

## *Appendix 1*

U.S. 69 Expansion Project Alternatives Screening with Screening Matrix Appendix



**DRAFT**

US 69 EXPANSION PROJECT

# Alternatives Screening

June 2021

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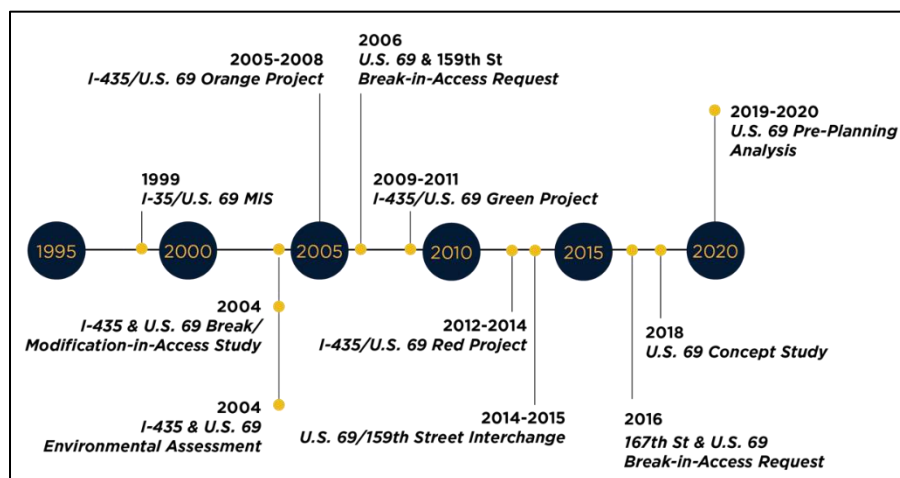
# 1.0 INTRODUCTION AND BACKGROUND HISTORY

The purpose of this technical report is to describe the alternatives for screening, proposed screening criteria and to document the results of the Initial (Tier 1) and Reasonable (Tier 2) screening process for the U.S. 69 Express Environmental Assessment (EA).

## 1.1 Project Background

The U.S. 69 Corridor has been evaluated for improvement within a range of previous studies and projects, initiated with the I-35/U.S. 69 Major Investment Study (MIS) prepared in 1999. The MIS developed a long-term vision for improving the corridor, which has led to a series of improvement projects over the past 10-15 years, as shown on Figure 1-1.

**Figure 1-1: U.S. 69 Corridor Previous Studies and Projects**



Of direct relevance to the U.S. 69 study area, a previous I-435 & U.S. 69 Environmental Assessment with a Finding of No Significant Impact (FONSI) was prepared in 2004 for the northern portion of the U.S. 69 Corridor study area from just north of 95<sup>th</sup> Street to the south to just east of Antioch Road. The proposed action included adding additional lane capacity, reconfiguring interchanges and constructing a new interchange at I-435 and Antioch Road. The purpose and need as it pertains to U.S. 69 was to relieve congestion and traffic levels of service, improve roadway deficiencies, improve safety and provide enhanced access to major employment centers. As an outcome of the approved 2004 EA/FONSI, U.S. 69 was widened and reconstructed north of 103<sup>rd</sup> St; the U.S. 69 interchanges with 95<sup>th</sup> Street, 103<sup>rd</sup> Street, College Boulevard, 119<sup>th</sup> Street and I-435 were modified and



reconfigured; and a collector-distributor road network was constructed along southbound U.S. 69 between I-435 and 119<sup>th</sup> Street.

The 2018 U.S. 69 Corridor Concept Study, prepared by the City of Overland Park, investigated the current and future safety and operational needs in the U.S. 69 Corridor from 179<sup>th</sup> Street to 103<sup>rd</sup> Street. This study considered alternatives for the future widening and upgrade of the corridor and its interchange connections.

In 2020, a U.S. 69 Pre-Planning Study was conducted by the Kansas Department of Transportation (KDOT), the City of Overland Park and the Kansas Turnpike Authority (KTA) to evaluate the potential for tolling in the corridor using an express toll lanes concept. This sketch-level planning study concluded that an express toll lane concept is technically feasible, and that toll revenue collected could be used to offset a portion of the cost to design, construct and operate the new lanes on U.S. 69. However, the study does not authorize toll lanes or their construction and more extensive analysis on the feasibility of the proposed express toll lanes and their environmental clearance is required prior to moving forward into design and construction. Preparation of this U.S. 69 Express EA will build upon the previous work performed for the I-435 & U.S. 69 EA/FONSI, the U.S. 69 Concept Study and the U.S. 69 Pre-Planning Study, as applicable.

## **2.0 OVERVIEW OF U.S. 69 EA ALTERNATIVES DEVELOPMENT PROCESS**

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Initial Alternatives developed within the U.S. 69 Concept Study and Pre-Planning Study were carried forward for evaluation within this EA. Other Initial Alternatives for consideration were developed through collaboration with local, regional, and State stakeholders. A No-Build alternative was also considered to serve as a baseline for comparison.

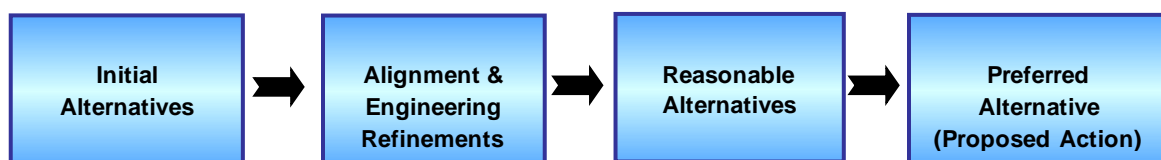
The alternatives development process entails screening of the alternatives to determine which warrant further consideration for the project. The Initial Alternatives Screening, or Tier 1, is conducted utilizing Screening Criteria established for the project, encompassing elements of the Purpose and Need, the Natural and Human Environment, Engineering and Costs and Public and Stakeholder Input. The initial screening is qualitative in nature as described later in this document. Under the Tier 1 screening all Initial Alternatives were evaluated first against the Purpose and Need criteria established for the project. In addition to the No-Build Alternative, only those alternatives that satisfied the Purpose and Need criteria as standalone alternatives

were carried through for additional Tier 1 screening against Natural and Human Environment criteria, Engineering and Cost criteria, and Public Stakeholder criteria.

Based on the screening of the Initial Alternatives, the alternatives development process transitions into a second round of Reasonable Alternative(s), or Tier 2 screening, should more than one alternative prove feasible and prudent to consider as the Proposed Action for the project. These Reasonable Alternatives will be further evaluated quantitatively to determine their potential impacts in comparison to the No Build Alternative and each other.

Through the screening of the Reasonable Alternatives a Preferred Alternative, or Proposed Action, will be selected. This Preferred Alternative will be the alternative that meets the purpose and need for the project while avoiding, minimizing or mitigating impacts to both the natural and human environment, and considers engineering and costs, and public and stakeholder input. **Figure 2-1** illustrates the alternatives development process for the project.

**Figure 2-1: Alternatives Development Process**



The Preferred Alternative will be carried forward and evaluated alongside the No-Build alternative as part of the EA. The process of screening alternatives with an ascending level of detail assures decision-makers of the fulfillment of the improvement's goals, while fostering informed consent with reviewing agencies, stakeholders, and the public.

### 3.0 DESCRIPTIONS OF INITIAL ALTERNATIVES

The Initial Alternatives identified for this project include:

- No-Build
- Improvement to Alternative Routes
- Existing Capacity Management
- Multimodal
- Add Capacity - Traditional Widening
- Add Capacity - Express Toll Lanes

The details of these Initial Alternatives, at this stage developed as standalone alternatives, are discussed below.

### 3.1 No-Build

As part of the environmental clearance process, a No-Build Alternative is used as a benchmark for comparison against the other alternatives being evaluated to improve a project. The No-Build Alternative means that no roadway and bridge reconstruction or capacity improvements would be constructed on the U.S. 69 Corridor. This alternative focuses on minor pavement and bridge rehabilitation and ongoing maintenance such as mowing and snow removal. It also includes future projects that are currently planned or committed in state, regional and local transportation improvement plans through the 2050 design year of this project.



For U.S. 69, the following improvements are committed for the corridor:

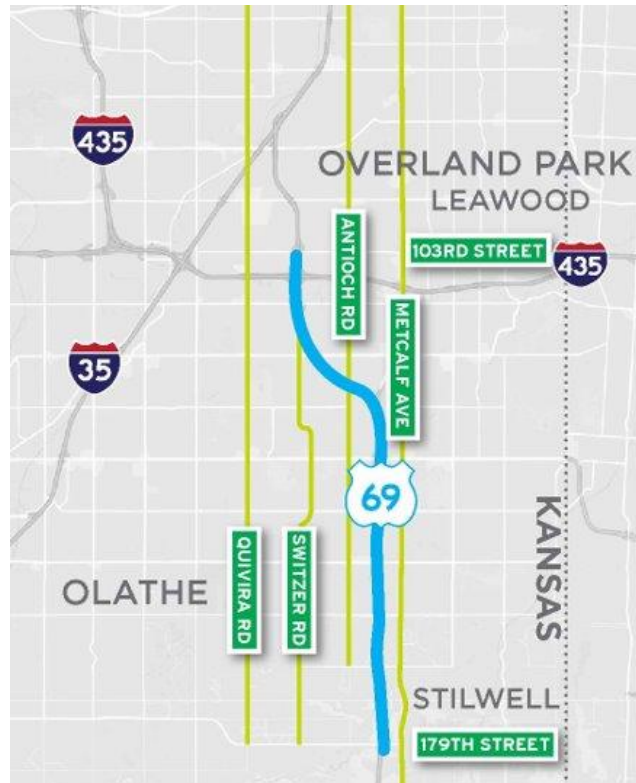
- U.S. 69 northbound bridge at 179th
- U.S. 69 guardrail end terminal updates

### 3.2 Improvement to Alternative Routes

This alternative includes improvements to parallel and supporting arterial roadways on the local city or county roadway network such as Metcalf Avenue, Antioch Road, Switzer Road and Quivira Road rather than directly improving U.S. 69 as shown in Figure 3-1



**Figure 3-1: Improvement of Alternative Routes**



Strategies for improving alternative routes could include:

- Intersection improvements;
- Upgrading and coordinating traffic signals;
- Building additional travel lanes;
- Transit improvements such as new bus routes, more frequent routes or bus rapid transit;
- Enhanced traveler information and other technology improvements to better manage traffic flow and safety.

In order to make these types of improvements to alternative routes, local (city or county) or area transit agency funding and programming commitments would be required.

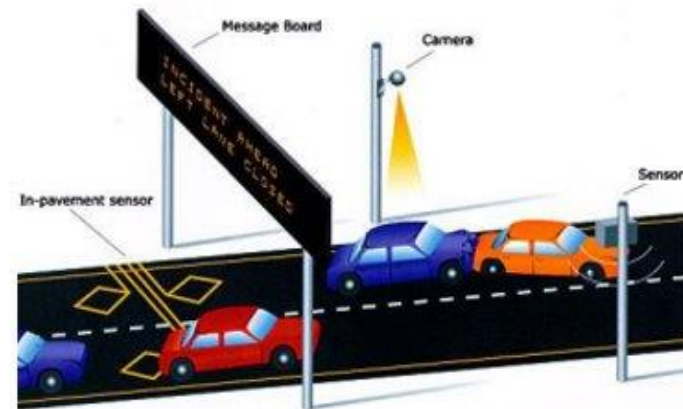
### 3.3 Existing Capacity Management

This alternative evaluates strategies to better manage the capacity of the existing lanes and access points on the U.S. 69 corridor. These strategies include low-cost ways to improve traffic operations and safety of the existing roadway to increase traveler mobility, improve safety and reduce traffic bottlenecks.

These types of strategies fall into two key categories:

- Travel Demand Strategies (TDM) - Strategies that manage the travel demand along the corridor such as carpooling, staggering work shifts and telecommuting by working from home.
- Transportation Systems Management Strategies (TSM) – strategies that manage traffic operations and safety through the use of technology or enhanced traveler information. This includes:
  - KC Scout type traveler information on travel times, incidents, or delays;
  - Ramp metering through traffic signals on ramps that help regulate the flow of vehicles entering the corridor from local interchanges; and
  - Queue warning systems that alert motorists of approach slowdowns or traffic backups ahead on the roadway.

#### KC Scout Traffic Management Components



The existing U.S. 69 corridor has some of these TSM strategies in operation today such as the ramp meters in operation at the northbound entrance ramps from 135<sup>th</sup> St.

### 3.4 Multimodal

This alternative considers strategies to improve travel for all modes of transportation, rather than just passenger vehicles. This includes improvements to bicycle and pedestrian facilities and trails parallel to or crossing U.S. 69, as well as transit service enhancements to improve corridor throughput.

Bicycle and Pedestrian improvements could include:

- Improving trails located parallel to or crossing the corridor;
- Adding sidewalks or designated bicycle and pedestrian areas to corridor bridge crossings; and
- Other bicycle and pedestrian improvement strategies identified in state, regional and local plans.

Transit improvements could include:

- Increased frequency and number of bus routes on U.S. 69;
- Express Bus or bus-on-shoulder use during peak periods of the day;
- Transit on-demand strategies;
- Improved/increased number of park-and-ride lots; and
- Other transit improvement strategies identified in state, regional or area transit agency plans.

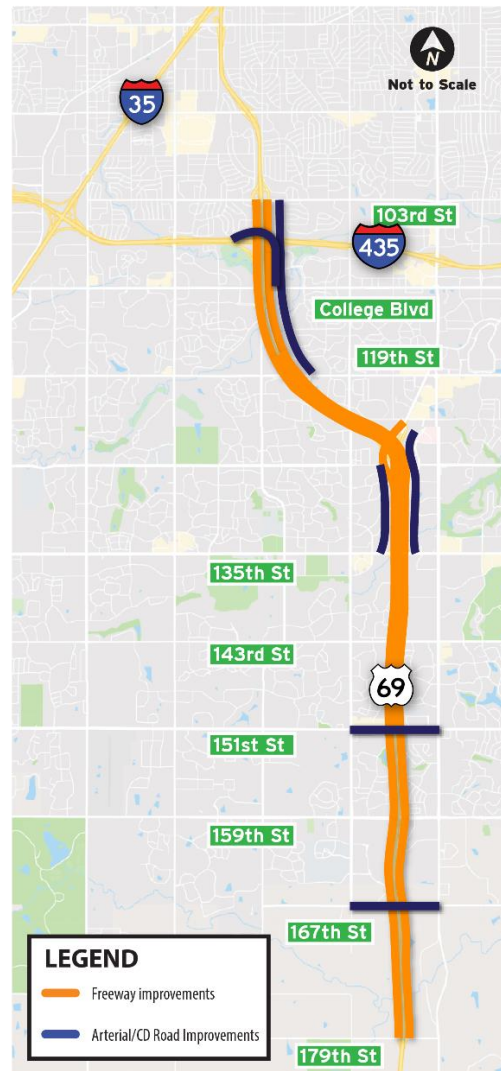


Other transit strategies, such as light rail, commuter rail and streetcar were not recommended for evaluation for the project due to their higher construction costs and lower ridership forecasts to address U.S. 69 traffic congestion needs.

In order to make these types of multimodal improvements, local (city and county), regional and area transit agency funding and programming commitments would be required.

### 3.5 Add Capacity - Traditional Widening

This alternative was initially developed within the U.S. 69 Concept Study and carried forward for evaluation in this EA, it is shown in **Figure 3-2**. The alternative considers the reconstruction of pavement and bridges along the corridor and constructing an additional lane in each direction of travel. The alternative also incorporates additional capacity to improve connections to and from interchange ramps along the corridor, such as collector/distributor roads (like the ramps used to access Roe and Nall on I-435) and auxiliary lanes, which provide a continuous lane of travel between closely spaced interchange entrance ramps and exit ramps.

**Figure 3-2: Add Capacity - Traditional Widening**

Geometric and condition improvements include:

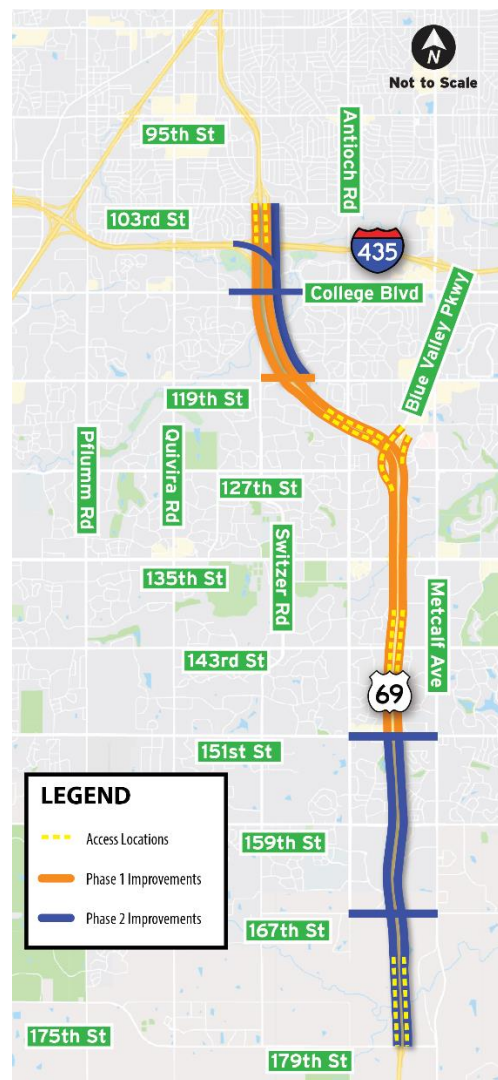
- Add an additional travel lane in each direction;
- Reconfigure interchange at I-435;
- Reconfigure interchange at Blue Valley Parkway;
- Improvements to local interchanges and supporting cross streets; and
- Reconstruction of existing pavement and bridges.

If this alternative is selected, improvements likely would be constructed in phases. Decisions on phasing would be based on funding availability and when traffic congestion and safety needs warrant the improvements along the corridor. For this analysis the full buildout of the alternative prior to the project design year is considered when rating against the screening criteria.

### 3.6 Add Capacity - Express Toll Lanes

This alternative was initially developed within the U.S. 69 Pre-Planning Study and carried forward for evaluation in this EA, is shown in Figure 3-3. This alternative includes adding an additional lane in each direction that would provide express toll service along the corridor by managing congestion in the lanes through pricing, vehicle eligibility and access strategies. This alternative also includes reconstruction of bridges and pavement in the corridor.

**Figure 3-3: Add Capacity - Express Toll Lanes**



Geometric and condition improvements include:

- Add an additional travel lane in each direction for express toll lane service;
- Reconfigure interchange at I-435;
- Reconfigure interchange at Blue Valley Parkway;



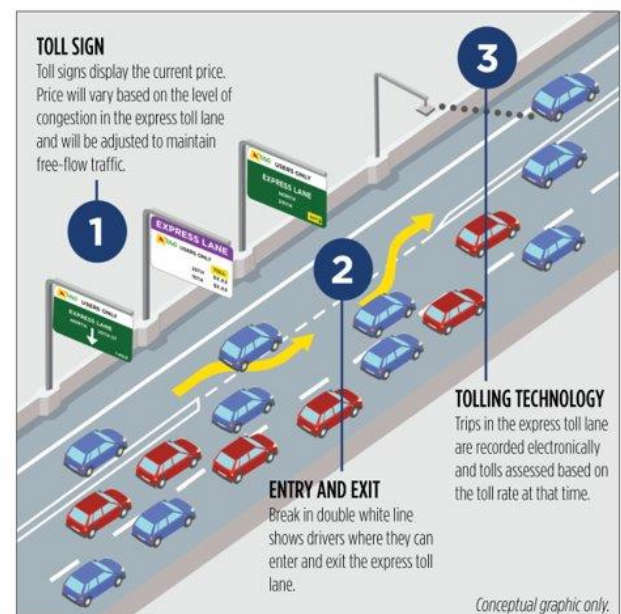
- Improvements to local interchanges and supporting cross streets;
- Reconstruction of existing pavement and bridges.

With the Express Toll Lanes Alternative the two lanes in each direction that exist today would remain free of any tolls as required by law. An additional express toll lane would then be added in each direction and constructed to the inside, in the current median of the corridor. Locations where travelers can enter or exit the express toll lanes would be indicated with a break in the double stripe lines and on overhead messaging signs.

A toll would be charged only to motorists who choose to enter and use the express toll lane. The toll price charged would vary depending on the time of day, length of the trip and the amount of traffic congestion on the corridor. The more traffic congestion there is along the corridor, the higher the toll to help manage the reliability of the trip in the express toll lanes. Typically, that would mean that the highest tolls would be charged during morning and evening rush hours; lower tolls during less busy times of day.

The express toll lanes would operate at typical highway speeds and be all electronic with no stopping to pay cash at toll plazas along the corridor, shown in **Figure 3-4**. Tolls would be assessed electronically either by reading a toll tag – such as K-TAG – or by reading the vehicle’s license plate and charging through video tolling.

**Figure 3-4: Express Toll Configuration**



## 4.0 SCREENING CRITERIA

Screening Criteria were developed across four broad categories covering various aspects of the project and community input.

### Screening Criteria Categories:

- Project Purpose and Need
- Natural and Human Environment
- Engineering and Cost
- Public and Stakeholder Input



Each broad category contains several criteria, discussed below. Ratings for each alternative are summarized in a Screening Matrix.

## 4.1 Purpose and Need Screening Criteria

The Purpose and Need for the project is defined as follows.

The proposed project is needed to modernize and expand U.S. 69 between 103<sup>rd</sup> Street and 179<sup>th</sup> Street in Overland Park, Kansas. The corridor has become insufficient to meet current and future mobility needs, resulting in worsening safety, reliability and congestion. There is also a need to address the corridor's issues with transportation improvements that offer long-term sustainability and flexibility for all users.

The proposed project is needed to:

- **Improve safety** to address crash frequency and congestion related-crashes within the corridor;
- **Reduce congestion** and improve traffic operations to meet existing and future travel demands;
- **Promote sustainability** by addressing infrastructure condition and ongoing operations and maintenance needs, supporting environmental stewardship, as well as improving long-term traveler reliability;
- **Provide flexible choices** by promoting a transportation system that accommodates the needs for all users and modes; and
- **Accommodate local and regional growth** through coordinated transportation improvements consistent with planned and proposed community land use.

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

- **Improve Safety** – This group of screening criteria evaluates the extent to which each alternative addresses crash frequency and congestion-related crashes.
  - **Change in Congestion-Related Crashes** - This screening criteria evaluates the extent to which an alternative reduces the number and severity of congestion-related crashes, such as rear-end, sideswipe and sudden changes in speed.
  - **Improve Bicycle and Pedestrian Safety Along Crossroads** – This screening criteria evaluates the extent to which an alternative improves safety for bicycles and pedestrians along crossings over or under U.S. 69.
- **Reduce Congestion** – This group of screening criteria evaluates the extent to which each alternative improves traffic operations to meet existing and future travel demands.

- **Change in Travel Level of Service on U.S. 69** – This screening measure is rated using LOS reporting, with a scale encompassing LOS A (best) through LOS F (worst). This measure evaluates the change in LOS along the corridor over existing and future No-Build conditions.
- **Change in Travel Speed** - This measure evaluates the change in travel speed along the corridor over existing and future No-Build conditions.
- **Change in Corridor Throughput** - This measure evaluates the change in person throughput along the corridor over existing and future No-Build conditions.
- **Promote Sustainability** - This group of screening criteria evaluates the extent to which each alternative addresses infrastructure condition and ongoing operations and maintenance needs, supporting environmental stewardship, as well as improving long-term traveler reliability.
  - **Change in Roadway and Bridge Condition** - This measure is a high-level indicator of an alternative's ability to address existing roadway and bridge infrastructure condition deficiencies.
  - **Change in Travel Time Reliability** – This measure evaluates the change in travel times and travel reliability over existing and future No-Build conditions.
  - **Support Environmental Sustainability** – This measure evaluates the alternative's ability to support green infrastructure and environmental stewardship best management practices and decrease the project's energy and greenhouse gas emissions.
- **Provide Flexible Choices** – This group of screening criteria evaluates the extent to which the alternative provides flexible choices for all users and modes.
  - **Long-term Corridor Operation Flexibility and Adaptability** - This measure is a high-level indicator of an alternative's ability to provide flexible and adaptable operations and management of the corridor over the long-term as condition and performance changes.
  - **Access and Connectivity to Bicycle and Pedestrian Facilities** – This measure evaluates each alternative's ability to maintain or improve access and connectivity of bicycle and pedestrian facilities along and across the corridor. This factor is not evaluating a bicycle and pedestrian facility on the U.S. 69 travel lanes or shoulder.
  - **Reliability for Transit Riders** - This measure evaluates each alternative's ability to provide a reliable transit experience for riders through the corridor.

- ***Accommodate Local and Regional Growth*** – This group of screening criteria evaluates the extent to which an alternative accommodates planned population, land use and other growth and development in the local study area and the Kansas City region.
  - **Compatibility with Local Planning** –The measure evaluates an alternative’s compatibility and consistency with city and county planning and land use goals for future growth and development.
  - **Compatibility with Regional Planning** –The measure evaluates an alternative’s compatibility and consistency with regional Metropolitan Planning Organization (MPO) (MARC) planning and land use goals for future growth and development.
  - **Employment Equity** – This measure evaluates an alternative’s ability to provide equitable access to jobs and opportunities for all users of the corridor.

## 4.2 Natural and Human Environment Screening Criteria

All Initial Alternatives are evaluated against the Purpose and Need criteria for the project. Only those alternatives that satisfy the Purpose and Need criteria are then carried through for qualitative analysis against Natural and Human Environment criteria, Engineering and Cost criteria, and Public Stakeholder Input criteria.

The natural environmental impacts are related to physical features of the landscape. The human environmental impacts include any community, neighborhood, environmental justice and business resources that may be affected by the proposed project alternatives.

- **Park and Recreational Area Impacts** – This measure includes the number and extent of parks or designated recreational areas impacted by each alternative.
- **Community Facility Impacts** – This measure includes the number of community facilities impacted by each alternative.
- **Environmental Justice Impacts** - This measure considers direct and indirect impacts to identified environmental justice (EJ) populations, including low-income and minority populations. Direct impacts include factors such as relocations as related to needed right-of-way or potential funding mechanisms. Indirect impacts are any indirect or cumulative impacts to EJ populations.
- **Noise Impacts** - Noise impacts are typically related to needed right-of-way and proximity to sensitive noise receptors. This measure considers the potential for noise impacts from each alternative compared to existing and future No-Build conditions.

- **Natural Resource Impacts** – This measure assesses impacts to natural resources including wetlands, floodplains (100-year floodplain and floodway), critical habitat, and threatened and endangered (T&E) species.
- **Hazardous Material Impacts** - This screening measure includes a relative rating based on the number of hazardous materials and contaminated sites potentially impacted by each alternative.
- **Cultural and Historical Site Impacts** - This screening measure indicates impacts to archeological, cultural and historic sites including those listed or eligible for listing as state or national register of historic places.
- **Air Quality, Emissions and Energy Impacts** – This screening measure indicates an alternative’s potential impact on local and regional air quality, greenhouse gas emissions and energy resources.
- **Indirect and Cumulative Impacts** - This screening measure indicates positive, neutral, or negative indirect and combined impacts from any environmental criteria.

### 4.3 Engineering and Cost Screening Criteria

The study team is evaluating each alternative for potential engineering and cost considerations including roadway and interchange geometrics, right-of-way and displacement impacts, project construction timeline, phasing, maintenance of traffic and constructability, as well as the ability to address project costs and funding needs. Like the Natural and Human Environment criteria, only Initial Alternatives that satisfy the Purpose and Need criteria are evaluated qualitatively against the Engineering and Cost criteria.

- **Roadway and Interchange Geometrics** – This is a high-level assessment of the alternative’s ability to improve roadway and interchange geometric deficiencies, such as horizontal and vertical curves, weaving and merging distances, and turning radii.
- **Right-of-Way Impacts**- This is a high-level assessment of right-of-way needs from private property for each alternative. A more comprehensive, quantifiable assessment will be made as the study progresses.
- **Residential or Business Displacements** - This is a high-level assessment of potential displacements to residences and/or businesses for each alternative. A more comprehensive, quantifiable assessment will be made as the study progresses.
- **Timing of Construction** – This criterion is a high-level assessment to determine which alternative(s) can be advanced through the project development pipeline and constructed under the fastest timeline.

- **Ease of Project Phasing, Maintenance of Traffic and Constructability** – This high-level measure is intended to determine the ease or complexity of project phasing, staging and anticipated road closures during construction.
- **Estimated Construction Costs** – This screening measure evaluates the relative level of anticipated construction costs for implementing each alternative.
- **Estimated Life-Cycle Costs** – This screening measure evaluates the anticipated costs of operating and maintaining each alternative over its expected life cycle.

#### 4.4 Public and Stakeholder Input Screening Criteria

The project team is evaluating each alternative based on public and stakeholder input received on the alternatives. This input is being provided through numerous sources and includes a broad cross section of interested stakeholders and the general public. Input received from public and stakeholder activities, such as stakeholder interviews and presentations, Advisory Group meetings, public information meetings, statistically valid community surveys, community focus group sessions, and social media outreach is incorporated into the screening process for the alternatives using public comment tools on the website, at meetings and through social media channels to document public and stakeholder feedback on the project.

- **Public and Stakeholder Input** - This screening measure indicates positive, neutral, or negative reactions from stakeholders and the public on each alternative and is captured via the project team's public and stakeholder outreach activities.

#### 4.5 Screening Rating System

The initial range of alternatives are rated qualitatively using a Harvey balls/ideograms rating system (Figure 4-1). Where applicable, quantifiable data on the criteria is included in the environmental consequences and impact analysis for the EA for the No-Build and any proposed actions being carried forward from the initial screening of alternatives as Reasonable Alternatives (Tier 2 screening).

Each symbol relates to the extent of achieving a purpose and need goal or the level of potential impacts. Criteria for Tier 1 screening are classified as impact related or achievement related. Achievement related criteria evaluate items related to project purpose and need goals and impact related criteria evaluate items related to environmental or cost impacts of an alternative.

Alternatives have been compared against the No-Build Alternative and each other for each criterion. Differences or similarities in ratings indicate differences or similarities between the alternatives at achieving the criteria.

**Figure 4-1: Harvey Balls/Ideograms Rating System**



**High Impact/No or Low Achievement** – This rating denotes that achievement-based criteria and goals are not met (or very negligible), or there are high environmental or engineering/cost impacts.

**Substantial Impact/Slight Achievement** – This rating indicates some success at addressing achievement-based criteria and goals, or there are substantial environmental and engineering/cost criteria related impacts.

**Moderate Impact/Moderate Achievement** – This rating indicates a mid-level of success at addressing achievement-based criteria and goals, or there are some environmental and engineering/cost criteria related impacts.

**Slight Impact/Substantial Achievement** – This rating indicates increasing success at addressing achievement-based criteria and goals, or lower levels of environmental or engineering/cost related impacts. Achievement based criteria might be met under this rating, however an alternative could be rated as substantial achievement if another alternative exceeds it at addressing the criteria.

**No or Low Impact/High Achievement** – This rating indicates the highest level of success at meeting achievement-based criteria and goals. Achievement-based criteria are fully met under this rating. This rating can also indicate that there are approximately zero or very low impacts for environmental and engineering/cost criteria.



## 5.0 SCREENING OF INITIAL ALTERNATIVES

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In January 2021 the Purpose and Need Statement for the project was reviewed, commented upon and concurrence was provided by Participating agencies, including:





















































































- U.S. Army Corp of Engineers (USACE)
- U.S. Fish and Wildlife Service (USFWS)
- U.S. Environmental Protection Agency (EPA)
- Kansas Department of Health and Environment
- Kansas Department of Wildlife, Parks and Tourism
- Kansas State Historical Society
- Kansas Department of Agriculture
- Federal Aviation Administration (FAA)

The Initial Alternatives (Tier 1) Screening of all alternatives is based upon the Purpose and Need and the screening criteria established as a result. Please see **Appendix A.1** for the full Initial Alternatives Screening Matrix.

### 5.1 Purpose and Need Screening

The Purpose and Need Screening considered all Initial Alternatives for the project. Each alternative was evaluated across several criteria under each component of the Purpose and Need. **Figure 5-1** shows the screening matrix of all Initial Alternatives against the Purpose and Need for the project.

**Figure 5-1: Purpose and Need Screening**

Alternative	PURPOSE & NEED CRITERIA													
	Improve Safety		Reduce Congestion			Promote Sustainability			Provide Flexible Choices			Accommodate Local and Regional Growth		
	Reduction in number and severity of Congestion Related Crashes	Improve Bicycle and Pedestrian Safety at Crossroad Arteries	Change in Travel Level of Service	Change in Travel Speed	Change in Corridor Person Throughput	Change in Roadway & Bridge Condition	Change in Travel Time Reliability	Support Environmental Sustainability	Long-term Corridor Operations Flexibility and Adaptability	Access and Connectivity to Bicycle & Pedestrian Facilities	Reliability for Transit Riders	Compatibility with Local Planning	Compatibility with Regional Planning	Employment Equity
	Achievement	Achievement	Achievement	Achievement	Achievement	Achievement	Achievement	Achievement	Achievement	Achievement	Achievement	Achievement	Achievement	Achievement
No-Build														
Improvement to Alternative Routes														
Existing Capacity Management														
Multimodal														
Traditional Widening														
Express Toll Lanes														

**Improve Safety** – Adding new lanes of travel capacity does the most to improve the safety of the corridor as it will address crashes caused by stop and go traffic and includes improvements to roadway, ramp and interchange geometrics along the corridor.

**Reduce Congestion** – The non-capacity alternatives are shown to offer minor benefits for reducing congestion on U.S. 69 over a No-Build condition. The Multimodal Alternative offers benefits such as improving corridor throughput via transit and other ridesharing strategies. The Existing Capacity Management Alternative reduces congestion by providing increased traveler information on route decision-making through KC Scout technologies and other demand management strategies such as staggered work shifts or telecommuting. The Improvement to Alternative Routes Alternative is forecast to shift some localized traffic to parallel arterial routes. However, additional travel lanes are needed to address the current and projected traffic volumes on U.S. 69 so the Add Capacity - Traditional Widening and Add Capacity - Express Toll Lanes alternatives have the highest ratings for reducing congestion.

**Promote Sustainability** - The add capacity alternatives best address the needs to improve roadway and bridge condition and lifecycle costs as they include a complete reconstruction of existing corridor pavement and bridges. The Add Capacity - Express Toll Lanes Alternative rates better overall as it offers the greatest corridor trip reliability, resiliency and environmental stewardship benefits. The Multimodal Alternative was also evaluated to have moderate benefits for promoting sustainability due to its ability to provide higher corridor person throughput, increased trip reliability for transit users and better environmental stewardship by reducing the corridor's right-of-way footprint.

**Provide Flexible Choices** – The Multimodal Alternative offers improved transit, bicycle and pedestrian connections in the study area, which provides additional traveler flexibility and mode choice. However, the Add Capacity - Express Toll Lanes Alternative offers lane management strategies that are flexible and adaptable to changing corridor conditions and has the ability to accommodate transit in the express toll lanes, so it offers the greatest long-term flexibility in traveler choice.

**Accommodate Local/Regional Growth** – The alternatives that add new lanes of capacity to U.S. 69 were evaluated to best align with the city and region's anticipated growth strategies. These alternatives are incorporated into the planned and committed transportation improvements within state, regional and local planning documents to help accommodate future growth plans. The other alternatives were evaluated to moderately align with future growth strategies as they provide improved multimodal connections and enhanced traveler information technologies

and demand management strategies that are included in local and regional goals and area plans.

## 5.2 Initial Alternatives Dismissed from Further Consideration

Through the Purpose and Need Screening it became apparent that several alternatives did not meet the Purpose and Need of the project. The Improvement of Alternative Routes, Existing Capacity Management and Multimodal alternatives as stand-alone alternatives do not satisfy the Purpose and Need for the project. Components of those alternatives may ultimately be incorporated as part of the Preferred Alternative (Proposed Action), if appropriate and coordinated with city, county, region and transit agency plans and commitments.

**Improvement of Alternative Routes** – This Initial Alternative was eliminated from consideration as a stand-alone alternative due to its low achievement at improving safety, providing flexible choices, and promoting sustainability along U.S. 69 in comparison to other Initial Alternatives.

**Existing Capacity Management** – This Initial Alternative was eliminated from consideration as a stand-alone alternative due to its low achievement at reducing congestion and addressing safety issues along the U.S. 69 corridor. This alternative also performs poorly when compared to other Initial Alternatives at providing flexible choices and promoting sustainability. TSM/TDM components of this alternative may be incorporated into the Preferred Alternative as appropriate.

**Multimodal** – This Initial Alternative was eliminated from consideration as a stand-alone alternative due to its low achievement at reducing congestion along the U.S. 69 corridor. The alternative has moderate, even substantial achievement at reaching the projects goals of providing flexible choices and supporting local and regional growth. Although this alternative is eliminated from consideration as a stand-alone solution due its poor performance at reducing congestion, individual elements may be incorporated into the Preferred Alternative.

## 5.3 Natural and Human Environment Screening

The two “Add Capacity” alternatives were carried forward from the Purpose and Need screening to evaluate their impacts to the natural and human environment at a qualitative level for Tier 1 screening. These alternatives include the Traditional Widening and Express Toll Lane alternatives. The No-Build Alternative was also carried forward as a benchmark for comparison. **Figure 5-2** shows the screening matrix for the Natural and Human Environment Criteria.

**Figure 5-2: Natural and Human Environment Screening**

Alternative	NATURAL & HUMAN ENVIRONMENT CRITERIA								
	Park and Recreational Area Impacts	Community Facility Impacts	Environmental Justice - Low Income and Minority Population Impacts	Noise Impacts	Natural Resource Impacts (Wetlands, Floodplains, Critical Habitat, T&E Species)	Hazardous Material Impacts	Cultural and Historic Sites Impacts	Air Quality, Emissions and Energy Impacts	Indirect and Cumulative Impacts
	Impact	Impact	Impact	Impact	Impact	Impact	Impact	Impact	Impact
No-Build									
Traditional Widening									
Express Toll Lanes									

Generally, the Express Toll Lane Alternative has a smaller right-of-way and impact footprint than the Traditional Widening, therefore fewer impacts are expected to environmental features or community facilities and resources. The No Build Alternative generally has more favorable ratings since it is a “no action” strategy and does not cause physical impacts to the natural and manmade environment.

**Park and Recreational Areas and Community Facilities** – There are anticipated to be minor impacts from each alternative to adjacent recreational trail connections; however, the magnitude from the Express Toll Lane Alternative is expected to be less than the Traditional Widening Alternative. The Traditional Widening Alternative also has potential property impacts to parks located in close proximity to the corridor; however, these impacts would be minor in nature and would not include impacts to the recreational facilities within the parks. It is anticipated that all impacts to parks and recreational trails would be able to be mitigated and replaced in-kind to restore access. However, the Tier 2 screening process will evaluate if Section 4(f) and/or 6(f) impacts will occur that would need to be avoided, minimized or mitigated as part of the environmental clearance process.

**Environmental Justice (EJ)** – EJ areas include areas along the corridor at the Block Group level that meet State, Regional, County and City level thresholds for designated low-income or minority populations. The EJ analysis also includes low-income and minority populations that use U.S. 69 to access jobs and other major activity centers from throughout the Kansas City region. For both alternatives, direct property impacts are anticipated to be minor and there are no residential or business displacements of EJ populations as a result of the alternatives. The Express Toll Lane Alternative rates slightly lower than the Traditional Widening Alternative due to the tolling component of the managed travel lane. Communications and outreach will be



performed with stakeholders located in these areas of the corridor to provide the opportunity for input and feedback on project improvements and impacts to understand their needs and values for the project. KDOT is committed to working with EJ populations to develop strategies for mitigating the financial impact of tolling should the ETL alternative move forward.

**Noise** - The Traditional Widening Alternative has a wider right-of-way footprint than the Express Toll Lanes Alternative, shifting traffic closer to sensitive noise receptors such as residences, schools, churches and other community facilities. KDOT is currently working on a noise study to evaluate if any areas of the corridor qualify for noise abatement measures based on being reasonable and feasible. However, based on this qualitative analysis, the Express Toll Lanes Alternative rates slightly better for noise impacts than the Traditional Widening.

**Natural Environment** - This category evaluates potential impacts to water resources such as wetlands, streams and floodplains, as well as critical plant and animal habitat and designated Threatened and Endangered Species. There will be areas of impact under both alternatives to streams, wetlands and floodplains crossing or adjacent to the corridor; however, these impacts are not expected to be substantial and will be mitigated. The project team will obtain all necessary permits and use best management practices for construction and ongoing maintenance to provide for long-term corridor resiliency and environmental stewardship. Overall, the Express Toll Lane Alternative has a smaller right-of-way footprint and is expected to have fewer impacts to the natural environment.

**Hazardous Materials** - Both the Traditional Widening Alternative and Express Toll Lane Alternative are anticipated to have similar impacts to locations with identified hazardous materials. These impacts are expected to be minor in nature and remediation will be completed as necessary.

**Cultural and Historic Sites** - Impacts to known cultural or historical sites are not anticipated under either the Traditional Widening or Express Toll Lane alternatives. KDOT is currently working with the State Historic Preservation Office to determine if there are any potentially eligible sites that have not previously been identified, and if any sites are determined they will be evaluated further within the Tier 2 screening.

**Air Quality, Emissions and Energy Impacts** - Both alternatives alleviate stop and go traffic congestion along the corridor, and therefore have positive impacts on the region's air quality, as well as on the reduction of greenhouse gas emissions. Since the Express Toll Lane Alternative allows for flexibility and adaptability in the way its new travel capacity is managed and does not attract as much induced traffic from other routes as the Traditional Widening Alternative, it rates slightly better under this criteria.



**Indirect and Cumulative Impacts** - Both alternatives are expected to have indirect and cumulative impacts from their construction and operation. The Traditional Widening Alternative having a larger footprint is expected to have slightly greater indirect and cumulative impacts than the Express Toll Lane Alternative. However, there are impacts from the tolling component of the managed travel lane and its influences on Kansas City regional travelers accessing U.S. 69 that ultimately makes both alternatives rate the same overall.

## 5.4 Engineering and Cost Screening

The Traditional Widening and Express Toll Lane alternatives were evaluated against the Engineering and Cost Criteria at a qualitative level. The No-Build Alternative was also carried forward as a benchmark for comparison. Figure 5-3 shows the screening matrix for the Engineering and Cost Criteria.

**Figure 5-3: Engineering and Cost Criteria**

Alternative	ENGINEERING & COST CRITERIA							
	Roadway and Interchange Geometrics	Right-of-Way Impacts	Residential or Business Displacements	Timing of Construction	Ease of Phasing, Maintenance of Traffic, and Constructability	Estimated Construction Costs	Estimated Life-Cycle Costs	Funding Confidence
	Impact	Impact	Impact	Impact	Impact	Impact	Impact	Impact
No-Build				N/A	N/A			
Traditional Widening								
Express Toll Lanes								

Generally, the Express Toll Lane Alternative has a smaller right-of-way footprint than the Traditional Widening Alternative, therefore fewer impacts are expected to engineering and cost factors such as right-of-way and property displacements for the project. Additionally, the Traditional Widening Alternative is anticipated to have additional roadway and bridge infrastructure and take more construction phases to build, resulting in higher construction impacts and costs for the project.

**Roadway and Interchange Geometrics** - Both alternatives would address current roadway, ramp and interchange deficiencies;

**Right-of-Way Impacts and Residential or Business Displacements** - The smaller footprint of the Express Toll Lane Alternative is expected to require less right-of-way and displace no residences and businesses located along the corridor. The Traditional Widening Alternative is anticipated to have greater right-of-way required due to the construction of improvements such as collector-distributor roadways and auxiliary lanes and displace at least one business property located along the corridor.

**Ease of Phasing, Maintenance of Traffic and Constructability** - The Express Toll Lane Alternative requires fewer phases to be constructed than the Traditional Widening Alternative, this has a positive impact on the traveling public. Fewer phases are required to complete the Express Toll Lane alternative with fewer interim phases required during construction. The Express Toll Lane Alternative has a smaller overall footprint, requiring fewer retaining walls and less enclosed drainage.

**Construction Cost** - The Express Toll Lane Alternative is estimated to cost less to build than the Traditional Widening Alternative because it requires a smaller footprint with less roadway and bridge infrastructure and less right-of-way. It would also be constructed in fewer phases which helps better manage increases in construction costs due to rising costs of materials and inflation.

**Life-Cycle Costs** - Overall the Express Toll Lane Alternative requires less roadway and bridge infrastructure and therefore there is less to maintain over the life-cycle of the corridor improvements. Additionally, due to the flexibility with lane management methods, there is less likelihood that additional lanes will be needed in the future to address congestion beyond the design year. The Express Toll Lane Alternative would require additional life-cycle costs for toll-related infrastructure over a Traditional Widening Alternative.

## 5.5 Public and Stakeholder Screening

Input received from public and stakeholder activities, such as stakeholder interviews and presentations, Advisory Group meetings, public information meetings, community surveys, community focus groups, and social media outreach is incorporated into the screening process for the alternatives using public comment tools on the website, at meetings and through social media channels to document public and stakeholder feedback on the project. Unlike the other rating categories, there is not a specific rating assigned to the public and stakeholder input; rather, the project team is using stakeholder outreach activities held throughout the alternatives development and screening process to help screen and refine alternatives down to a

Preferred Alternative that best meets the goals of the project and has community support.

## 5.6 Initial Alternatives Retained for Further Development

Two alternatives in addition to the No-Build Alternative were retained from the Initial Alternatives Screening for further development and screening as Reasonable Alternatives. These alternatives have been shown to satisfy the Purpose and Need of the project and rate favorably against most other screening criteria when compared to other alternatives. No alternative was shown to score well across all screening criteria.

**No Build Alternative** – As previously described, the No Build Alternative makes no capacity improvements to the U.S. 69 corridor except those directly related to ongoing rehabilitation and maintenance of the facility or those already committed or programmed by local, regional, or State funding programs. This alternative fails to meet several components of the Purpose and Need for the project. This alternative however is retained throughout the NEPA evaluation process and its potential impacts are utilized as a basis of comparison for the Build alternatives.

**Traditional Widening Alternative** – This alternative was carried forward for analysis as a Reasonable Alternative due to its ability to meet most of the Purpose and Need criteria at a high level. This alternative is anticipated to enhance safety and reduce congestion along the U.S. 69 corridor while promoting sustainability, , and accommodating local and regional growth. The Traditional Widening Alternative includes collector/distributor roads and auxiliary lanes to accommodate future congestion to meet purpose and need goals. This wider footprint has the potential for greater Natural and Human Environment impacts as well as greater Engineering and Cost related requirements. It also may require additional capacity and right-of-way at a future time since the general purpose capacity would not include lane management strategies to manage congestion and reliability for the long-term. These elements will be explored further and quantified during the Reasonable Alternatives Screening.

**Express Toll Lane Alternative** – The Express Toll Lane Alternative was carried forward for analysis as a Reasonable Alternative due to its substantial ability to meet the Purpose and Need criteria established for the project. This alternative is anticipated to enhance safety and reduce congestion along the U.S. 69 corridor while promoting sustainability, providing flexible choices, and supporting local and regional growth. The Express Toll Lane Alternative is expected to manage congestion and offer long-term corridor travel reliability while maintaining a smaller overall footprint, less project phasing and lower construction costs than the Traditional Widening Alternative. Impacts to the Natural and Human Environment as

well as Engineering and Cost related criteria will be quantified for this alternative as part of the Reasonable Alternatives Analysis.

Based on the Tier 1 screening, both the Traditional Widening and Express Toll Lanes Alternatives merit additional analysis. However, the Express Toll Lanes alternative cannot advance as a viable alternative without the consent of the community, and approvals by the KTA Board, and State Finance Council as required by Kansas Statute KSA 68,20-120. If the necessary consent and approvals are not secured, the Express Toll Lanes alternative will be dismissed and more detailed, quantitative analysis will only be performed on the Traditional Widening alternative.





















































































# Appendices

































## **Appendix A**

### **Screening Matrices**



## *Appendix A*

Alternative	PURPOSE & NEED CRITERIA													
	Improve Safety		Reduce Congestion			Promote Sustainability			Provide Flexible Choices			Accomodate Local and Regional Growth		
	Reduction in number and severity of Congestion Related Crashes	Improve Bicycle and Pedestrian Safety at Crossroad Arteries	Change in Travel Level of Service	Change in Travel Speed	Change in Corridor Person Throughput	Change in Roadway & Bridge Condition	Change in Travel Time Reliability	Support Environmental Sustainability	Long-term Corridor Operations Flexibility and Adaptability	Access and Connectivity to Bicycle & Pedestrian Facilities	Reliability for Transit Riders	Compatibility with Local Planning	Compatibility with Regional Planning	Employment Equity
	Achievement	Achievement	Achievement	Achievement	Achievement	Achievement	Achievement	Achievement	Achievement	Achievement	Achievement	Achievement	Achievement	Achievement
No-Build														
Improvement to Alternative Routes														
Existing Capacity Management														
Multimodal														
Traditional Widening														
Express Toll Lanes														

Alternative	NATURAL & HUMAN ENVIRONMENT CRITERIA									ENGINEERING & COST CRITERIA							
	Park and Recreational Area Impacts	Community Facility Impacts	Environmental Justice - Low Income and Minority Population Impacts	Noise Impacts	Natural Resource Impacts (Wetlands, Floodplains, Critical Habitat, T&E Species)	Hazardous Material Impacts	Cultural and Historic Sites Impacts	Air Quality, Emissions and Energy Impacts	Indirect and Cumulative Impacts	Roadway and Interchange Geometrics	Right-of-Way Impacts	Residential or Business Displacements	Timing of Construction	Ease of Phasing, Maintenance of Traffic, and Constructability	Estimated Construction Costs	Estimated Life-Cycle Costs	Funding Confidence
	Impact	Impact	Impact	Impact	Impact	Impact	Impact	Impact	Impact	Impact	Impact	Impact	Impact	Impact	Impact	Impact	Impact
No-Build													N/A	N/A			
Improvement to Alternative Routes																	
Existing Capacity Management																	
Multimodal																	
Traditional Widening																	
Express Toll Lanes	