
Technical Memorandum

To: Cooperating Agencies, Participating Agencies and Other Interested Stakeholders	Date: April 19, 2019
From: South Lawrence Trafficway SEIS Study Team	
Subject: SLT SEIS Initial Alternatives Screening Technical Memorandum	

South Lawrence Trafficway Supplemental Environmental Impact Statement Proposed Alternatives Screening Criteria

1.0 Introduction and Background History

The purpose of this technical memorandum is to describe the initial alternatives for screening, proposed screening criteria, , and to document the results of the initial alternatives screening process for the South Lawrence Trafficway (SLT) Supplemental Environmental Impact Statement (SEIS). This Technical Memorandum is one of several interim reports to be prepared for the SLT SEIS for review and concurrence by Cooperating and Participating Agencies for the project.

SLT EIS

A previous Environmental Impact Statement (EIS) was prepared in 1990 for the overall SLT study area. The Purpose and Need stated in that EIS was to relieve congestion on existing 23rd Street and Iowa Street by diverting through and local traffic from these two existing streets and Clinton Parkway, thereby achieving an improved level of traffic service on the local street network. As an outcome of the approved 1990 EIS, two expressway lanes of the West Section were constructed and opened to traffic in 1996. The East Section was not constructed and a subsequent SEIS with a “No Build” decision was approved in 2000. A subsequent EIS, in conjunction with a USACE 404 Permit, was completed in 2002 and adopted and approved by FHWA in November 2007. The FHWA then issued a Record of Decision (ROD) in May 2008. Since the completion of the ROD, the East Section four-lane freeway was constructed and opened to traffic in 2016.

K-10 West Leg Concept Study

The *K-10 West Leg Concept Study*, conducted from 2014-2016 for the Kansas Department of Transportation, investigated the current and future needs and functions in the K-10/SLT West Section. This study considered alternatives for the future widening and upgrade of the corridor, which modified the current 2-lane expressway design to a 4-lane freeway design with limited access (with consideration for a 6-lane facility), and either closed existing at-grade intersections or upgraded them to grade separated interchanges. During the concept study, proposed conceptual alternatives went through a screening process to evaluate qualitative and quantitative impacts of the alternatives for the West Section improvements. The concept study and its alternatives screening process will be used as a baseline and reference document for the SLT SEIS for developing and screening the initial alternatives.

2.0 Overview of SLT SEIS Alternatives Development Process

A Supplemental Environmental Impact Statement (SEIS) will be prepared for the proposed project. Within the SEIS, the alternatives development process identifies alternatives for the proposed project that are reasonable and feasible from a technical, environmental and economic standpoint. Initial Alternatives for the project were developed using the SLT 1990 EIS and the K-10 West Leg Concept Study as a baseline for the proposed build alternatives.

The current SEIS, as a supplement to the original 1990 EIS, will evaluate a 'No Action' alternative as well as a combination of proposed Build Alternatives for the entire SLT study area, designated as the **Initial Alternatives**. Roadway configuration options will be evaluated, including upgrading of the West Section as a multi-lane freeway, with controlled access and interchanges at West 6th Street/U.S. 40, Bob Billings Parkway, Clinton Parkway, an interchange between Wakarusa Drive and Kasold Drive, and at U.S. 59/Iowa Street. Also, interchange alternatives at I-70/East 600 Road/Lecompton Road and K-10/I-70/North 1800 Road will be considered. A range of funding options will also be evaluated for the proposed alternatives.

The East Section of the SLT is included in this study because it was a part of the study area for the original 1990 EIS, and because funding options, such as tolled and toll-free options, are being evaluated for the project. Therefore, the entire SLT corridor will need to be evaluated to assess potential impacts of the funding options and their ability to provide sustainable funds for operation, maintenance and future SLT improvements. It is not anticipated that there will be any physical roadway improvements or modifications that require additional right-of-way on the East Section as a result of the funding options.

The screening process will entail a screening of the alternatives to determine which alternatives warrant further consideration for the project. Based on the screening of the Initial Alternatives, the alternatives development process then defines and evaluates a range of No Action and Build Alternatives in sufficient detail to identify the feasible and prudent alternatives (i.e., **Reasonable Alternatives**). The Reasonable Alternatives are then carried forward and evaluated with regard to the acceptability of the environmental and social impacts, as presented within the Affected Environmental and Environmental Consequences section of the SEIS. The more detailed evaluation of the Reasonable Alternatives then identifies the alternative that best accomplishes the purpose and need for the proposed project while providing acceptable impacts to both the natural and man-made environment. This alternative is designated as the **Identified Preferred Alternative**. The Identified Preferred Alternative is then presented within the Draft SEIS and at the Public Hearing for agency and public review and comment. After the comments on the Public Hearing and Draft SEIS have been received and addressed, the Identified Preferred Alternative is approved by FHWA as the **Selected Alternative** for the project and a Final SEIS and Record of Decision will be prepared.

The process of alternatives screening and ascending level of detailed evaluation assures decision-makers of the fulfillment of the improvement's goals, while developing informed consent with the reviewing agencies, stakeholders and the general public. This screening process will be performed in collaboration with the public and agency coordination plan as defined in the Project Coordination Plan.

Figure 1
Alternatives Development Process



3.0 Detailed Descriptions of Initial Alternatives

As previously discussed, Initial Alternatives for the project were developed using the SLT 1990 EIS and the K-10 West Leg Concept Study as a baseline for the proposed build alternatives. The Initial Alternatives for the project include the following:

No Action Alternative

The No Action Alternative makes no capacity improvements on the existing West Section of the SLT beyond improvements that are directly related to ongoing rehabilitation and maintenance of the facility or projects that are already committed or programmed in the State Transportation Improvement Program (STIP) or the Lawrence - Douglas County Metropolitan Planning Organization (MPO) Long Range Transportation Plan (LRTP), designated as *Transportation 2040 (T2040)*. The No Action Alternative is not a no cost alternative. Currently, there are several committed or programmed roadway or bridge projects identified that have been included in the No Action Alternative. Those projects include:

- **6th Street/K-10 Interchange** - KDOT has developed preliminary plans to reconfigure the existing 6th Street (US-40)/K-10 Diamond Interchange to a Diverging Diamond Interchange. Further development of the plans has been suspended during the SLT SEIS and will be progressed as traffic conditions warrant.
- **E 1200 Road (Kasold Drive)/K-10 Intersection closure** – KDOT identified this intersection for closure in December 2018 after more than 28 crashes have occurred at the intersection since 2016. The expressway experienced a substantial increase of traffic with the opening of the eastern leg of the South Lawrence Trafficway.
- **I-70 Acceleration/Deceleration Lane Improvements** – The Kansas Turnpike Authority is planning and constructing improvements to the acceleration and deceleration lanes at the Lecompton Interchange ramps where they enter and exit the I-70 Turnpike. These improvements will be constructed in fiscal year 2020.
- **Interim Safety Improvements** – KDOT has identified several interim safety improvements for SLT which include a queue warning system and intersection geometric improvements. These improvements would be planned and constructed as interim improvements until a preferred alternative to improve the SLT corridor is selected and funded.

The No Action Alternative also includes planned or programmed multimodal projects such as transit and bicycle and pedestrian facilities. Identified planned facilities within the SLT right-of-way include potential crossings at:

- N 1750 Road;
- 6th Street;
- N 1800 Road at Lecompton Road/E 600 Road;
- Along US 40; and
- Wakarusa Drive south of W 27th Street.

While several existing Lawrence or RideKC transit routes are located in close proximity to the SLT corridor, no routes currently cross, or are planned to cross, SLT.

Exhibit 1 in Appendix A: Initial Alternatives Exhibits shows the programmed and committed projects included with the No Action Alternative. The No Action Alternative is used as a baseline for comparison to the other alternatives proposed for the project.

Transportation System Management (TSM)/Transportation Demand Management (TDM) Alternative

The Transportation System Management/Transportation Demand Management (TSM/TDM) Alternative is designed to maximize the efficiency of the existing transportation system by improving capacity and reducing the effects of bottlenecks and chokepoints. These strategies are relatively low-cost, low-impact strategies geared toward enhancing mobility on the SLT without adding new travel lanes or upgrading the facility to a freeway. TSM improvements may include a wide range of strategies, including: coordinated signal timings, intelligent transportation systems (ITS), ramp metering, queue warning systems or minor intersection improvements. TDM strategies typically attempt to modify travel behaviors to benefit capacity, such as carpooling, staggered work shifts, telecommuting, and promoting transit use.

The following TSM/TDM strategies were considered appropriate for implementation in the SLT corridor and are considered the primary elements of the TSM/TDM initial alternative for the SLT SEIS. Those strategies include:

- Installation of ITS elements throughout the SLT corridor including driver information systems that convey travel times, weather advisory data, incident avoidance information, and other pertinent congestion reduction and incident management information. The KC Scout ITS system (or similar system) elements are considered the model for system implementation in the SLT corridor. K-10 Highway near the Kansas City metro area has KC Scout elements deployed and the SLT corridor will propose similar ITS elements.
- Construction of minor intersection improvements to improve safety and traffic circulation. Modifications may include adding right and left turn bays at intersections, lengthening existing turn bays, adaptive signal timings, increasing lane widths at intersections, widening shoulders, adding rumble strips, or enhanced bicycle/pedestrian crossings. In addition, minor safety and geometric improvements could be made to alternate routes such as U.S. 40 to improve overall operations on the roadway network, such as improving vertical curves, intersection sight distance or roadside grading and slopes.

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- While it is difficult to implement or mandate specific TDM strategies for the proposed project, the SLT study team promotes the integration of these strategies where possible for affected commuters and businesses to help alleviate peak period congestion and improve safety and mobility within the study area.

Exhibit 2 in Appendix A shows the TSM/TDM strategies proposed for the SLT project and study area.

Multimodal Alternative

The Multimodal Alternative includes reasonable measures to enhance crossing of the corridor for non-motorized travel and freight and increases the effectiveness of transit options in the corridor. Elements of this alternative allows for the existing transit agencies in the state or Lawrence region to increase transit routes or enhance transit service by providing roadway improvements that allow for more efficient local and regional transit connections. Transit elements such as Bus-on-Shoulder that enhance the reliability and reduce congestion of the corridor are also included in this alternative. Bus-on-shoulder improvements may include pavement improvements and minor widening of existing shoulders on the SLT corridor to accommodate bus-on-shoulder operations. This concept would be similar to the bus-on-shoulder provided by Kansas City Area Transportation Authority (KCATA), designated as RideKC, for the I-35 corridor in the Kansas City metro area. At the current time, no existing transit agencies have transit routes on or crossing the SLT corridor. A bus-on-shoulder concept would only be implemented if a transit agency committed to deploying transit on the SLT corridor.

Similarly, this alternative aims to preserve existing bicycle and pedestrian connections and crossings of the SLT corridor by shared-use trails and paths while also accommodating future planned shared path and trail connections. This alternative will also enhance freight service bottlenecks through intersection improvements such as increased turning radii, elongated turn bays, wider shoulders, wider lanes at intersections, improving merge distances, and optimizing signal timings.

Exhibit 3 in Appendix A shows the proposed multimodal improvements programmed or committed for the study area, as well as other multimodal improvements that could be accommodated by the SLT corridor, such as bus-on-shoulder, if desired in the future by existing transit agencies.

Build Alternative – Add Capacity Expressway (West Section)

This alternative will upgrade the existing two-lane undivided West Section of the SLT to a median divided expressway facility with four lanes. It will also include the reconstruction of the existing two lanes. This alternative was the approved preferred alternative from the 1990 EIS. Existing interchanges at West 6th Street/U.S. 40, Bob Billings Parkway, Clinton Parkway, and U.S. 59/Iowa Street will remain interchanges with ramp modifications to accommodate additional expressway travel lanes.

Under an expressway concept, existing at-grade intersections located along the SLT West Section, such as the West 27th Street/Wakarusa Drive signalized intersection and the I-70 interchange ramp terminals would remain in-place, but would have various intersection improvements to enhance safety and mobility. In a separate project, E 1050 Road (Wakarusa Drive) will be extended to provide connection between N 1200 Road (County Road 458) and the future SLT improvements.

Exhibit 4 in Appendix A shows the proposed Add Capacity Expressway Alternative.

Build Alternative – Add Capacity Freeway (West Section)

This alternative will upgrade the existing two-lane undivided West Section of the SLT to a median divided fully access-controlled freeway facility with either four or six lanes, as predicated on future need. The freeway section would be consistent with the SLT East Section to provide system continuity for travelers. Existing interchanges at West 6th Street/U.S. 40, Bob Billings Parkway, Clinton Parkway, and U.S. 59/Iowa Street will remain interchanges with ramp modifications to accommodate additional freeway travel lanes.

Under a freeway concept, existing at-grade intersections located along the SLT West Section, such as the West 27th Street/Wakarusa Drive signalized intersection, will no longer remain in-place. These at-grade intersections will be improved to modified, or new grade-separated access, to enhance safety and mobility along and across the SLT corridor, consistent with a freeway section. A system interchange with I-70 will be considered; however, new service interchanges at I-70/East 600 Road/Lecompton Road and K-10/I-70/North 1800 Road will also be considered to provide local access. In a separate project, N 1200 Road (County Road 458) will be connected to the future SLT improvements at the selected access point.

In addition, this alternative includes the consideration of tolling concepts to close the existing toll system with the I-70 Turnpike.

Exhibit 5 in Appendix A shows the proposed Add Capacity Freeway Alternative.

Build Alternative – Add Capacity Tolled Highway (East & West Sections)

This alternative is similar to the previous ‘add capacity’ build alternative, however it includes the ability to collect tolls through all-electronic tolling (AET) to fund the construction of the facility. The tolled highway section would be consistent with the SLT East Section to provide system continuity for travelers.

The alternative will upgrade the existing two-lane undivided West Section of the SLT to a divided four or six lane fully access-controlled freeway facility. Existing interchanges at West 6th Street/U.S. 40, Bob Billings Parkway, Clinton Parkway, and U.S. 59/Iowa Street will remain interchanges with ramp modifications to accommodate the median divided freeway.

Under a tolled highway concept, existing at-grade intersections located along the SLT West Section, such as the West 27th Street/Wakarusa Drive signalized intersection, will no longer remain in-place. These at-grade intersections will be improved to modified, or new grade-separated access, to enhance safety and mobility along and across the SLT corridor, consistent with a fully access-controlled highway section. A system interchange with I-70 will be considered; however, new interchanges at I-70/East 600 Road/Lecompton Road and K-10/I-70/North 1800 Road will also be considered to provide local access. In a separate project, N 1200 Road (County Road 458) will be connected to the future SLT improvements at the selected access point.

Under AET, no physical toll plazas to stop and pay tolls with cash would be constructed along the SLT corridor. Rather, overhead gantries will be constructed at various points throughout the corridor to collect tolls through the AET method.

The East Section of the SLT is included in this alternative because tolling the entire facility is being evaluated as part of the project. Therefore, the entire SLT corridor will need to be evaluated to assess potential impacts of the funding options and their ability to provide sustainable funds for operation, maintenance and future SLT improvements. It is not anticipated that there will be any physical roadway improvements or modifications that require additional right-of-way on the East Section as a result of the funding options.

In addition, this alternative includes the consideration of tolling concepts to close the existing toll system with the I-70 Turnpike.

Exhibit 6 in Appendix A shows the proposed Add Capacity Tolloed Highway Alternative and how proposed AET gantries would look and function along the SLT corridor.

4.0 Screening Criteria

The Initial Alternatives previously described will be screened against the purpose and need goals for the project. Natural and human environmental impacts, as well as engineering issues and associated relative costs, will also be evaluated at a high-level for the Initial Alternatives. An Initial Alternatives Screening Matrix will then be prepared to screen the alternatives based on the screening criteria developed. Public and stakeholder input will be a component of the screening criteria for the Initial Alternatives.

Purpose and Need Criteria

The purpose of the South Lawrence Trafficway is to provide the traveling public with an efficient and cost-effective transportation facility for users of K-10 Highway and the surrounding state highway system. In addition, the purpose and need established in the 1990 EIS will be carried forward for the SEIS, which is to relieve congestion on the local street network within the city of Lawrence.

The proposed project is needed to:

- ***Reduce congestion*** and improve the traffic capacity to meet existing and future travel demands,
- ***Enhance safety*** to help address high crash locations within the study area,
- ***Promote a multimodal transportation system*** by ensuring the project accommodates the needs of other transportation modes, and
- ***Support local and regional growth*** by providing and coordinating transportation connections to be consistent with planned and proposed community land use and development.

The screening criteria to evaluate meeting the purpose and need criteria are defined as:

- **Reduce Congestion** – The alternative includes measures that increase the capacity of the SLT West Section and/or increase transit service and use that would be sufficient to anticipate a reduction in congestion to level of service (LOS) D during the peak periods.
 - Potential Improvements to LOS D or greater on K-10 and on major urban arterials – This screening measure is rated using LOS reporting, with the scale encompassing LOS A (best) through LOS F (worst). The alternative that improves LOS conditions to LOS D or better during peak periods will receive a higher relative rating.
 - Decrease in Travel Time- This screening measure is rated using the Harvey balls/ideograms type system. This screening measure is used for evaluating decreases in travel time and will quantify the change in travel distances and/or travel times and speeds over existing conditions.

- **Enhance Safety** – The alternative includes measures that potentially address safety of the SLT West Section over existing conditions.
 - Reduction in Number and Severity of Crashes - This screening measure is rated using the Harvey balls/ideograms type system. The alternative includes improvements to address a specific number of locations with critical crash rates above the statewide average. The focus is on a reduction in number and severity of crashes as a result of the alternative improvements.
 - Crash Modification Factors - This screening measure is rated using the Harvey balls/ideograms type system. The alternative incorporates countermeasures (i.e., additional driving lanes, installation of grade-separated interchanges, traffic signals or median barriers) on the SLT West Leg mainline that result in an expected reduction in crashes using the FHWA Crash Modification Factors Clearinghouse as a basis of analysis.

- **Promote a Multimodal Transportation System** – The alternative includes reasonable measures to enhance crossing of the corridor for non-motorized travel and freight and increases the effectiveness of transit options in the corridor.
 - Potential for Crossing Improvements – This screening measure is rated using the Harvey balls/ideograms type system. The alternative that allows for potential crossing improvements of SLT at new locations will receive a higher relative rating.
 - Increased Accommodation of Bus Transit Routes – This screening measure will include the potential increase in the number of bus transit routes that may facilitate improved transit access within the community. This will be measured by an increase/decrease in the number of potential transit route crossings of the SLT that could link with nearby existing transit routes.
 - Provides Connection to Pedestrian, Bike or Trail Facility – This screening measure is rated using the Harvey balls/ideograms type system. The alternative will preserve existing bike or trail systems and accommodate future planned connections.
 - Potential to Eliminate Freight Bottlenecks – This screening measure is rated using the Harvey balls/ideograms type system. This screening measure will evaluate improvements that may be beneficial to freight movement (i.e. increased turning radii, access points) or improvements that may reduce or eliminate freight bottlenecks on

areas of the SLT corridor (i.e., the number of signalized intersections potentially eliminated that cause backups and queues along SLT, adding traffic capacity with additional lanes, improving traffic merge distances, etc.) that can impact goods movement.

- **Support Local and Regional Growth** – The alternative accommodates planned population, land use and other growth and development plans in the region.
 - Compatibility with Local Planning – This screening measure is rated using the Harvey balls/ideograms type system. This screening measure will evaluate the alternative’s compatibility and consistency with city plans for future growth and development.
 - Compatibility with Regional Planning - This screening measure is rated using the Harvey balls/ideograms type system. This screening measure will evaluate the alternative’s compatibility and consistency with regional metropolitan planning organization (MPO) plans for future growth and development.

Environmental Criteria

The study team will also perform a cursory evaluation of the potential natural and human environmental impacts for each initial alternative. The natural environmental impacts relate to the anticipated effect on natural sites. The human environmental impacts include any community, neighborhood, or business resources that may be affected by the alternatives.

- **Environmental Fatal Flaws** – This screening measure is a simple yes or no evaluation to determine if the alternative has any environmental fatal flaws. Environmental fatal flaws are defined as unavoidable impacts for which mitigation is not considered an acceptable remedy. Examples (though not all-inclusive) include impacts to critical habitat for threatened and endangered species, impacts to sensitive Native American cultural and burial sites, or substantial impacts to Section 4(f)/6(f) resources that require the development of an avoidance alternative.
- **Potential Parks Impacted** – This screening measure will include the number of parks potentially impacted by each alternative.
- **Potential Community Facilities Impacted** – This screening measure will include the number of community facilities potentially impacted by each alternative.
- **Potential for Changes to Land Use** – This screening measure is rated using the Harvey balls/ideograms type system. The alternatives that will require more right of way have more potential to change the surrounding land use. This screening measure does not determine whether the change is positive or negative as this is often subjective.
- **Potential for Environmental Justice Impacts** – This screening measure is rated using the Harvey balls/ideograms type system. The direct impact on environmental justice areas are from relocations as related to the need for right of way and range of funding options being considered for the project.
- **Potential for Noise Impacts** – This screening measure is rated using the Harvey balls/ideograms type system. The impact of noise is typically related to the need for right of way and proximity to sensitive noise receptors. Once the reasonable alternatives are identified, the evaluation will consider the number of noise receptors affected.

- **Potential for Natural Environmental Resources Impacts** – This screening measure is rated using the Harvey balls/ideograms type system.
- **Potential for Hazardous Materials and Contaminated Sites Impacts** – This screening measure will include the number of hazardous materials and contaminated sites potentially impacted by each alternative.
- **Stakeholder and Public Support** - This screening measure is rated using the Harvey balls/ideograms type system.

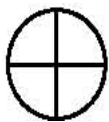
Engineering Criteria

The study team will also perform an evaluation of potential engineering issues including fatal flaws, right of way impacts, and construction phasing for the initial alternatives. The engineering criteria incorporate the major elements used within the K-10 West Leg Concept Study as a baseline.

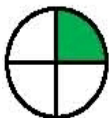
- **Engineering Fatal Flaws** – This screening measure is a simple yes or no evaluation to determine if the alternative has any engineering fatal flaws.
- **Right of Way Impacts** – This screening measure is rated using the Harvey balls/ideograms type system. The evaluation will be high level at this stage and more detail will be available as the study proceeds.
- **Allows for Project Phasing** – This screening measure is a simple yes or no evaluation to determine if the alternative allows for construction to be phased over time.
- **Maintenance of Traffic and Constructability** – This screening measure is rated using the Harvey balls/ideograms type system. The evaluation is high level at this stage and measures complexity of staging and anticipated road closures.

5.0 Initial Alternatives Screening Ratings System

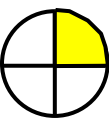
A Harvey balls/ideograms rating system will be established as part of the screening process and used in the screening matrix when screening the Initial Alternatives. An example rating system is shown below.

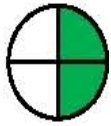


No Achievement/No Impact: For the purpose and need goals this symbol relates to the extent of achieving a goal; for environmental and engineering/cost criteria, it relates to the level of potential impacts (the greater the impact, the more slices in the circle are highlighted). This rating denotes that this criterion is not met at all (or very negligible) and there are no (or negligible) environmental and engineering/cost impacts. It should be noted that impacts can have either a positive or negative connotation depending on what criteria is being evaluated.



Some Achievement/Some Impact (approximately 25%): For the purpose and need goals this symbol relates to the extent of achieving a goal in green; for environmental and engineering/cost criteria in yellow, it relates to the level of potential impacts (the greater the impact, the more slices in the circle are highlighted). This rating indicates that approximately a quarter of the purpose and need goals are met and there are approximately 25% impacts for environmental and engineering/cost criteria. It should be noted that impacts can have either a positive or negative connotation depending on what criteria is being evaluated.

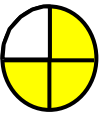




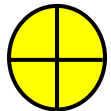
Half Achievement/Moderate Impact (approximately 50%): For the purpose and need goals this symbol relates to the extent of achieving a goal in green; for environmental and engineering/cost criteria in yellow, it relates to the level of potential impacts (the greater the impact, the more slices in the circle are highlighted). This rating indicates approximately half of the purpose and need goals are met and there are approximately 50% impacts for environmental and engineering/cost criteria. It should be noted that impacts can have either a positive or negative connotation depending on what criteria is being evaluated.



Substantial Achievement/Substantial Impact (approximately 75%): For the purpose and need goals this symbol relates to the extent of achieving a goal in green; for environmental and engineering/cost criteria in yellow, it relates to the level of potential impacts (the greater the impact, the more slices in the circle are highlighted). This rating indicates approximately three-quarters of the purpose and need goals are met and there are approximately 75% impacts for environmental and engineering/cost criteria. It should be noted that impacts can have either a positive or negative connotation depending on what criteria is being evaluated.



Complete Achievement/High Impact (approximately 100%): For the purpose and need goals this symbol relates to the extent of achieving a goal in green; for environmental and engineering/cost criteria in yellow, it relates to the level of potential impacts (the greater the impact, the more slices in the circle are highlighted). This rating indicates all or the vast majority of the purpose and need goals are met and there are approximately 100% impacts for environmental and engineering/cost criteria. It should be noted that impacts can have either a positive or negative connotation depending on what criteria is being evaluated.



Project Cost Criteria

In addition, the final evaluation criterion was the relative costs of each alternative. The alternatives were given one of the ratings below:



Alternatives would have low or minimal additional cost beyond what is anticipated for long-term maintenance (i.e. maintaining the existing facility – No Action).



Alternatives anticipated have moderate to average costs related to other alternatives proposed.



Alternatives anticipated have substantial costs related to other alternatives proposed.



Alternatives anticipated to have a cost that is orders of magnitude higher than other alternatives.

6.0 Screening of Initial Alternatives

In March 2019, the Purpose and Need Statement for the project was reviewed, commented upon, and concurred upon by Cooperating and Participating agencies, resulting in a finalized Purpose and Need Statement for the project. The Initial Alternatives screening criteria based upon the Purpose and Need described in this document are now considered finalized and were used by the SLT SEIS Study Team to screen the alternatives utilizing the rating system described in this technical memorandum. The results of this screening may be viewed in **Appendix B: Initial Alternative Screening Results** and are summarized below.

Initial Alternatives dismissed from further consideration

TSM/TDM Alternative – This Initial Alternative was eliminated from consideration as a stand-alone alternative due to its relatively low ability to reduce congestion and enhance safety in comparison to the other build alternatives. Although this alternative is eliminated from consideration as a stand-alone solution to congestion and safety in the SLT corridor, individual elements of the alternative may be incorporated into the build alternatives that have been retained for further development.

Multimodal Alternative – Similar to the TSM/TDM Alternative, the Multimodal Alternative was eliminated as a stand-alone alternative due to its lack of ability to meet the purpose and need of the project through reducing congestion and enhancing safety in comparison to build alternatives that add capacity. Likewise, individual elements of this alternative, in combination with elements of the TSM/TDM Alternative, may be incorporated into the build alternatives retained for further development to maximize alternative performance.

Build Alternative – Add Capacity Expressway (West Section) – This Initial Alternative was eliminated from further consideration primarily due to its inability to enhance safety in comparison to the Build - Add Capacity Freeway and Build- Add Capacity Tolle Highway alternatives. The primary difference between these alternatives is the retainage of at-grade intersections in the Expressway alternative, while all at-grade intersections are converted to limited access full interchanges in the Freeway and Tolle Highway alternatives. At-grade intersections within the existing corridor are locations with high frequencies of crashes and those intersection configurations perform poorly in safety evaluations in comparison to limited access interchanges.

Initial Alternatives retained for further development

No Action Alternative – As previously described, the No Action Alternative makes no capacity improvements on the existing West Section of the SLT beyond improvements that are directly related to ongoing rehabilitation and maintenance of the facility or projects that are already committed or programmed by local or State funding programs. The alternative does not meet several elements of the purpose and need established for the project. However, this alternative is retained throughout the NEPA evaluation process and its potential impacts are disclosed to provide a basis of comparison for other build alternatives.

Build Alternative – Add Capacity Freeway (West Section) – This Initial Alternative will be carried forward for further development due to its substantial ability to enhance safety and reduce congestion in comparison to all other alternatives. This alternative eliminates all at-grade intersections and converts them to limited access full interchanges while also adding capacity in the form of additional travel lanes. By removing at-grade intersections, this alternative addresses the issue of locations with high frequencies of crashes while also increasing capacity and improving levels of service. In addition, various elements of the Multimodal and TSM/TDM alternatives may be incorporated into this Build Alternative.

Build Alternative – Add Capacity Tolloed Highway (East and West Sections) - This alternative is similar to the previous 'Add Capacity Freeway' build alternative and will be carried forward for additional development and analysis. However, this alternative includes the ability to collect tolls through all-electronic tolling (AET) to fund the construction of the facility. The tolled highway section would be consistent with the SLT East Section to provide system continuity for travelers. Like the freeway build alternative, this alternative will add capacity to reduce congestion, and will eliminate at-grade intersections thereby enhancing safety in comparison to other alternatives. Various elements of the Multimodal and TSM/TDM alternatives may be incorporated into this Build Alternative.

APPENDIX A: INITIAL ALTERNATIVES EXHIBITS



**South Lawrence Trafficway
No Action Alternative**

DRAFT
For discussion only. Not final.

March 2019



Not to Scale



Installation of ITS elements throughout the SLT corridor including driver information systems that convey travel times, weather advisory data, incident avoidance information, and other pertinent congestion reduction and incident management information. The KC Scout ITS system elements are considered the model for system implementation in the SLT corridor.



Interim Safety Improvements
 KDOT has identified several interim safety improvements for the SLT, such as a queue warning system and intersection geometric improvements.

Legend

- Construction of intersection improvements to improve safety and traffic circulation. Improvements may include:
 - Adding right and left turn bays at intersections
 - Lengthening existing turn bays
 - Adaptive signal timings
 - Increasing lane widths at intersections
 - Widening shoulders
- Adding rumble strips
- Enhanced bicycle/pedestrian crossings
- ITS improvements including ramp metering, queue detection and advance warning for roadway transitions.

— — — US 40 safety improvements

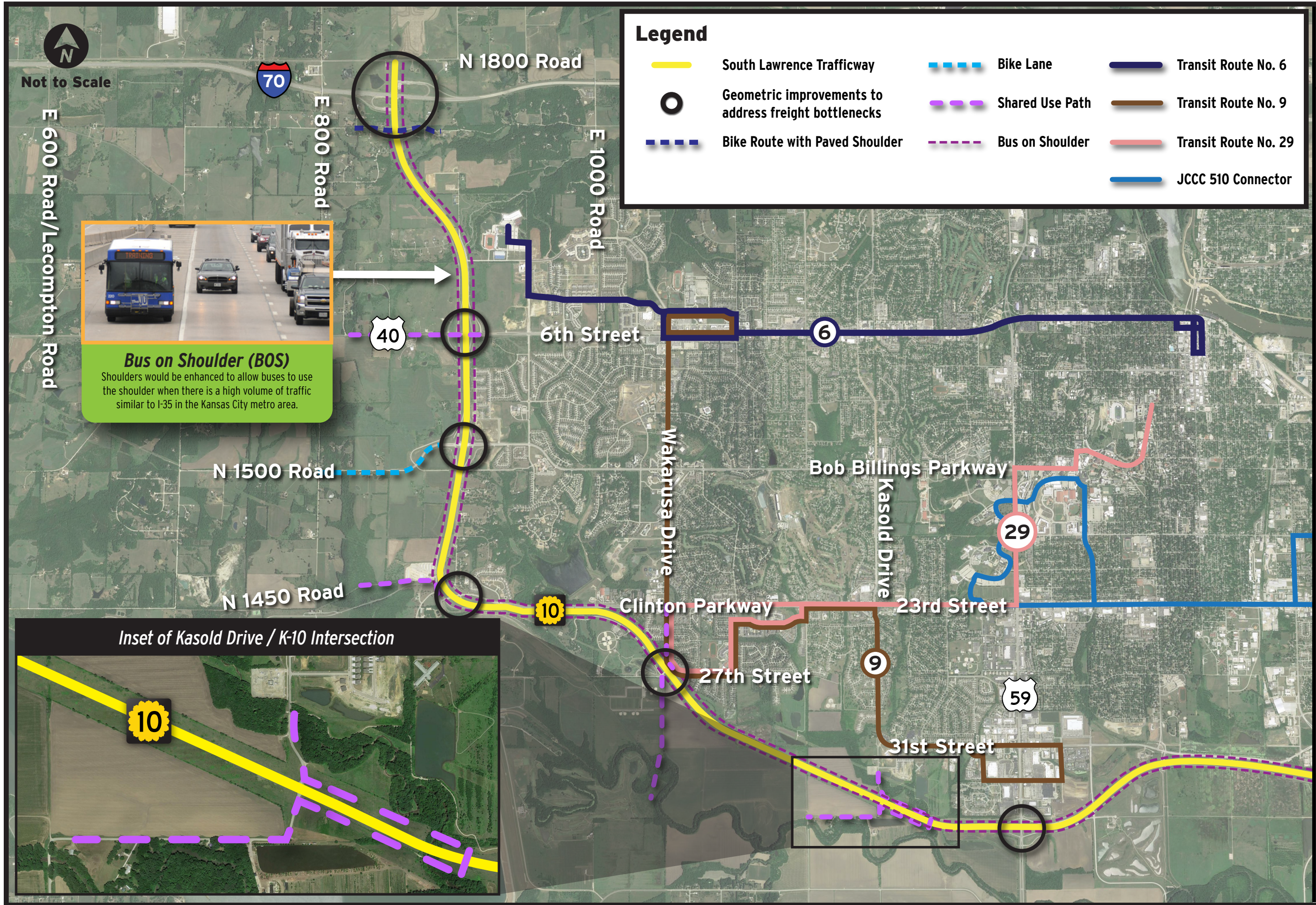
— South Lawrence Trafficway

**South Lawrence Trafficway
TSM / TDM Alternative**

DRAFT
 For discussion only. Not final.

March 2019

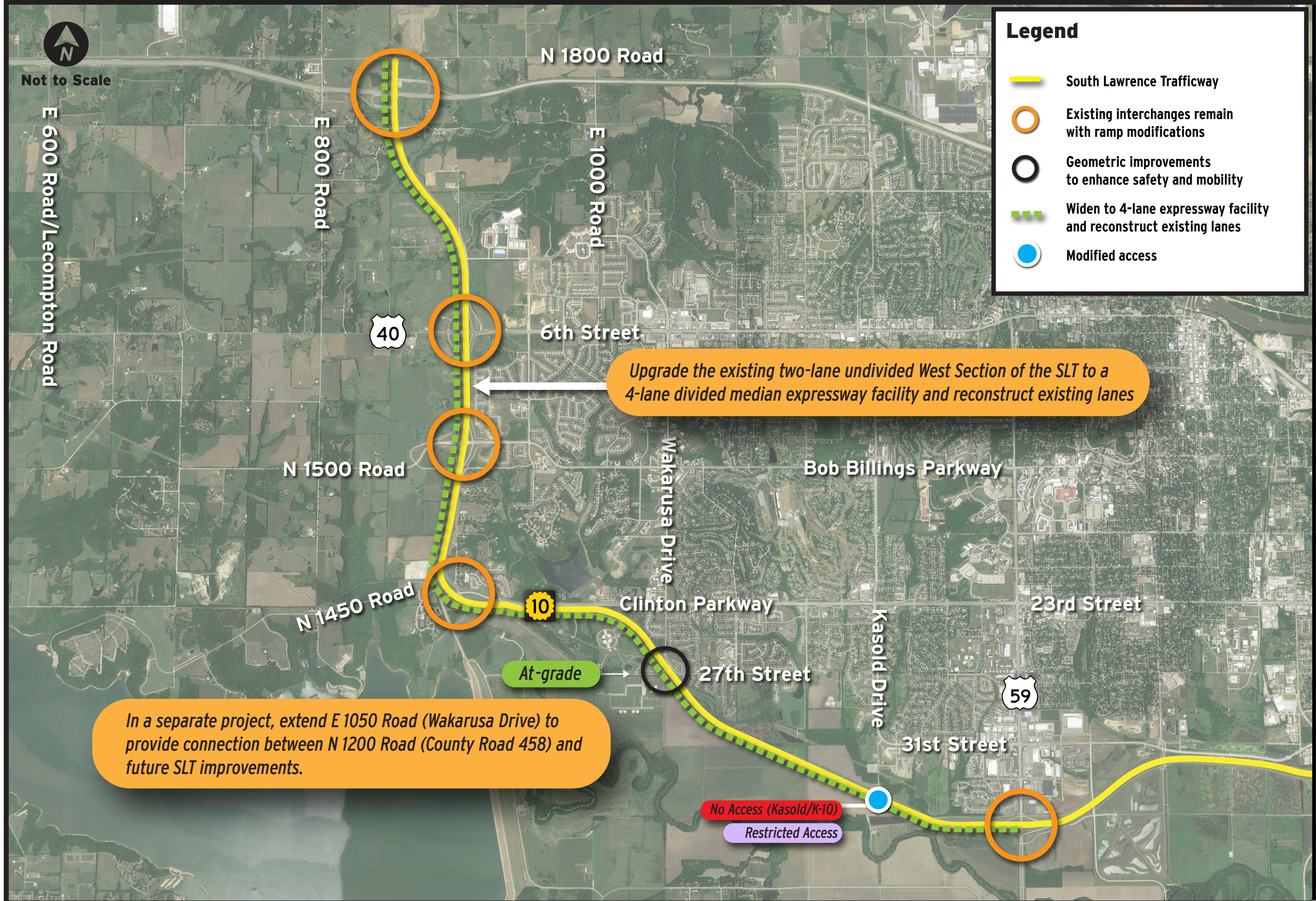
EXHIBIT 3



South Lawrence Trafficway Multimodal Alternative

DRAFT
For discussion only. Not final.

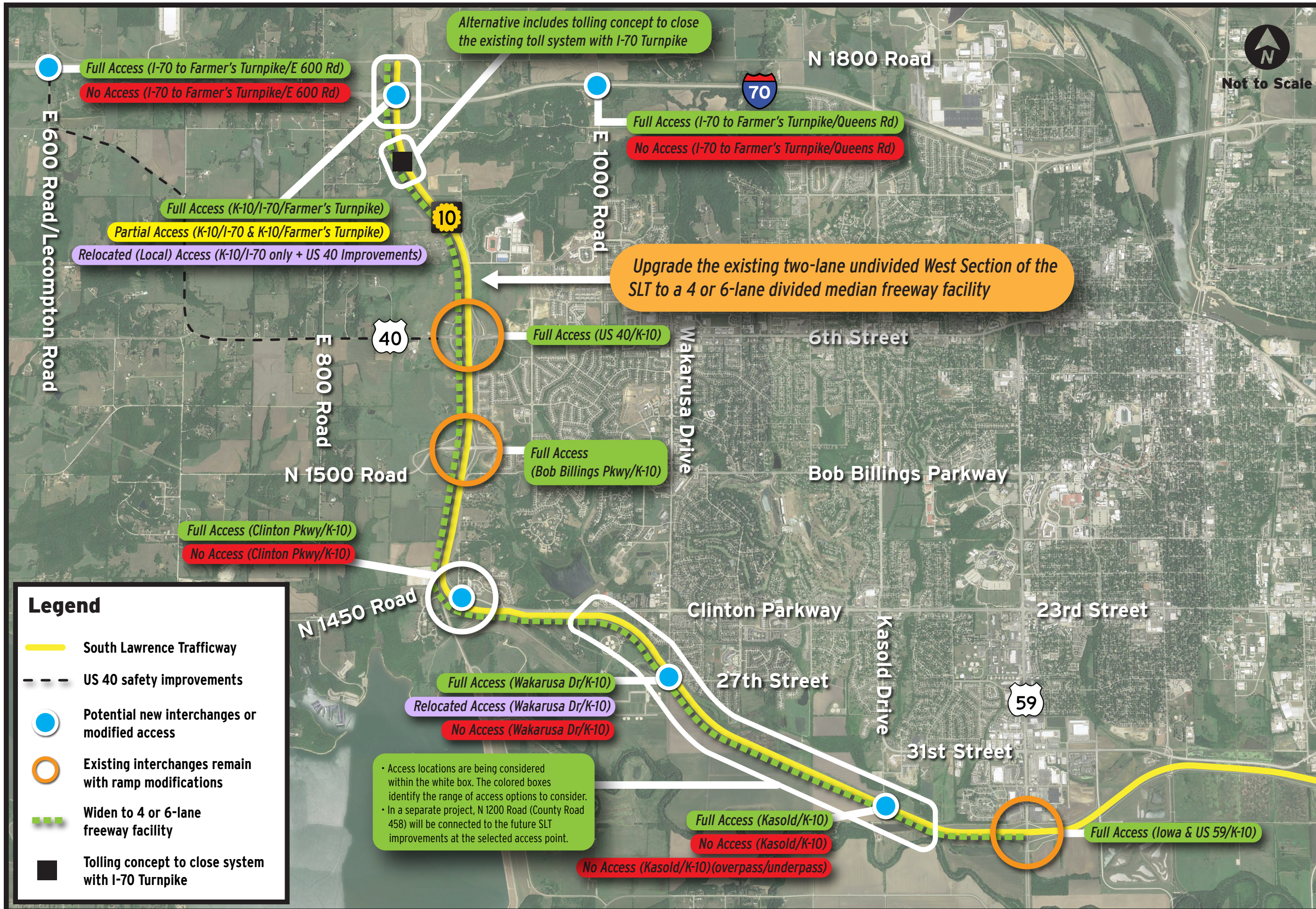
March 2019



**South Lawrence Trafficway
Add Capacity Expressway Alternative**

DRAFT
For discussion only. Not final.

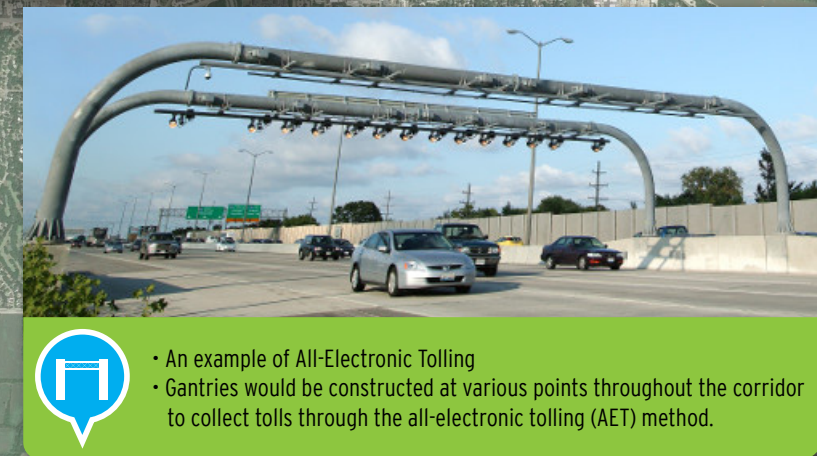
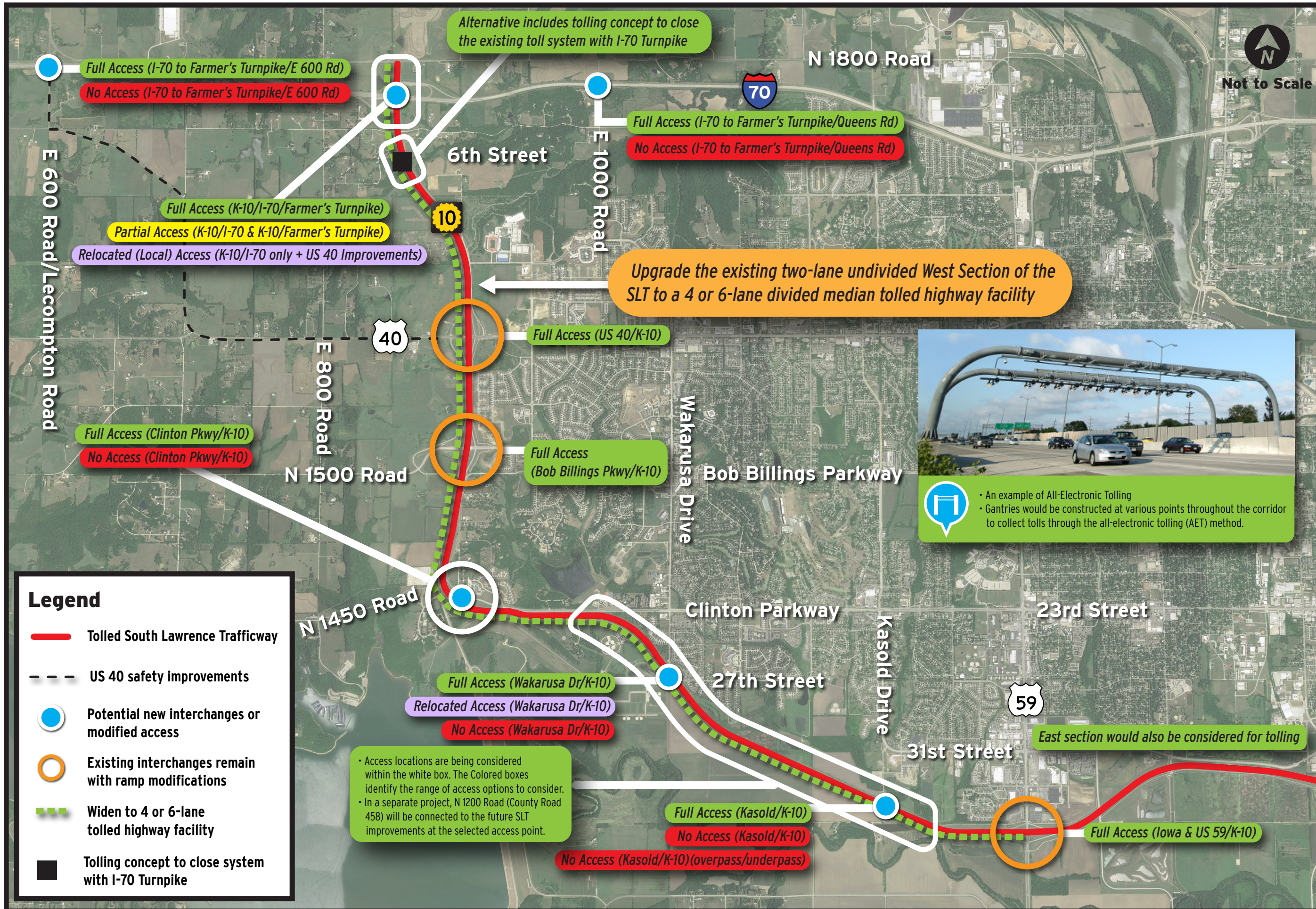
March 2019



**South Lawrence Trafficway
Add Capacity Freeway Alternative**

DRAFT
For discussion only. Not final.

March 2019



**South Lawrence Trafficway
Add Capacity Tolled Highway Alternative**

DRAFT
For discussion only. Not final.

March 2019

APPENDIX B: INITIAL ALTERNATIVES SCREENING RESULTS

**EXHIBIT
1**

Alternatives	Screening Criteria								
	Reduce Congestion		Enhance Safety	Promote a Multimodal Transportation System				Support Local and Regional Growth	
	Potential Improvements to LOS D or Greater on K-10 and Major Urban Arterials	Decrease in Travel Time	Reduction in Number and Severity of Crashes	Potential for Crossing Improvements	Increased Accommodation of Bus Transit Routes	Provide Connection to Pedestrian, Bike or Trail Facility	Potential to Eliminate Freight Bottlenecks	Compatibility with Local Planning	Compatibility with Regional Planning
No Action									
Transportation System Management/Transportation Demand Management									
Multimodal									
Build - Add Capacity Expressway									
Build - Add Capacity Freeway									
Build - Add Capacity Tolled Highway									



No Achievement



Moderate Achievement



High Achievement



Some Achievement



Substantial Achievement

Purpose and Need Criteria

**EXHIBIT
2**

Alternatives	Screening Criteria								
	Environmental Fatal Flaws	Parks Impacted	Community Facilities Impacted	Changes to Land Use	Environmental Justice Impacts	Noise Impacts	Natural Environmental Resources Impacts	Hazardous Materials and Contaminated Sites Impacts	Stakeholder and Public Support
No Action	No	⊕	⊕	⊕	⊕	⊕	⊕	⊕	
Transportation System Management/Transportation Demand Management	No	⊕	⊕	⊕	⊕	⊕	⊕	⊕	
Multimodal	No	⊕	⊕	⊕	⊕	⊕	⊕	⊕	
Build - Add Capacity Expressway	No	⊕	⊕	⊕	⊕	⊕	⊕	⊕	
Build - Add Capacity Freeway	No	⊕	⊕	⊕	⊕	⊕	⊕	⊕	
Build - Add Capacity Tolloed Highway	No	⊕	⊕	⊕	⊕	⊕	⊕	⊕	

Environmental Criteria



No Impact



Moderate Impact



High Impact



Some Impact



Substantial Impact

**EXHIBIT
3**

Alternatives	Screening Criteria				
	Engineering Fatal Flaws	Right of Way Impacts	Allows for Project Phasing	Maintenance of Traffic and Constructability	Project Cost
No Action	No	⊕	Yes	⊕	⊕*
Transportation System Management/Transportation Demand Management	No	⊕	Yes	⊕	⊕
Multimodal	No	⊕	Yes	⊕	⊕
Build - Add Capacity Expressway	No	⊕	Yes	⊕	⊕
Build - Add Capacity Freeway	No	⊕	Yes	⊕	⊕
Build - Add Capacity Tolled Highway	No	⊕	Yes	⊕	⊕

* Project Cost for No Action Includes Maintenance and Preservation of the Existing Facility



No Impact / No Cost



Moderate Impact / Moderate Cost



High Impact / High Cost



Some Impact / Low Cost



Substantial Impact / Substantial Cost

Engineering Criteria