Kansas	Missouri	Total
Fatal	7	20	27
Disabling	10	93	103
Minor Injury	167	1,087	1,250
Property-Damage Only	486	4,032	5,898

From 2010 to 2014 there were just under 5,900 crashes on the urban interstates, including US 169, in the Study Area including 27 fatal crashes.



IMPROVE SAFETY FOR BICYCLISTS AND PEDESTRIANS



In recent years, FHWA has been developing a new, expanded statement of policy regarding the non-motorized modes of transportation – walking and bicycling. In the congressionally mandated National Bicycling and Walking Study, FHWA has taken the position that bicycling and walking are transportation modes that have too long been the “forgotten modes,” and that this should change. The National Bicycling and Walking Study goals are to double the percentage of all trips made by bicycling or walking and reduce the current number of bicycling and walking injuries and fatalities by 10 percent.

Bridge crossings over freeways and rivers without pedestrian or bicycle facilities can intimidate pedestrians and bicyclists and prevent them from making a walking/bicycling trip to a destination. Freeways and major highways can present a significant barrier to walking/bicycling where the roadway is grade-separated from the rest of the street network. Grade-separated freeways serve as a barrier in three ways. First, they break up the existing street network and typically have infrequent crossings which may force pedestrians and bicyclists to travel significant distances to access a crossing of the highway. Second, the limited crossings of freeways often carry high traffic volumes and may have interchanges that are difficult or hazardous for pedestrians and bicyclists to navigate. Third, the limited crossings are often bridges or underpasses that were not originally built with pedestrian or bicycle accommodations in mind and often lack the space to add such accommodations.

Bicycle Safety

In association with MARC’s Greater Kansas City Regional Bikeway Plan, bicycle crash trends were analyzed over a four year period from 2009-2012 within the MARC boundary which includes the Study Area. The majority of crashes were located in the downtown Kansas City area, with events generally decreasing relative to the distance from downtown. The highest concentration of crashes was found in northwestern Jackson County, Missouri.

The Missouri River and its floodplain serve as a very significant barrier to bicycling. The river has relatively few crossings and most of those crossings carry high volumes of motor vehicle traffic. Additionally, the river’s floodplain is quite wide, which results in lengthy bridge spans. The O’Neil Bridge does not have bike lanes, shoulders, or sidewalks and was assigned a “F” rating (no accommodations, no room for bikes) in MARC’s Bikeway Plan. Although the bridge is technically open to bicycle traffic, the volume of traffic combined with narrow travel lanes and long spans make it not feasible for bicycle use.

Within the Study Area, other Missouri River Crossings include the Heart of America and Kit Bond bridges. The Heart of America Bridge does not have bike lanes or shoulders, but does have a 10 foot wide, two-way shared use path on the east side of the bridge and was assigned a “B” rating (separated path on one side of bridge or sidewalks on both sides). The Kit Bond Bridge has narrow shoulders with no sidewalk/path and does not allow bicyclists.



The O’Neil Bridge currently does not have accommodations for either pedestrians or bicyclists. Numerous bicyclists cross the bridge daily to access the outer roads surrounding the Downtown Airport. As illustrated in this picture, pedestrians often utilize the raised center median to walk across the bridge.

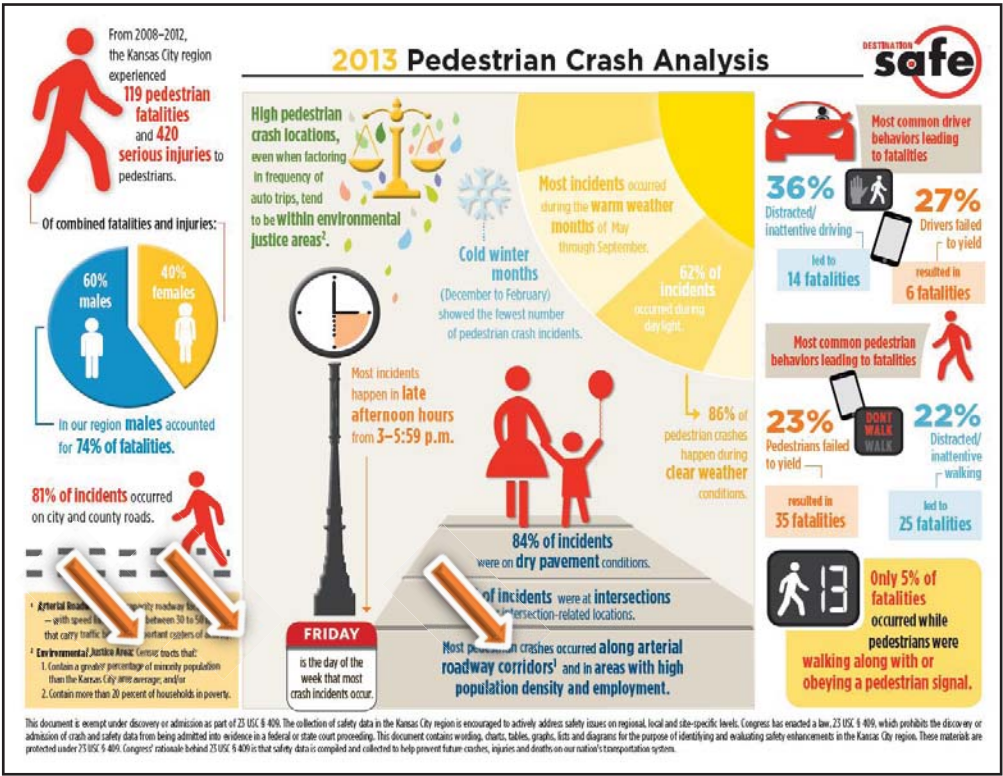
Pedestrian Safety

Pedestrian safety is of paramount importance to the Kansas City region and all its municipalities. Nationally, crashes involving pedestrians account for 14 percent of all traffic fatalities yet pedestrian trips account for only six to seven percent of all trips. Pedestrians require a sense of security, both through visual line of sight with others and separation from vehicles. They also require well-lighted pathways and sidewalks for night use. Increasing residential development, mainly in downtown Kansas City and the River Market areas within the Study Area, has led to a higher residential demand for walking and thus a higher probability for vehicle/pedestrian accidents or crime where inadequate pedestrian facilities exist.

In the 2003 Kansas City Walkability Plan, the City of Kansas City, Missouri evaluated the downtown Kansas City and Missouri Riverfront/River Market areas for walkability. Levels of service (LOS) were determined for these areas based on a number of different factors including directness, continuity, street crossings, visual interest and security. Security in both these areas was assigned a “C” LOS rating (generally good lighting levels on pedestrian routes with occasional short intervals of lower lighting; generally unobstructed lines of sight; potential for separation from traffic of at least five feet) with a goal of obtaining a “B” LOS rating (good, if uneven, lighting levels on pedestrian routes and unobstructed lines of sight. Street edge of sidewalk separated from the street by at least five feet).

Project Need

The project need is to improve the safety of the bicycle and pedestrian community through reducing or eliminating unsafe interactions with motorized vehicles, separated facilities, and providing better accessibility across both I-70 and the Missouri River.



In 2013, MARC conducted a pedestrian crash analysis that recommended that both roadway and pedestrian facilities need to be designed and engineered in accordance with the Kansas City Regional Safety Blueprint. The Blueprint provided a number of engineering strategies that agencies can use to improve pedestrian safety.

IMPROVE EMERGENCY RESPONSE TIMES AND PROVIDE IMPROVED SYSTEM REDUNDANCY

Our nation’s highways do more than provide corridors for moving people, goods and services. They also serve as important facilities during times of national, state and/or local emergencies, as well as the movement of hazardous materials in as safe a manner as possible. As a result, highways systems must have alternative routing redundancy to be able to detour traffic during times of traffic incidents or closures and provide options for emergency responders, hazardous materials haulers, and freight haulers.

In addition, the Kansas and Missouri Rivers are considerable physical barriers within the Kansas City Area. With a limited number of river crossings in the area, each crossing must be maintained to provide a number of options for crossing these barriers. Redundancy has specific meaning when it comes to highway bridges, which can be described as the capacity that a bridge has to continue carrying loads after suffering the failure of one or more main structural components without undergoing significant deformations.

Emergency Response Times

For every minute a freeway lane is blocked during the rush hour, a 10-minute (minimum) backup will result after an incident is cleared. Proper incident management is a vital factor in the battle to combat congestion, to improve public safety, and to advance the overall quality of the commute for drivers in the Kansas City area. As it grows, more and more vehicles use the freeway system. Quick incident clearance is necessary to ensure better traffic flow, congestion prevention, and improved safety.

O’Neil Bridge

Redundancy applies to the O’Neil Bridge on two levels: first, by serving as one of a limited number of Missouri River crossings in the Kansas City area, and, second, as it pertains to the bridge structure itself. The bridge is considered a fracture critical structure, meaning that it has steel members in tension, or with a tension element, whose failure could cause a portion of or the entire bridge to collapse, similar to the I-35 Bridge in Minneapolis. The bridge has also reached the end of its useful life and is in need of repair or replacement. Because of the critical link this bridge provides, there’s a need to provide solutions that would result in limited or no closures.

Homeland Security

The U.S. Department of Homeland Security (DHS) has stated that critical infrastructure includes the vast network of highways, connecting bridges and tunnels, railways, utilities and buildings necessary to maintain normalcy in daily life. In particular, DHS has identified bridges and tunnels as potential choke points for evacuation, disaster, and travel routes. Transportation systems provide lifeline services within communities and are vitally important for response and recovery operations.

The Strategic Highway Network (STRAHNET) is a designation given to roads that provide “defense access, continuity, and emergency capabilities for movements of personnel and equipment in both peace and war.” STRAHNET includes routes (for long-distance travel) and connectors (to connect individual installations to the routes). STRAHNET routes include all of the Interstate highways within the Study Area with the intersection of three interstates (I-70/I-29/I-35) a critical piece of this network.

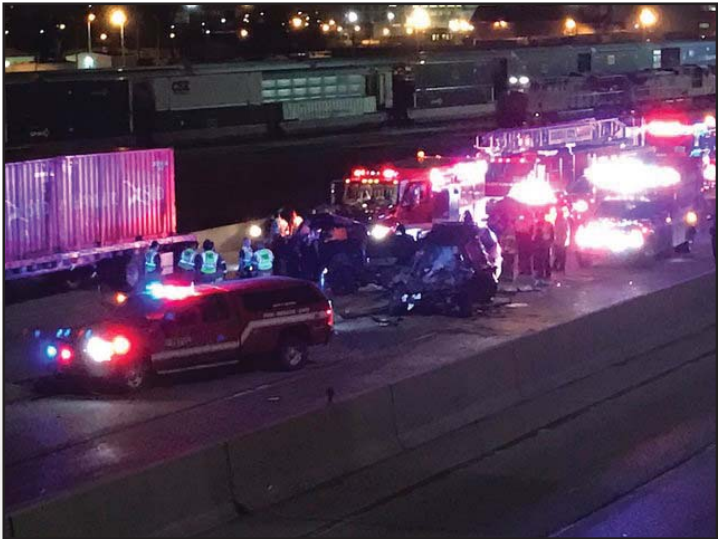
Downtown Airport

Access to the Downtown Airport for emergency response is required for compliance with Federal Aviation Regulations Part 139. The Downtown Airport could be utilized during a national emergency, being a participant for the Federal National Disaster Medical System, which was utilized for the New Orleans’ Children’s Hospital evacuation during Hurricane Katrina. The Downtown Airport also is utilized by Children’s Mercy Hospital and the Midwest Organ Transplant Network. Considering the Downtown Airport is on the north bank of the Missouri River and most of its users (e.g., Children’s Mercy Hospital) are located on the south bank of the Missouri River, a quick and dependable link across the Missouri River is vital, especially in the event of an emergency.

In addition, because of the close proximity of the existing O’Neil Bridge to the flight path for the Downtown Airport, any bridge replacement alternative needs to comply with Federal Aviation requirements prohibiting physical flight path impediments that might reduce the overall safety in and around the airport.

Project Need

The project need is to improve emergency response times and provide infrastructure options within the Study Area, including increasing the reliability of the O’Neil Bridge, the ability of first responders to respond to an emergency, and for DHS to service the Study Area for homeland security.



The limited inside shoulder and sub-standard outside shoulder widths increase the difficulty of first responders to quickly resolve and remove incidents on the I-70 North Loop.

Project Need #4:

IMPROVE TRANSPORTATION CHOICES



PROVIDE BICYCLIST + PEDESTRIAN OPPORTUNITIES

There have been numerous efforts undertaken throughout the Study Area to improve bicycle and pedestrian connectivity, including Kansas City’s Bike KC plan for enhancing both bike lanes and shared use trails. As of 2013, approximately 200 miles of a 600-mile on-street network of bicycle facilities and approximately 52 miles of a 230-mile network of shared use trails had been completed. These efforts and planning continue to evolve to better connect and serve the various districts and neighborhoods located within the Study Area.

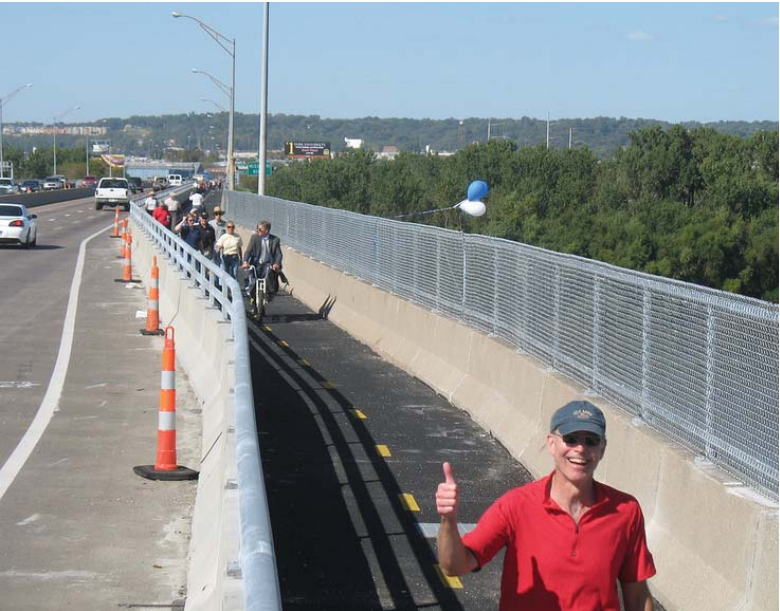
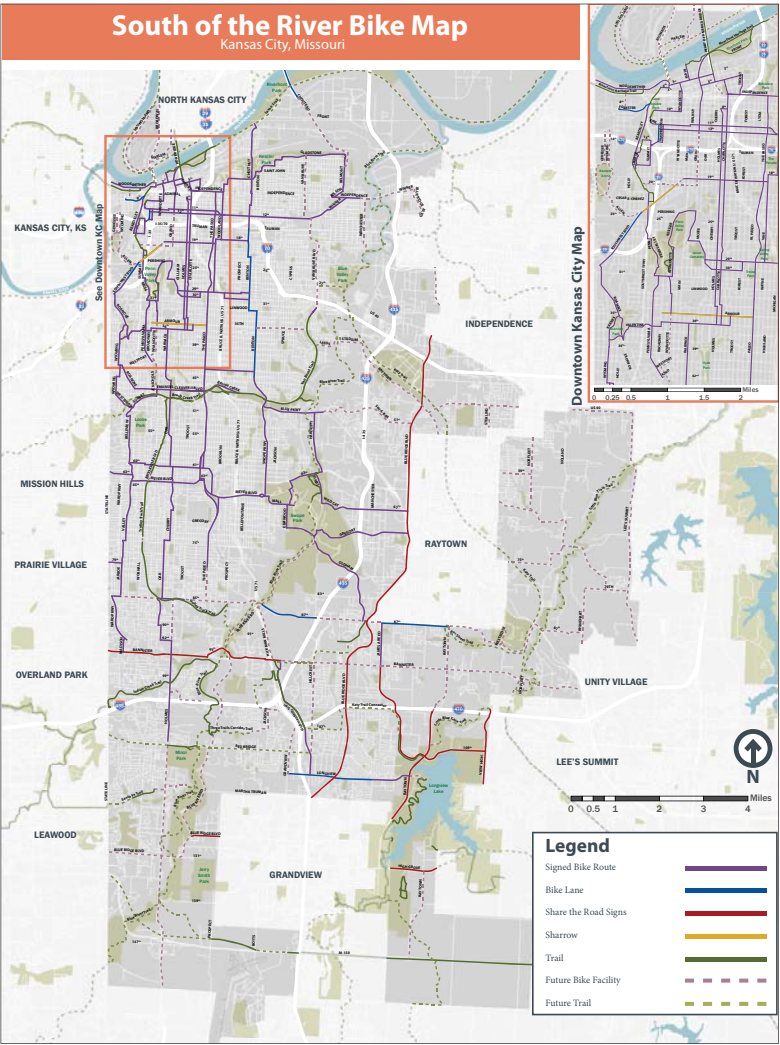
This project should contribute to this evolving network of bicycle and pedestrian improvements, and should address existing needs for providing safe and efficient access between districts as part of this study effort. The Bike KC plan outlines future provision of a bicycle/pedestrian facility along the existing O’Neil Bridge alignment, which will connect Downtown across the Missouri River to the Harlem area and the Downtown Airport along the US 169 Corridor. Several pedestrians use this bridge daily without the benefit of any pedestrian accommodation or improvements.

This project should also contribute to improving connections between Downtown/River Market District and the West Bottoms area leading into Kansas City, Kansas. The existing Woodswether Bridge and the Beardsley Road/Forester Road connection currently provides bicycle/pedestrian access. In addition, the HOA Bridge provides a critical link from the River Market/Columbus Park to North Kansas City and the future Burlington Corridor Complete Streets Plan (adopted in 2016). To the extent any of these connections is impacted by recommended improvements, these connections need to be replaced and/or improved. The existing North Loop freeway and relatively long vehicular bridges that connect Downtown to the River Market District create impediments to a quality experience for pedestrians and bicyclists. The elevated condition and limited tunnel connections between the River Market and Columbus Park create similar connectivity constraints that should be considered for improvement as part of these study efforts.

These new and improved bicycle and pedestrian connections can also promote multi-modal forms of transportation. As destinations within the Downtown CBD become more popular, and as the residential population within the Study Area continues to increase, the need for providing a quality network of sidewalks and bicycle facilities is needed to promote transportation choices and connections to other available forms of transit.

Project Need

The recommendations resulting from this project should contribute to improving bicycle and pedestrian network connections between Downtown, the River Market District, the Columbus Park Neighborhood, as well as across the Missouri River into North Kansas City and the Downtown Airport.



IMPROVE TRANSIT ACCESSIBILITY

Public transportation provides people with mobility and access to employment, community resources, medical care, and recreational opportunities in communities across America. It benefits those who choose to ride, as well as those who have no other choice: over 90 percent of public assistance recipients do not own a car and must rely on public transportation. Public transit provides a basic mobility service to these persons and to all others without access to a car.

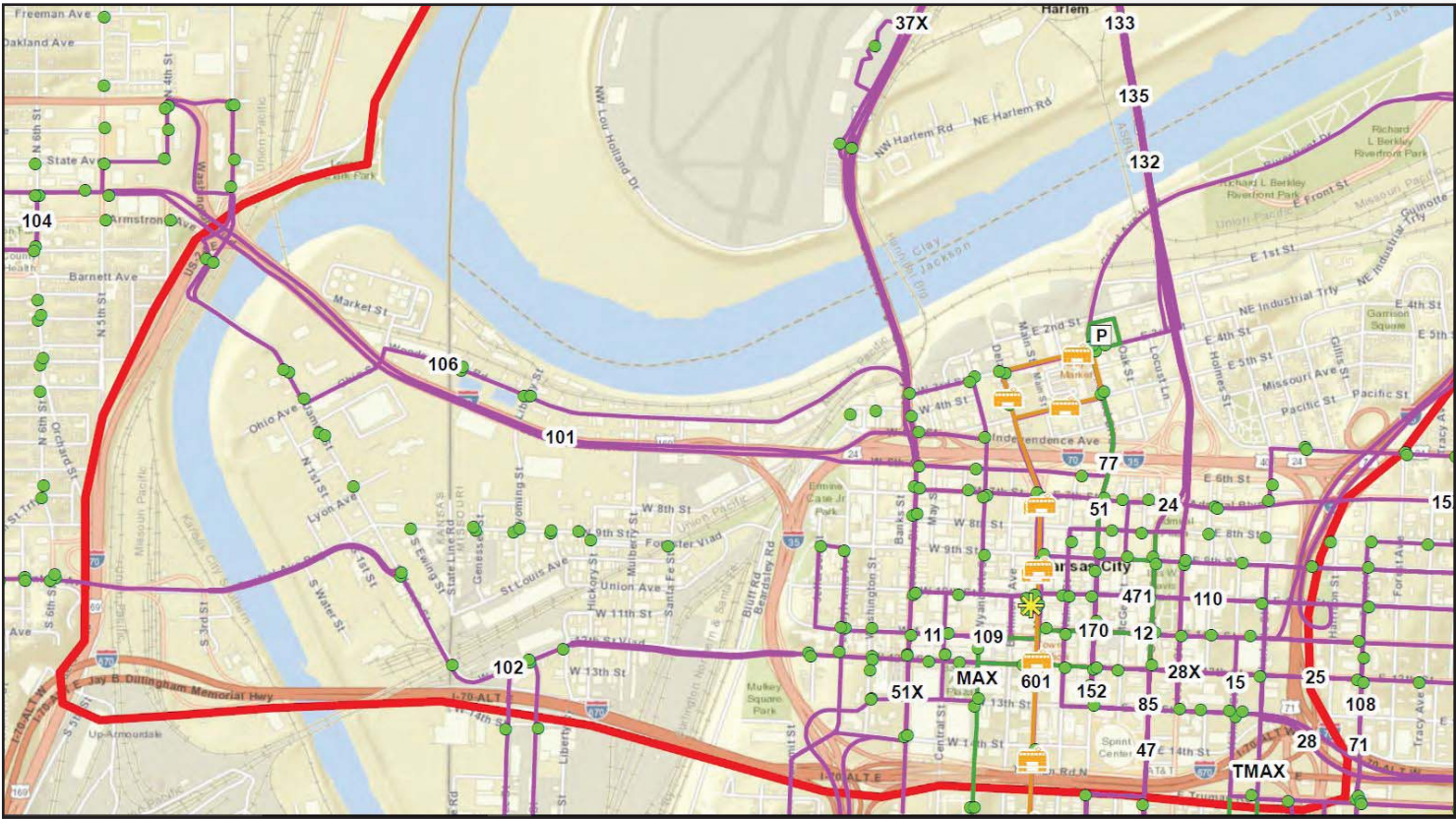
The incorporation of public transportation options and considerations into broader economic and land use planning can also help a community expand business opportunities, reduce sprawl, and create a sense of community through transit-oriented development. In fact, the City of Kansas City, Missouri reports that over \$2B in investment has occurred along its recently opened two-mile KC Streetcar line. By creating a locus for public activities, such development contributes to a sense of community and can enhance neighborhood safety and security. For these reasons, areas with good public transit systems are economically thriving communities and offer location advantages to businesses and individuals choosing to work or live in them. And in times of emergency, public transportation is critical to safe and efficient evacuation, providing the resiliency Kansas City needs in its emergency transportation network. Public transportation also helps to reduce congestion and travel times, air pollution, and energy and oil consumption, all of which benefit both riders and non-riders alike. A number of transit lines run through the Study Area and include local bus routes, express (MAX) bus service, and the KC Streetcar line.

Project Need

The project need is to integrate opportunities to improve transit accessibility including opportunities to simplify the transit service, to provide important integration with the KC Streetcar, providing improved service to Northland, and to provide opportunities to expand the service levels within the Study Area.



Numerous transit routes, including bus routes, MAX Express routes, and even the new Streetcar Starter Line, carry thousands of daily riders in the Study Area. The proposed improvements need to integrate the need for transit service, provide modal choices, and improve the overall accessibility of the transit system.



Project Need #5:

IMPROVE ECONOMIC VITALITY & PLACEMAKING

ECONOMIC DEVELOPMENT OPPORTUNITIES



The economic development climate within the Study Area has changed considerably since the 2007-2009 recession. Prior to the recession, Kansas City invested in the creation of the Sprint Center and the adjacent Power + Light Entertainment District on the south side of the Downtown Loop. These investments corresponded with the City’s expansion of the Bartle Hall convention facility’s new Ballroom. Each of these projects contributed to expanding tourism and better promoting the Downtown area to potential conventions, concert tours, and other major events.

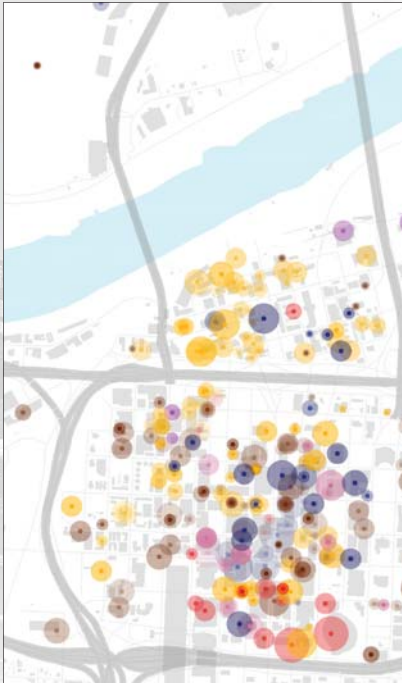
As the housing market began to rebound, interest in building new or converting older buildings into residential uses throughout the urban core has expanded. Kansas City also recently completed the KC Streetcar line connecting from the River Market District south to Union Station – offering free rides to residents and visitors alike. This investment has spurred approximately \$2B in new economic development activity throughout the Downtown area – drawing outside investors not previously involved in the Kansas City development market to create new densely populated mixed-use developments that can take advantage of proximity to this new service, while also benefiting from a renewed sense of vibrancy and energy that is found within the core of the Study Area.

Previous urban design studies of the Downtown Loop and its connections to the surrounding freeway network considered substantial reconfiguration and/or removal of the North Loop, and the resulting economic development activity that could take place as a result. Kansas City’s District Council of the Urban Land Institute recently studied a “what if” scenario related to removal of the North Loop of the freeway, and concluded there would be significant economic development opportunities resulting from this change. These findings were limited to only exploring the existing freeway right-of-way, and did not consider a larger Study Area or the properties adjacent to the existing freeway.

This project should contribute to Downtown’s vision for improving the economic development potential within the Study Area. It should include exploring possibilities to condense and/or remove portions of the freeway system to create new opportunities for growth and development that contribute to making this area a great place to live, work, and visit. As part of this study effort, alternatives that explore enhanced opportunities for economic vitality should be used in considering the level of investment associated with options for changing the transportation network. These will assist in better understanding the relationship between improving the sense of place, enhancing the quality of life, and consideration of the economic factors associated with these possibilities.

Project Need

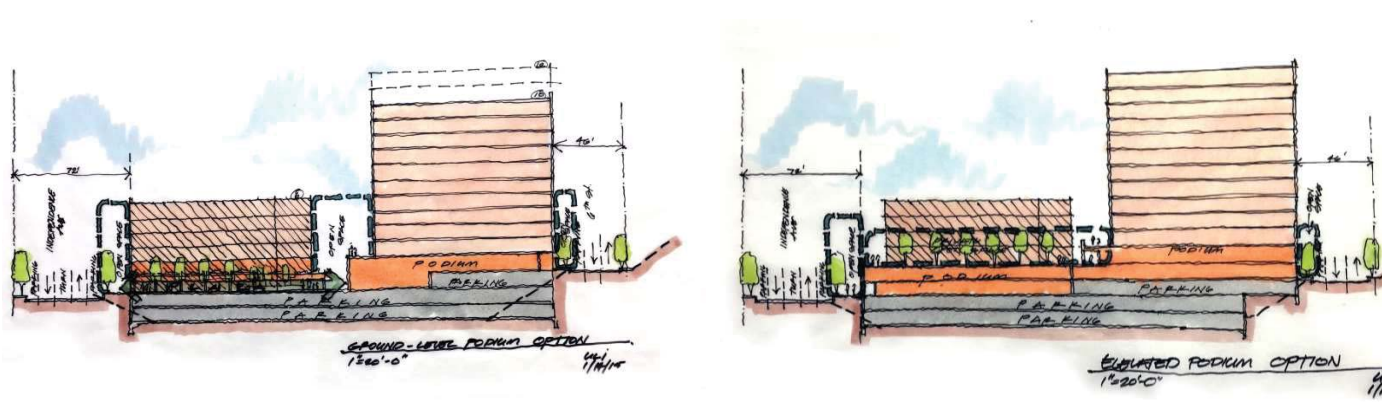
This project should contribute to improving the ability for properties within the Study Area to achieve their potential to further promote the growing residential and commercial tax base that adds to the vitality and sustainability of the Downtown CBD, the Downtown Airport, the West Bottoms, the Kansas City, KS CBD and Fairfax Industrial District, North Kansas City, and the surrounding districts and neighborhoods. The alternatives studies should consider the potential for enhancing economic development and growth within existing districts, while also exploring opportunities for new site development opportunities to occur in areas where streets or freeways are significantly altered and/or removed.



Technical Assistance Panel
North Loop Highway
Kansas City, Missouri

Panel Recommendations to the
City of Kansas City, Missouri &
Mid America Regional Council
January 2016

Urban Land Institute Kansas City



ENHANCE REGIONAL FREIGHT MOVEMENTS

The transportation of freight by air, barge, rail, and truck is fundamental to the region's quality of life. Freight systems are how goods produced by area businesses get to market and how consumer goods and business supplies produced elsewhere get to local end users. The freight industry supports more than 100,000 jobs in the region. Within the Study Area, facilities for the transportation of freight exist for all modes, including air freight at the Downtown Airport, the recently opened multi-modal PortKC facility in the West Bottoms, as well as a number of key rail and truck routes. This includes the BNSF railroad over the Missouri River, as well as I-70, I-35, I-29/35 and I-670 which are designated National freight corridors. In addition, there are a number of key freight hubs within the West Bottoms and the Fairfax Industrial District. Accessibility to these regional freight facilities today can be a challenge, jeopardizing the viability of existing freight related businesses, discouraging new businesses from locating in the area, and affecting the region's overall economic health.

West Bottoms

The West Bottoms is an industrial area immediately west of downtown at the confluence of the Missouri and Kansas Rivers. The area is one of the oldest areas of the city and has been home to a number of industries over the years including the former Kansas City Stockyards and the Darby Steel Corporation. Current industries include PortKC, Wagner Industries, and Faultless Starch/Bon Ami. Freeway access to/from the West Bottoms is limited. The Greater Downtown Area Plan, adopted in March 2010, recommended a more direct access to the West Bottoms from I-70. In fact, a number of trucks access the West Bottoms by exiting I-29/I-35 at Front Street, travel west to 3rd Street in the River Market, proceed west on 3rd Street and then access the West Bottoms via the Woodswether Viaduct.



Fairfax Industrial District

The Fairfax Industrial District (Fairfax) plays a major role in the region's economy. Fairfax is home to more than 135 businesses including General Motors, Sunshine Biscuit, Owens Corning, Central Plains Steel, and CertainTeed, that manufacture and/or distribute a variety of products throughout the region.

A number of companies located within Fairfax operate large trucks transporting petroleum products, hazardous materials, and heavy loads. They rely, among other routes, on I-70 to transport these commodities to their customers. Maintaining and/or improving accessibility to the Fairfax Industrial District is important for maintaining the viability of this important industrial district.



Port of KC

The Port of Kansas City occupies approximately 9 acres located at Missouri River mile 367.1 adjacent to the West Bottoms Industrial District. Located near the intermodal yards of five Class I railroads, four interstate highways, and the Kansas City CBD, the Port of Kansas City is the public entity for the reestablishment of waterborne commerce in the Kansas City area. Current terminal capabilities include rail and truck transfer, covered storage, and product distribution. In August of 2015, the Port welcomed its first barge since 2007, reasserting the importance of waterway transportation and opening a new era of multi-modal transport, with a proposed rail connection expected to be complete in 2017. Like the West Bottoms in general, freeway access to/from this facility is limited and hampers the ability of this facility to transport freight as efficiently as possible. MARC has identified the support of freight on the Missouri River as one of their Goods Movement strategies in Transportation Outlook 2040.



Rail

The Kansas City region is the second largest rail hub in the nation. Within the Study Area, a major intermodal/rail yard known as the BNSF Yard is located immediately east of US 169 north of the Missouri River. Going south out of the BNSF Yard, the only rail crossing of the Missouri River includes the Second Hannibal Bridge immediately east and downstream of the O'Neil bridge. Coming off the Hannibal Bridge, the railroad tracks make a sharp turn commonly referred to as the "Gooseneck". This sharp turn results in greatly reduced speeds so that rail operations in the area experience additional delay and operating expense.



Downtown Airport

The Greater Downtown Area Plan, adopted in March, 2010, recommended that due to traffic issues, access to the Downtown Airport should be improved to better accommodate both private passenger and commercial cargo flights. The 2004 CBW Land Use Plan identified options to increase land leases and to focus on new development opportunities at the Airport. The Plan also recommended that the Downtown Airport be promoted as an economic engine and transportation hub, as well as strengthening interstate connections.

Project Need

The project need is to improve accessibility to the West Bottoms and Fairfax Industrial Districts, as well as access to PortKC, the Downtown Airport and the BNSF rail yard.



PROMOTE QUALITY PLACES

This study effort represents an opportunity to further explore the relationship between anticipated transportation investments and creating economic development opportunities within the Study Area. The results of this project will promote the creation of vibrant, enduring, and adaptable places that add to the area’s unique sense of place, while also supporting a high quality of life for residents and visitors alike. These attributes include both public and private-sector improvements that shape the urban environment within the Study Area.

Urban Design

The areas, districts, and neighborhoods located within this Study Area vary greatly – ranging from vibrant mixed-use areas within Downtown Kansas City’s CBD, to lower-scaled residential and community-oriented mixed-use destinations in the River Market District and Columbus Park Neighborhood, to more diverse commercial and industrial properties located in the West Bottoms, North Kansas City, and Fairfax Industrial District areas.

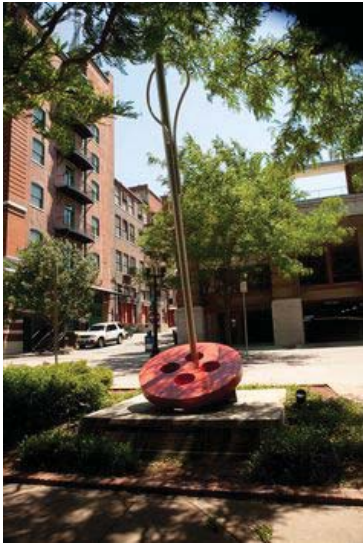
Visual Character + Aesthetics

As the collection of urban buildings and public spaces within the Study Area continue to improve, the visual character and aesthetic quality of these areas and districts also continues to evolve – and contribute to the overall quality of life. The design and appearance of public streets and open space areas play an important role in connecting disparate properties in urban settings, and in many ways assist in defining and promoting the unique character and charm found within each of these neighborhoods and districts. This project will also make a positive contribution to the overall sense of quality and visual character for these unique districts within the Study Area.

The use of art as part of major public improvement projects has long been a hallmark of promoting quality places within Kansas City, and there are numerous examples of these improvements found throughout the Study Area. Numerous architectural styles are found throughout the Study Area, yet with most older civic buildings there has been a tradition of art deco-inspired style and visual character – which includes the gateway markers leading into Downtown at 5th and Broadway. The existing O’Neil Bridge, the Heart of America Bridge, and the recently constructed Kit Bond Bridge also includes aesthetic lighting to highlight these unique bridge structures – which celebrates the City’s relationship with the Missouri River environment and Downtown’s connection with the Northland.

Project Need

There has been strong recent growth and demand for additional residential, commercial, and hospitality uses in the core of the Study Area – and the results of this project will need to promote a strengthened urban environment that allows this growth to continue to meet market demands, while supporting a positive sense of place that continues to evolve.



Project Need #6:

IMPROVE SUSTAINABILITY

PROMOTE SOCIAL EQUITY & NEIGHBORHOOD REVITALIZATION

The original construction of urban interstates had the impact of breaking apart low-income and minority communities. This was particularly prevalent in urban cores around the country. Even where impacts were not direct to homes and businesses, the barriers created by this type of infrastructure precluded growth, cut off access to pedestrian and transit to jobs, and often caused decline in once thriving neighborhoods. Air and noise pollution have also been an area of concern for communities surrounded by transportation infrastructure. In Kansas City, the interstate loop has had a similar impact on the neighboring community.

With the boom in people moving back to the Downtown, considering transportations impact on the neighborhoods, especially low income and minority neighborhoods, is important. It isn't just the transportation infrastructure that is important, it is public transportation, bike lanes and paths, and pedestrian walkways. Providing access and eliminating barriers will be important considerations in the continued growth and resurgence of the Kansas City core neighborhoods.

Downtown

At the end of the 19th century, the CBD began to flourish around 9th Street with the construction of the New England and New York Life buildings. At the time, Kansas City had the third largest cable car system in the country and was the national center for manufacturing and shipping, livestock sales, and transportation. Unfortunately, the work of George Kessler on Kansas City's parks and boulevard system largely ignored the CBD, leaving the area lacking for green space. Efforts to build on the strengths of the CBD in the mid-20th century were overshadowed by strict traffic ordinances that fractured most of downtown, the development of the interstate highway loop, and the creation of a great number of surface parking lots through the elimination of blighted buildings.

Downtown Kansas City, Missouri had been experiencing decline for some time with empty commercial space and the loss of retail and restaurants. With the opening of the Sprint Center and the Power & Light District in 2007, Kansas City's downtown began to experience renewed energy. Over the last decade there has been a great deal of historic rehabilitation, including many office space conversions to residential units. There have also been a number of new residential projects in downtown and the River Market. The population in this area continues to grow as residential options are added downtown. The addition of the streetcar line from Union Station to the River Market continues to encourage economic development within this corridor. However, the issues created by the interstate loop and lack of green space continue to be a source of opportunity for the CBD.

River Market

The River Market is a riverfront neighborhood that comprises one of the first and oldest incorporated districts in Kansas City, Missouri. The River Market has also been known as Westport Landing, the City Market, and River Quay. The River Market is situated between I-70 and the Missouri River and is bordered by the O'Neil and Heart of America Bridges. The River Market gets its name from the large open air farmer's market. The neighborhood has also seen a resurgence with warehouses increasingly developed into residential developments, restaurants, and markets. The River Market has similar barriers to other neighborhoods in the area with interstate and highway barriers to the CBD and Columbus Park. The addition of the streetcar line has helped to re-connect this neighborhood to the CBD.

Columbus Park

The Columbus Park neighborhood, which is located between I-29/35 and M-9, was an early home to many immigrants. The neighborhood was sometimes referred to as "Little Italy," but included immigrant communities from other countries as well. Minority populations began to grow in this area in the late 18th and early 19th centuries. The Garrison Field House, later the Garrison Community Center, was the only settlement center in Kansas City, exclusively for blacks. In the 1950s, the federal government purchased much of the northeast corner of the neighborhood to make way for a public housing development. The neighborhood ethnicity began to change and included Hispanics and Southeast Asians.

Columbus Park is surrounded by highway barriers and the Missouri River. The neighborhood has fared better than others but it is missing good connections to downtown and the River Market area. Parking is also an issue in the neighborhood for those coming to visit the ethnically diverse restaurants and businesses.

Strawberry Hill

The Strawberry Hill neighborhood is located on the west side of the Study Area just south of downtown Kansas City, Kansas and overlooks the confluence of the Kansas and Missouri Rivers. The neighborhood was established in the late 19th century as immigrants from Croatia, Slovenia, Serbia, and Russia settled in the area. Existing I-70 on its eastern boundary has historically provided a physical barrier from the neighborhood to the Kansas River, the West Bottoms, and other amenities to the east.

Harlem

The Harlem area is located on the north side of the Missouri River between the O'Neil Bridge and the ASB Bridge. In the 1800s and into early 1900s, this was a town of 50 acres with nearly 600 residents. In 1950 the area was annexed by Kansas City, Missouri. Currently there are only three homes left in the area and one apartment complex. When the ASB Bridge opened in 1911, people began bypassing Harlem. The river bridges created barriers and flooding contributed to residents moving out of the area. Over the years a number of plans for development and redevelopment have been proposed but none have come to fruition.

Project Need

The project need is to understand the negative impact the original Downtown Loop had on existing neighborhoods in the Study Area and to promote alternative strategies that reconnect these areas, provide needed revitalization, and promote social equity of the citizens that live and work in these neighborhoods.

The construction of the Downtown Loop in the 1950s created a physical division between established neighborhoods resulting in a gradual decay in their cohesiveness, property values, and quality of life.



PROTECT HISTORICAL RESOURCES

The Kansas City Area has a rich centuries old history that dates back to Native American encampments near the confluence of the Kansas and Missouri Rivers and well known French fur trader Francois Chouteau. While there is not much evidence of that era remaining today, the Study Area contains a number of historic landmarks and districts dating back as far as the 1800’s.

In the Study Area, there are more than 100 single sites and districts listed in the National Register of Historic Places. These assets include commercial, industrial, archaeological, parks and boulevards, and transportation related resources in the Kansas City downtown neighborhoods, North Kansas City, and Kansas City, Kansas. In addition, there are several historic assets located in the Study Area that are listed in the Kansas City Register of Historic Places.

The National Historic Preservation Act (NHPA) sets forth government policy and procedures regarding “historic properties” – that is, districts, sites, buildings, structures, and objects included in or eligible for the National Register of Historic Places. Section 106 of NHPA requires that Federal agencies consider the effects of their actions on such properties, following regulations issued by the Advisory Council on Historic Preservation (36 CFR 800).

Historic Districts

Garment District - The Kansas City Garment District is located in Downtown Kansas City, Missouri to the east of Quality Hill, across Broadway Boulevard. In the 1930s, several large clothing manufacturers clustered here, making Kansas City’s garment district second only to New York City’s in size. Today, this heritage is commemorated by an oversize needle and thread monument. Its old industrial buildings have since been redeveloped into loft apartments, office, and restaurants. Henry Perry, father of Kansas City-style barbecue got his start in 1908 from a stand in an alley in the neighborhood.

River Market - River Market stretches north of the downtown Interstate 70 loop to the Missouri River, and is bordered by the O’Neil Bridge on the west and the Heart of America Bridge on the east. The area encompasses the location in which Kansas City was first founded. The market name comes from its large open air farmers’ market, the southern section of which was the public square in the mid 19th century.

West Bottoms - The West Bottoms is an industrial area immediately to the west of downtown Kansas City, Missouri, at the confluence of the Missouri River and the Kansas River. The area is one of the oldest areas of the city, with a large industrial base, and is currently being planned for redevelopment.

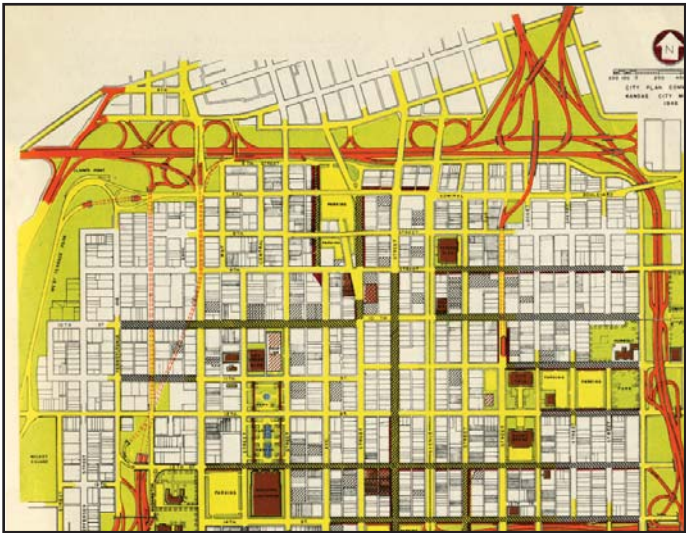
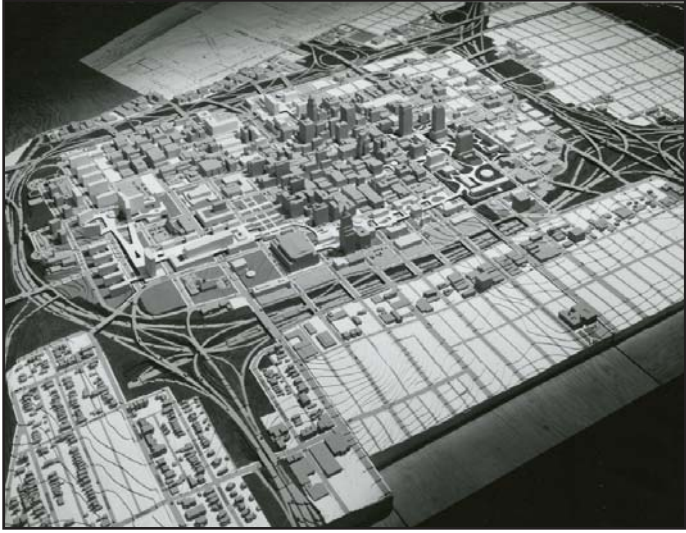
Strawberry Hill - Strawberry Hill is a Kansas City, Kansas neighborhood on the bluffs overlooking the confluence of the Kansas and Missouri Rivers. It is now a mainly South Slavic community. Strawberry Hill was previously known as Splitlog Hill, after Mathias Splitlog, a wealthy Indian mill owner who purchased the area and built a mansion on it in 1870. After the area was subdivided, the new Strawberry Hill neighborhood was established in the late 19th century. Immigrants from Croatia, Slovenia, Serbia, and Russia found a home along the river’s hillside. They built a community where people could worship, celebrate, and prosper while maintaining their distinct Slavic heritage.

Project Need

There is a need to protect the existing historical resources and promote strategies that preserve the historical context that exists in the Study Area.



Construction of the original expressway loop plan, circa 1950, created a concrete divide between Downtown Kansas City and the River Market, essentially separating the community from the Missouri River. Any proposed improvement to the North Loop needs to understand this history and work to improve the connectivity and accessibility of this vital community resource.



PROTECT NATURAL ENVIRONMENTAL RESOURCES

The project Study Area has changed dramatically over the last 150 years and most of the original natural environmental resources have been disturbed through the on-going urbanization of the area. However, there still exists several natural resources that need to be protected as the project identifies and evaluations the various improvement strategies.



Environmental Resources

The development of the improvement recommendations need to include an evaluation of their respective impacts on the following environmental resources.

- Air Quality - Assess the relative benefits to the region’s ability to maintain compliance with current air quality regulations.
- Noise - Identify potential adverse impacts to sensitive noise receptors an integrate reasonable noise abate options in the recommended strategies.
- Storm Water - Assess the potential changes in storm water drainage and identify options to mitigate any adverse impacts.
- Floodway and Floodplains - Avoid any strategies that adversely impact the current flood protection along either the Kansas or Missouri Rivers in the Study Area.
- Water Quality - Assess the potential impact on regional water quality.
- Greenhouse Gas Emissions - Evaluate the potential reduction in greenhouse gas emissions from any of the propose improvement strategies.
- Wetland Habitat - Minimize impacts to existing wetland habitats along the Missouri River.
- Threatened & Endangered Species - Preserve the habitats of the known endangered species.
- Energy Conservation - Identify opportunities to conserve energy and promote solutions that reuse and/or recycle existing materials.

Project Need

There is a need to protect the existing natural resources and promote strategies that improve the sustain-ability of the transportation network and any area affected by the proposed improvements in the Study Area.



The evaluation of the proposed improvement strategies needs to identify opportunities to avoid, minimize, and if unavoidable, mitigate negative impacts to the natural environment.

INTEGRATE NEW TRANSPORTATION TECHNOLOGIES

The Autonomous and Connected Vehicles (AV/CV), or driverless vehicle, is a closely watched technological development. This development has the potential to bring a paradigm shift in the transportation sector which impacts the everyday lives of countless people. AV/CVs are programmed vehicles that operate in pre-mapped driving areas, navigating between fixed and moving obstacles. With the use of a variety of sensors attached externally, AV/CVs are able to make algorithmic decisions based on data received and processed from sensors within seconds. AV/CVs can also be connected vehicles communicating with other AV/CVs to optimize traffic flow for the desired travel way speed. AV/CV technology, in theory, should significantly increase the efficiency of our existing transportation network where traffic queues, delays, and accidents would approach zero. This new technology is already being implemented in autonomous fleets such as Uber or Lyft, in transit with passenger shuttles, and in freight with last-mile aerial delivery and freight shuttles.

Autonomous Fleets

AV/CVs are central to developing on-demand mobility fleets. Sharing rides will have the effect of reducing congestion, transforming the livability of cities, and allow for travel quickly and safely for a small price. AV/CVs will offer mobility to those that cannot drive, and in conjunction with car-sharing, can offer mobility to those who do not have ready access to a car. For riders who could normally drive themselves, AV/CVs can offer amenities similar to those of transit in terms of being able to use time while traveling to read, sleep or work. Accommodating self-driving vehicles will require cities to rethink their infrastructure to include the potential for special dedicated lanes or geo-fenced areas.

Autonomous Transit

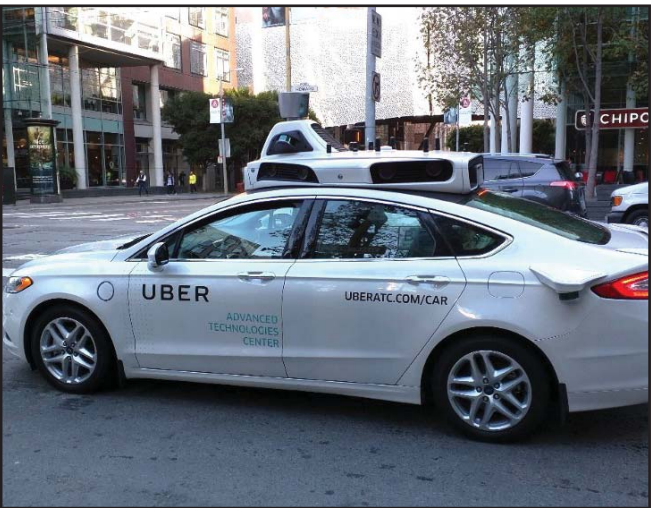
AV/CV passenger shuttles are being developed and tested to run fixed-routes stopping at designated stops. Designed to travel short distances, these shuttles would ideally serve first and last mile trips. Collision Avoidance Systems (CAS) have already been developed for cars with options that include: adaptive cruise control, blind spot detection, lane departure warning, etc. Although bus transit is one of the safest ways to travel, these could reduce the frequency and severity of collisions and reduce associated liability expenses. Precision docking technology is also being used in Oregon for their Bus Rapid Transit vehicles. These are classified as driver assist systems which are not technically related to automation.

Freight Deliveries

Truck trains or caravans would reduce the cost of fuel and haul more freight at a time. The lead truck would have one driver in the cab who would lead the caravan of a dozen or so trucks along the highway. Platooning technology connects two or more trucks via cloud technology and uses safety features like active braking. The lead truck driver would control all the trucks, but drivers will still be needed to maneuver the highway exits, city streets and backing up to the loading dock. Semi-autonomous freight trucks might also help to address the current driver shortage. Several freight companies including UPS, Amazon, and even Ford are also looking at supplementing their normal ground delivery services with last-mile aerial drone delivery to increase the efficiency of deliveries while understanding the power limitations of aerial delivery vehicles.

Project Need

The study need is to understand how the AV/CV technology will be incorporated in the Study Area and make recommendations on its inclusion, integration or exclusion. Any improvements identified for this study need to take into account the transformation being brought on by this new technology and incorporate improvements that will aid in its ultimate implementation.



Autonomous technologies are already transforming the field of transportation planning. Any improvements to the transportation system in Kansas City needs to accommodate this new shift in transporting people and goods.