

# Project Selection Criteria



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## PROJECT SELECTION CRITERIA

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Projects in the STIP are created from various levels of government (city, county, and state). Consequently, they are also created from many different processes and criteria. The criteria described below were those used by KDOT when the projects currently programmed in FFY 2012-2015 and listed in this document were selected. KDOT has a legislatively approved 10-year transportation program in place, Transportation Works for Kansas (T-WORKS). The program was authorized by the legislature in May 2010 and is for the SFY 2011-2020. T-WORKS primary areas of focus are:

- Preservation of the highway system that is ranked as the nation's best
- A multi-modal approach to meeting transportation needs with increased funding to Public Transit, Rail and Aviation programs
- The leveraging of transportation to further the state's economic goals

Under T-WORKS, road and bridge construction projects are categorized into four core groups or programs: Preservation, Modernization, Expansion and Local Construction. The modernization and expansion projects selected for this program were announced jointly

by the Governor of Kansas and the Secretary of Transportation in June 2011. Because of the close timing between the project selection announcement and the STIP preparation, some of these projects may not yet be programmed. These projects will be added to the STIP via amendment.

While the approval of T-WORKS is of great benefit, the federal transportation program remains a question. As a result, the magnitude of the next program will be greatly affected by the potential lack of federal funding. The uncertainty in funding makes planning difficult, and the agency's ability to take on important new projects is greatly limited until a new federal transportation program is passed. In this period of uncertainty KDOT continues to develop plan production projects. Thus, when federal funding is in place, projects will be ready, or nearly ready, for the construction phases.

In 2008 Kansas adopted a Long Range Transportation Plan (LRTP) which has the three guiding principles of preserving the transportation system, making travel safer, and supporting economic growth. These principles were developed with the input from hundreds

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of transportation stakeholders during an 18-month process. Today these guiding principles provide the framework for KDOT's day-to-day decision-making process, and are embodied by the projects in this STIP.

### — PROJECT SELECTION — (An Expanded Process)

One of the most significant changes in T-WORKS is the manner in which projects are selected. In the previous program, the Comprehensive Transportation Program (CTP), project selection was based solely on engineering factors. In T-WORKS, the economic impact of a project and local input are considerations as well as engineering factors.

KDOT categorizes highway projects into four broad programs— **Preservation** for projects that take care of what is already in place (pavement rehabilitation and reconstruction and bridge repairs and replacements); **Modernization** for projects that improve safety by improving the existing roadway (shoulder improvements, flattening hills, straightening curves, and improving interchanges); **Expansion** projects that add to the existing system (new lanes and interchanges); and **Local Construction** for projects on county and city roads. Within each of these major programs are funding and/or project-type groups that separate the projects into more specific groups or subcategories.

In the past, KDOT has primarily relied upon priority formulas or other data-driven processes to select projects for inclusion in the transportation programs. While this system worked well to select preservation-type projects, it was not as successful for selecting expansion and modernization projects. In addition, since only engineering factors were considered in the priority formulas, other considerations that stakeholders and Kansans felt were important did not factor into the selection process.

Several important planning and policy efforts, including development of the statewide Kansas Long Range Transportation Plan (LRTP) in 2007/8 and the subsequent creation of the T-LINK Task Force (“Transportation-Leveraging Investments in Kansas”) in mid-2008, have helped KDOT set a policy direction for choosing transportation projects that is built on the lessons learned from the CTP era. KDOT has developed an expanded process for selecting highway projects that is responsive to the direction set in the LRTP and by the T-LINK Task Force. In addition, this process fulfills the requirements specified by the T-WORKS legislation.

Under the new process crafted by T-LINK – which is still evolving – instead of relying solely on engineering factors, regional priorities and potential economic impact were incorporated into project selection. This new selection process was piloted by KDOT in selecting major highway construction projects for T-WORKS. Proposed projects are

scored based on how well a project addresses relevant criteria, such as engineering needs, regional priorities identified at local consult sessions across the state, and support for economic development.

The chart below illustrates the initial recommendation from the task force on how the three criteria are to be weighted among the program categories. To aid in assessing potential economic impact, the agency is also piloting a computer modeling package that estimates the increase in jobs, income and economic output for a region due to a transportation improvement.

Pilot Project Selection Criteria				
	Engineering Factors	Regional Priorities	Economic Impact	Other
Preservation	100%	-	-	
Modernization	80%	20%	-	
Expansion	50 %	25%	25%	
Local Construction				100 %

The information from the modeling package will be used in conjunction with information gathered by KDOT’s area engineers from local officials to determine economic impacts. The state long range plan, MPO plans, and local entity plans, along with local consult meetings will be used to determine regional priorities. By employing these selection criteria, KDOT will ensure that the projects chosen meet our LRTP guiding principles, fulfills the goals of T-LINK and meets the requirements of the T-WORKS legislation.

In addition to the state projects, there are local projects on county and city roads that have their own selection process. This process is coordinated at KDOT by the Bureau of Local Projects (BLP) and is discussed in greater detail in the Local Construction Program section.

**— PRESERVATION —**  
(Taking care of what we have)

The first major program category in T-WORKS is the Preservation program. The objective of this program is to protect the public’s investment in its highway system by preserving the “as built” condition as long as possible. Without proper maintenance, the cost for major repairs and/or replacement at a later date may be several times greater than the cost of timely maintenance. Projects within this category address the first principle of the LRTP of preservation. The project selection criteria for projects in this program rely on engineering factors.

Projects within the Preservation program are divided into subcategories, and projects with the same subcategory share similar work types. The Preservation program includes the subcategories: Non-Interstate Resurfacing (IRR), Interstate Resurfacing (ISR), Contract Maintenance (CMN), Bridge and Culvert Repair (BSR & BCR), Bridge Painting (BSP), Signing (SOS), Pavement Marking (PMR), Interstate Basic Improvement (IRP), Non-Interstate Basic Improvement (RIP) Emergency Repair (EMR), Bridge

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Replacement or Rehabilitation (PBR), Bridge Re-deck (PDR) and Culvert Bridge (PCR). Each of these subcategories is described in greater detail on the following pages.

### **Non-Interstate Resurfacing (IRR)**

Approximately 1,200 to 1,400 miles of two-lane non-Interstate pavement are re-surfaced or repaired annually through this set aside funded program. Since most of these projects are selected on an annual basis, projects for this group appear only in the first year of the STIP. The program's intent is to maintain non-Interstate pavements in adequate condition and keep ride ability at an acceptable level. These projects are selected by using the Pavement Management System (PMS). PMS is an integrated set of procedures that were developed by KDOT and Woodward-Clyde Consultants. It recommends pavement maintenance and rehabilitation strategies on both a network and a project level. Currently, projects within this subcategory are state funded.

### **Bridge and Culvert Repair (BSR & BCR)**

The Bridge Repair and Culvert Repair subcategories are for bridge and culvert repairs of lesser magnitude than the Bridge Replacement/Rehabilitation and Culvert/Bridge Rehabilitation subcategories. These subcategories aim to restore the structural integrity of bridges and culverts. Bridge /culvert repair work includes: overlaying concrete decks; re-

placing or resetting expansion joints; resetting bearing devices; repairing abutments, piers, or girders; and repairing damage from external sources. At this time, all projects within these two subcategories are state funded.

To select bridge projects, each KDOT District, using the Bridge Management Engineer's recommended repair list, submits prioritized lists of candidate bridge and culvert projects to the Bureau of Construction and Maintenance and the Bureau of Design. Each candidate project is reviewed for the structure's condition history and latest inspection to confirm necessary repairs or replacement. Statewide lists are prioritized using such factors as maintenance effort, safety, traffic, and engineering judgment. The lists are submitted to the Bureau of Program and Project Management for review to confirm that the candidate structures are not programmed for future work under any other KDOT program. The prioritized lists are merged to create the yearly statewide repair list.

### **Bridge Painting (BSP)**

Work performed in this subcategory is funded with state funds. There are approximately 800 bridge structures on the Kansas State Highway System that require periodic painting to slow corrosion of the structural steel. These structures contain nearly 242,000 tons of structural steel. They are categorized into two groups:

**Group A:** Structures that have 10 tons or more of structural steel.

The Bridge Management Engineer prioritizes these structures (approximately 760 bridges) according to the Bridge Inspection Manual’s “Paint Condition Rating.” The statewide prioritized list is reviewed by the Bureau of Program and Project Management to confirm that each candidate structure is not programmed for future work under any other KDOT program. Projects are then scheduled in order of priority until available funds are exhausted

**Group B:** Structures having less than 10 tons of structural steel.

Each District is responsible for the painting of these structures (approximately 40 bridges statewide).

**Bridge Replacement/ Rehabilitation (PBR)**

The Bridge Replacement and Rehabilitation subcategory is designed to replace or rehabilitate sub-standard bridges. Sub-standard bridges are those in a deteriorated condition or with deficiencies in load-carrying capacity, width, or traffic service. Projects within this subcategory are funded with a combination of federal and state funds.

Bridge projects are selected using the Bridge Priority Formula. The formula was developed by KDOT and Woodward-Clyde Consultants in 1981 and has been modified since then to incorporate

updated technology, policy direction, and available data. A schematic of the formula follows:

<b>Bridge Priority Formula</b>		
<b>(Attributes / Adjustment Factors)</b>		
		<b>Adjustment Factors</b>
<b>Attribute (Need Value)</b>	<b>Rel. Weight</b>	<b>AADT<sup>1</sup> (see p )</b>
Bridge Width (Driver Exposure Attribute)	0.222	0 to 1
Deck Condition	0.169	0 to 1
Structural Condition	0.359	0 to 1
Operating Rating	0.250	0 to 1
<b>Sum of All Weights</b>	<b>1.00</b>	
<b>1 Average Annual Daily Traffic-</b> The number of vehicles per day on a roadway segment averaged over one.		

**Bridge Deck Replacement and Culvert-Bridge (PDR & PCR)**

The Bridge Deck Replacement subcategory addresses bridges where the bridge superstructure and substructure are in satisfactory condition, but the bridge deck has deteriorated to the point where a Bridge Repair project would not be adequate. The Culvert Bridge subcategory addresses culverts that are beyond the scope of a Culvert Repair project, but do not yet qualify as a Bridge Replacement /Rehabilitation project. Projects in these subcategories are usually funded using state funds.

Each District, using the Bridge Management Engineer’s recommended repair list, submits prioritized lists of

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candidate projects to the Bureau of Design. Each candidate project is reviewed for the structure's condition history and latest inspection to confirm necessary repairs or replacement. Statewide lists are prioritized using such factors as maintenance effort, safety, traffic, and engineering judgment. The lists are submitted to the Bureau of Program and Project Management for review to confirm that each candidate structure is not programmed for future work under any other KDOT program. The prioritized lists are then merged to create the yearly statewide repair list.

### **Contract Maintenance (CMN)**

Maintenance activities are performed to offset the effects of weather, deterioration, traffic wear, damage, and vandalism. Eligible projects are those that KDOT is not adequately staffed or equipped to perform. Due to the diverse types of actions and/or geographic location, contracting for the service is the most cost-effective approach for the agency. These projects are funded using state funds.

Selection is based on priority as seen from a statewide perspective. Basic criteria for contract maintenance projects are: 1) inability to perform necessary actions with existing maintenance forces; 2) ineligibility for other maintenance programs; 3) unforeseen (generally the result of weather or traffic conditions). Projects are selected on the basis of statewide need for corrective action, ra-

ther than selection based on a balanced distribution between districts.

### **Emergency Repair (EMR)**

State funds are set aside annually for emergency repairs that occur as the result of accidents or disasters. Allocation of these funds is authorized by the State Transportation Engineer when accidents/weather-related causes occur.

### **Interstate Basic Improvement and Non-Interstate Basic Improvement (RIP & IRP)**

Interstate and Non-Interstate Basic Improvement projects are projects that involve pavement rehabilitation or replacement but do not include wider shoulders, added passing or through lanes, or intersection or interchange improvements. Projects within these subcategories are funded with a combination of federal and state funds.

These projects are selected using the pavement condition-related attributes of the Non-Interstate and Interstate Priority Formulas. For additional discussion of the formulas, refer to the Modernization section of Project Selection Criteria.

### **Interstate Resurfacing (ISR)**

Approximately 20 center-line miles of divided Interstate roadway (40 miles of two-lane pavement) are resurfaced or repaired annually through the

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Interstate Resurfacing set aside program. Input from the Pavement Management System is used to decide which sections of interstate are to be resurfaced. Projects in this subcategory are generally state funded.

### **Pavement Marking (PMR)**

This subcategory was established in 1996 to address pavement marking necessary due to pending new federal requirements for minimum retro reflectivity of pavement markings. Improvements in this category utilize high-performance, long-life pavement marking materials. Efforts are also made to identify those marking materials with wet-weather retro reflectivity. This program is limited to projects that do not have high-performance markings included under any other KDOT program.

Projects are selected by Bureau of Transportation Safety and Technology staff based upon a roadway's traffic volumes, past performance of marking material, geometry, surface condition, surface type, crash history, and, in the case of new marking materials, the research benefit. Projects within this subcategory are generally funded with 100 percent federal funds.

### **Railroad Crossing Surfacing (RRS)**

This subcategory was established in SFY 2000. Projects in this subcategory are for at-grade highway/railroad

crossing approach and surface upgrades. Eligible crossings are rural State Highway System Crossings and State Highway System City Connecting Link crossings in cities with populations up to 2,500.

Projects are selected from applications for crossing surface improvement projects submitted by railroad companies and KDOT district personnel. Project scopes include all necessary materials and activities required for long-term crossing surface and approach improvements. These projects are funded with 50 percent state and 50 percent railroad company monies.

### **Signing (SOS)**

Established in 1996, this subcategory addresses necessary sign replacements on the State Highway System in response to new federal requirements for minimum retro reflectivity of signs. This program schedules sign replacements based upon highway route mileage statewide and the total mileage of all the routes in each of KDOT's six districts for that year. Excluded from this program are signs that are scheduled for repair under other state projects in the same year. This program also excludes any signs that were replaced within seven years of the scheduled date of the replacement project. Projects within this subcategory are generally funded with 100 percent federal funds.



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**— MODERNIZATION —**  
**(Improving safety & existing  
roadways & structures)**

The Modernization program category is the second major component of the projects included in T-WORKS. The projects for this program category with work phases anticipated to obligate during the STIP years of FFY 2012-2015 are listed in the Appendix B following the narrative sections. Projects in this program category are designed to improve existing roadways and enhance safety by flattening hills, adding shoulders, straightening curves and improving intersections. The principle of safety from the LRTP is addressed by this program. Under T-WORKS, projects within this program category were selected using a combination of engineering factors and regional priorities.

The following subcategories are included in this program category: Resurfacing with Improvements-Practical Design (IRS), Corridor Management (COR), Interstate Roadway Geometric Improvements (IRI), KCC Railroad Crossing Projects (KCC), Highway Lighting (LTG), Non-Interstate Roadway Geometric Improvements (RIM), and State Safety Projects (SAF). Of these subcategories- Corridor Management (COR), Highway Lighting (LTG) and State Safety Projects (SAF) are funded with state set aside funding.

**Corridor Management  
(COR)**

The Corridor Management set aside program was created to address the growing need for KDOT, cities, and counties to jointly manage transportation corridors, particularly in high-growth developing areas. This fund is divided into two groups with two-thirds of the available funding going to a project group and one-third to a contingency group. To be eligible for either group of funds, a corridor must be designated in the district plan, there must be a partnering agreement between the Secretary, city, and county, and there must be a binding corridor master plan in place.

The project group of subcategory funds is designed to assist newly developing areas in meeting the master plan or to retrofit established areas to master plan standards. Projects are solicited annually and require a minimum 33 percent local match for state monies. Additionally, projects in this group have a per-project maximum of \$0.25 million.

The contingency group of subcategory funds is designed to address rapidly developing areas or sites where transportation infrastructure changes must be made to better accommodate changes in demand. This fund requires a minimum 50 percent local match for state monies. Additionally, projects in the contingency group have a per-project maximum of \$0.20 million.

In addition, in some special cases,

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Corridor Management funds may be used for advance right-of-way acquisition.

**Interstate Roadway Geometric Improvements/ Non-Interstate Roadway Geometric Improvements/ and Resurfacing with Improvements (RIM, IRI & IRS)**

Interstate and Non-Interstate Roadway Geometric Improvements projects are major highway improvements that, in addition to pavement rehabilitation or replacement, include wider shoulders or intersection improvements but do not include passing or through lanes or interchanges. Resurfacing with Improvements projects are pavement rehabilitation projects with modest shoulder improvements using practical improvement principles. Projects within these subcategories are usually funded with a combination of federal and state funds.

Roadway projects are selected using the Non-Interstate and Interstate Priority Formulas, which supply the engineering factors, along with regional priorities in the area of the proposed projects determined through local consult meetings. The formulas used for the engineering factors were developed by KDOT and Woodward-Clyde Consultants in 1981 and have been modified since to incorporate updated technology, policy direction, and available data. Schematics of the formulas are on the following page.

**KCC Railroad Crossing (KCC)**

Prior to 1999, this program was administered by the Kansas Corporation Commission (KCC), since then KDOT has managed the program. This is a state funded program supplemented with railroad company funds. Eligible crossings in this program are crossings that do not meet the federal funded program eligibility requirements, but if updated would improve safety. To be considered for this program, LPAs must submit potential crossings for funding. Projects are programmed, as funds are available in the order requests are made.

**Lighting (LTG)**

Since lighting is beneficial to the safety and operation of the highway system, this subcategory was established in FY 2000. Projects are selected by Bureau of Transportation Safety and Technology using the engineering factors of the roadway's volume and nighttime crash history along with consideration of existing regional priorities in the area of the proposed projects. Projects in this program may not be included under any other KDOT program. Projects are scheduled until the available lighting funds are exhausted and generally funded with 100 percent federal funds. (At other locations, lighting may be installed by the LPA by obtaining a highway permit. In general, when the LPA elects to install lighting, the LPA is responsible for the cost of installation, maintenance, and operation.)

<b>Non-Interstate Priority Formula (Attributes / Adjustment Factors)</b>										
		<b>Adjustment Factors</b>								
		<b>Accident Rate</b> (See below)	<b>Posted Speed</b> (See below)	<b>Facility Type</b>		<b>Shoulder Type</b>		<b>Route Class</b> (See below)	<b>AADT<sup>1</sup></b> (See below)	
<b>Attribute (Need Value)</b>		<b>Relative Weight</b>	*	*	Divided	Undivided	Stabilized	Unstabilized	*	*
<b>Driver Exposure Attributes</b>	No. Of Narrow Structures Per Mile	0.086	0 to 1	0 to 1					0 to 1	0 to 1
	Shoulder Width	0.089	0 to 1	0 to 1	0.54	1.0	.0607	1.0	0 to 1	0 to 1
	No. Of SSSD <sup>2</sup> Per Mile	0.069	0 to 1	0 to 1					0 to 1	0 to 1
	Lane Width	0.101	0 to 1	0 to 1	0.5	1.0			0 to 1	0 to 1
	No. Of SHC <sup>3</sup> Per Mile	0.099	0 to 1	0 to 1					0 to 1	0 to 1
	Volume/ Capacity (Maximum Default Value = 1.15)	0.091							0 to 1	0 to 1
	Commercial Traffic (Maximum Default Value = 725)	0.065			.0376	1.0	0.519	1	0 to 1	0 to 1
	Rideability	0.088							0 to 1	0 to 1
	Pavement Structural Evaluation (PSE)	0.208							0 to 1	0 to 1
	Observed Condition	0.104							0 to 1	0 to 1
<b>Sum of All Weights</b>		<b>1.00</b>								

<b>* Non-Interstate Priority Formula (Adjustment Factors)</b>							
<b>Accident Rate</b>	<b>Adjustment Factor</b>	<b>Posted Speed</b>	<b>Adjustment Factor</b>	<b>Route Class</b>	<b>Adjustment Factor</b>	<b>Capacity – Adjusted AADT<sup>4</sup></b>	<b>Adjustment Factor</b>
High	1.0	≥ 55 MPH	1.0	A	1.0	20,000	1.0
Medium	0.858			B	0.9	10,000	0.925
Low	0.734	≤ 55 MPH	Varies from	C	0.7	6,000	0.895
			0 to 1	D	0.5	2,000	0.865
				E	0.3	0	0.850

<b>Interstate Priority Formula (Attributes / Adjustment Factors)</b>							
		<b>Adjustment Factors</b>					
		<b>Facility Type</b>		<b>Shoulder Type</b>		<b>Route Class</b> (See below)	<b>AADT<sup>1</sup></b> (See below)
<b>Attribute (Need Value)</b>	<b>Relative Weight</b>	<b>Divided</b>	<b>Undivided</b>	<b>Stabilized</b>	<b>Unstabilized</b>		
Commercial Traffic	0.140	0.376	1.0	0.519	1.0	0 to 1	0 to 1
Rideability	0.189					0 to 1	0 to 1
Pavement Structural Evaluation (PSE)	0.447					0 to 1	0 to 1
Observed Condition	0.224					0 to 1	0 to 1
<b>Sum of All Weights</b>	<b>1.00</b>						

<sup>1</sup> **Average Annual Daily Traffic-** The number of vehicles per day on a road -way segment averaged over one year.

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## Safety Projects (SAF)

This subcategory provides for improvement of intersections or spot locations where major improvement is not required. The addition of left-turn lanes, pavement resurfacing, traffic signals, signing, and pavement marking provide cost effective solutions to reducing crashes at these locations.

The Bureau of Transportation Safety and Technology conducts studies on the physical and operational characteristics of high-crash locations. These studies:

- 1) identify the reason the particular location is being reviewed;
- 2) identify pertinent conditions;
- 3) identify concerns;
- 4) identify possible causes of the concerns;
- 5) identify possible solutions;
- 6) estimate cost of each possible solution;
- 7) rank each solution on the basis of engineering judgment;
- 8) consider effects on like or similar areas (uniformity factor);
- 9) provide benefit/cost analysis for each solution;
- 10) review regional priorities for projects under consideration;
- 11) recommend action.

Once identified, projects are ranked in descending order by average annual net return. KDOT determines the average annual net return for each project by subtracting the average annual cost from the

average annual benefit. First priority is given to the project with the highest average annual net return and with overlapping regional priority.

Exceptions to this order are sometimes necessary because city matching funds are unavailable, future projects encompass the selected project location, approximate locations are grouped into one project, or several smaller projects are combined resulting in a total net return larger than the return for one project. These projects are usually state funded and projects are scheduled until the available funds in the Safety subcategory are exhausted.

### — EXPANSION — (Adding something new)

T-WORKS's third program category of projects is Expansion. Expansion projects add new lanes or interchanges, enhance driving by relieving congestion and improving access, enhance economic development, and substantially improve safety. The LRTP principles of economic expansion and safety are the focus of projects within this program category.

The majority of the expansion projects were announced along with the modernization projects by the Governor of Kansas and the State Transportation Secretary in early June 2011. With the exception of the economic development subcategory of projects, which will be reviewed and selected on an on-going basis during T-WORKS, most of the expansion projects have been selected. Although selected, not

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all expansion projects may be programmed at the time of the STIP preparation because of the short time period between the announcement and the preparation of the STIP. These projects will be amended to the STIP as they are programmed.

KDOT's approach for selecting Expansion projects relied on the new local consultation process, implemented under T-WORKS. This new approach used three factors, rather than relying solely upon engineering factors like prior transportation programs. These three factors were engineering factors, regional priorities and economic impacts. In addition to considering these three factors, KDOT also considered the money available through T-WORKS, the money already invested in projects (e.g. design engineering, right of way, etc), and the local funding available.

Projects in the program are grouped into the following subcategories: Economic Development (EDP), Interstate Capacity Improvement (IRC), Intelligent Transportation Systems (ITS), Non-Interstate Capacity Improvement (RIC), Local Partnership Railroad Grade Separation (RSL), Railroad Grade Separations (RSP), Enhancement Bypass Construction (SEB), Enhancement Corridor Improvement (SEC), and Enhancement Interchanges /Separations Improvement (SEI).

### **Economic Development (EDP)**

Economic development projects are projects that help spur financial growth. A key priority identified in the LRTP, local

consultation meetings and T-WORKS was the need for transportation projects to be linked to the state's economic priorities. To assess the potential impact of proposed economic development projects, KDOT is piloting a computer modeling package- the Transportation Economic Development Impact System (TREDIS). TREDIS estimates the increase in jobs, income, and economic output for a region due to a transportation improvement. In addition to scoring well in the TREDIS analysis, desirable projects are those that align with regional priorities of an area, have the recommendation of KDOT staff and the endorsement of an external Economic Advisory Panel.

To increase flexibility during the 10-year period of T-WORKS, proposed economic development projects will be reviewed and selected on an ongoing basis. In this way when desirable opportunities arise over the next 10-years, there will be a source of available funding. As projects are selected and programmed, they will be amended into the STIP. These projects are funded using a combination of state and local funding.

### **Interstate Capacity Improvement & Non-Interstate Capacity Improvement (RIC & IRC)**

Interstate and Non-Interstate Capacity Improvement projects are major high-way improvements that include passing or additional through lanes or interchanges in addition to pavement rehabilitation or replacement and geometric improvements. Projects in these categories will be selected

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using the new process piloted by KDOT in selecting major highway construction projects for T-WORKS. Refer to the section “Project Selection Pilot” at the beginning of the Project Selection Criteria for a detailed discussion of project selection. Projects in these two subcategories include projects that prior to T-WORKS were in the System Enhancement Bypass, System Enhancement Corridor Improvement and System Enhancement Interchange- Separations Improvement subcategories. Subcategory RIC & IRC projects are generally funded using a combination of federal and state funds.

### **Intelligent Transportation Systems (ITS)**

The Intelligent Transportation Systems (ITS) program was established to meet the funding needs of ITS/ technology-related projects in Kansas. The funding is available to apply technology such as advanced sensor, computer, electronics, and communications and management strategies to increase the safety and efficiency of the transportation system. The funding is available to both state and local agencies and is not necessarily limited to agencies that are transportation oriented. There are ITS applications in urban areas, rural areas, transit, and commercial vehicle operations, consideration for funding will be given to all of these areas.

The Bureau of Transportation Planning, along with the ITS Steering Committee, establishes project rankings based upon:

- 1) project support and integration

- risks;
- 2) telecommunication considerations;
- 3) design considerations and factors of success;
- 4) funding sources and evaluation consideration;
- 5) cost effectiveness and benefits;
- 6) local funding match percentage;
- 7) economic impact of project;
- 8) commonality with regional priorities in the area of the proposed project.

Projects are solicited annually as funding is available and selected based upon the criteria outlined above. ITS projects are generally funded with a combination of state and local funds. Recently with the passage of T-WORKS, ITS projects have been selected for SFY 2012 & 2013 and annual selection is anticipated to continue with a transportation program in place.

### **Local Partnership Railroad Grade Separations & State Railroad Grade Separations (RSP & RSL)**

These two subcategories were established just prior to and during the CTP and functioned to replace highway railroad at-grade crossings with grade separation structures. Funding for work in these subcategories is usually from a combination of state and/or local and/or federal sources. Although there may be some projects from the CTP still being completed, these subcategories are considered inactive and were not included as part of the T-WORK program.

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**System Enhancement Bypass/  
Corridor Improvement/  
Interchanges-Separations Improvement  
(SEB, SEC, SEI)**

Projects in these subcategories provide bypasses around cities, substantially improve the capacity and serviceability of significant segments of the State Highway System, or provide new interchanges, improve existing interchanges, or build separation structures, which reduce congestion on the State Highway System. Funding for work in these subcategories is usually from a combination of state and/or local and/or federal sources. Currently, new projects are not programmed for construction in these three subcategories, although there may be some projects carried over from the CTP still being completed. These three subcategories are inactive and were not included in T-WORKS. Instead, under T-WORKS, the work covered by these categories has been absorbed into the Interstate Capacity Improvement (IRC) and Non-Interstate Capacity Improvement (RIC) subcategories.

**— LOCAL CONSTRUCTION —  
(City and county road improvements)**

The fourth program category in T-WORKS is Local Construction. Local Construction projects involve improvements on city or county roads. The work encompassed by this program is varied in nature, some projects are safety-oriented, others focus on maintaining existing roadways, and still others are smaller, expansion-type projects. The funding within this program of projects is also varied, coming

from a combination of state and/or local and/or federal sources. The LRTP principles of safety and preservation are the focus of projects within this program category.

Like the other programs already described, the Local Construction program is grouped into subcategories. The subcategories included in this program are: HSIP Safety Projects-off system (HAZ), HSIP Safety Projects-on system (HES), KLINK resurfacing projects (K1R), Geometric Improvements for KLINKs (K3R), Local Fund Transfer (LFT), Local Administered projects (LOC), KDOT Administered projects (RES), HSIP Railroad Crossing Protection-on system (RRX), HSIP Railroad Crossing Protection-off system (RXX), Safe Routes to Schools projects (SRT) and Transportation Enhancement (TEX) projects. Each of these subcategories is described in more detail on the following pages.

**City Connecting Link  
(KLINK) Resurfacing  
(K1R)**

The KLINK Resurfacing program assists local governments in making needed road improvements on city connecting links (KLINKs) and other city and county roads. The KLINK Resurfacing set aside program provides funding for resurfacing projects on city streets that connect two rural portions of state highway (called City Connecting Links).

These projects are funded under a 50 percent state/50 percent city funding

matching arrangement for cities with populations greater than 10,000 and a 75 percent state/25 percent city ratio for cities with populations less than 10,000. The maximum state participation for a project is \$0.2 million.

KDOT annually solicits requests for eligible projects by mailing applications to all eligible cities in the state. All State Highway System City Connecting Links are eligible except those on the Interstate System and fully-controlled access sections on the Freeway System. Cities requesting projects are encouraged to review the proposed projects with the KDOT District Engineer or designated representative in their area before submitting their applications. If project applications exceed available funds, projects are prioritized and selected on the basis of pavement survey conditions.

KDOT received KLINK applications for potential SFY 2012 projects in September 2009 from interested cities but selections were deferred because of the lack of funding. With T-WORKS funding in place, SFY 2012 projects were selected and have been programmed. Applications for SFY 2013 projects were solicited through June 2011. Currently, the SSFY 2013 applications are being reviewed and project selections are anticipated to be made in the fall of 2011.

**Federal Safety Projects  
(HAZ & HES)**

These federal-aid projects provide safety improvements on all federal-aid sys-

tems. The construction and construction engineering costs of projects in these two subcategories are generally funded with federal safety funds at a 90 percent pro rata and 10 percent local or state funding, except for certain safety improvements as listed in 23 U.S.C. 120 (c) which are eligible for 100 percent funding. The majority of the safety projects are administered by the Bureau of Transportation Safety and Technology. A small portion of projects on county roads and in cities under a population of 5,000, are administered by the Bureau of Local Projects.

Jurisdiction (Location)	Population	Funding Split
<b>N</b> (Metropolitan)	Kansas City / Wichita	38 %
<b>U</b> (Urban)	Over 5,000	45 %
<b>K &amp; KA</b> (Rural State Highways)	Less than 5,000	5 %
<b>C</b> (County Rds & Other Rdwys)	Less than 5,000	12 %
<i>(These figures are not rigid. The percentages may vary by a few points in any given year and funds that cannot be utilized in one category may be transferred to another category.)</i>		

KDOT has divided the state roadway systems into four categories as a basis for location analysis and funding distribution to ensure that federal safety funding benefits all roadway systems across the state. The four categories are metropolitan, urban, rural state highways and county roads and other roadways. The chart above illustrates how KDOT allocates the total amount of safety funds available at the beginning of each federal fiscal year to each of the four categories. These category percentages are only estimates of how funds are to be distributed and actual distribution percentages may vary in any giv-



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en year based on the projects selected and the ability for fund utilization within each category. Actual project selections are made based upon the priority selection process described below for each of the categories.

**Identification of High Accident Locations** - For Jurisdictions N and U projects, cities are requested to submit two years of crash data for up to five high-crash locations on federal-aid routes within their areas. High-crash locations are determined and ranked by descending equivalent-property-damage-only (EPDO) accident rate. The top 50 (approximately) are considered high-crash locations warranting further analysis. Projects selected in these categories are financed with federal and local funds.

For jurisdiction K and KA projects, a comparison is made between the actual crash rate of the location and the statewide average rate for similar highways, to determine whether the location is a high-frequency crash location. The Bureau of Transportation Safety and Technology conducts county-wide road safety audits. From these audits and from traffic studies, high-crash locations are established. High-crash locations are ranked in descending EPDO crash rate order. The top ten are considered high-crash locations warranting further analysis. Projects in jurisdiction K or KA on the rural State Highway System are financed with federal and state funds.

Jurisdiction C projects are financed with federal and local funds rather than state funds. These projects are selected by

LPA's and are subject to Federal Highway Administration approval. They are administered in KDOT by the Bureau of Local Projects.

**Prioritization** - The identified high-crash locations are prioritized on the basis of the average annual net return for each location. The average annual net return is a dollar amount obtained by subtracting the average annual costs from the average annual benefits. First priority is given to the location with the highest average annual net return. Remaining projects are scheduled in descending order until funds are exhausted. Exceptions to this order of selection may occur when a LPA does not have the necessary matching funds, a future project is planned that encompasses the selected location, a grouping of proximate locations into one project, or the combining of several smaller projects yields a total net return larger than one project.

### **Geometric Improvement (K3R)**

The Geometric Improvement program assists cities with funding geometric improvements on City Connecting Links (KLINK's)-city streets which connect two portions of rural state highway. Geometric improvements are designed to widen pavements, add or widen shoulders, and add needed turning, acceleration, and deceleration lanes. Currently, funding ratios for these projects remain unchanged. These projects are funded either with a combination of local and state funding or solely with state funds, and the maximum

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state share per project is between \$700,000 and \$950,000 depending on city population. The minimum local funding share ranges from 0 percent to 25 percent of the project cost with the percentage of participation dependent on city size.

Prior to T-WORKS, KDOT annually solicited requests for projects and projects were presented to the Highway Advisory Commission for review and recommendation to the Secretary of Transportation for final selection. However, the Highway Advisory Commission was officially abolished July 1, 2011. Projects are now solicited and reviewed by KDOT's Bureau of Local Projects. After initial review, input is obtained from KDOT district personnel. Additionally, each application site is visited by KDOT staff and input from the locals is received at that time. At the conclusion of the review process, project recommendations are then provided to the Secretary of Transportation for concurrence.

Due to funding constraints resulting from the lack of new state and federal transportation programs, Geometric Improvement projects were not selected for SFY 2012 & 2013. However, applications for SFY 2014 have been solicited. The application submittal period ended in June 2011 and applications are currently under review. The selection process is anticipated to complete in fall 2011 and projects will be announced and programmed then.

### **Local Construction Locally and State Administered (LOC, RES, LFT)**

The projects in these subcategories are varied and may have elements of each of the three state programs-preservation, modernization and expansion, but all are performed on city and county roads. Local construction projects are divided into three subcategories: LOC, for those projects administered by the LPA with federal funding; LFT, for those projects administered by the LPA with funds received in exchange for their federal funding obligation; and RES, for those projects with federal funding administered by KDOT on behalf of the LPA. In order for LPAs to qualify for LOC subcategory funding and the administration of their own federally funded non-National Highway System (Non-NHS) projects, they must meet minimum requirements established by FHWA and KDOT. These requirements are intended to ensure that projects are developed in accordance with all applicable laws, regulations, criteria, and accepted engineering practices. For LPAs to qualify for LFT subcategory project programming they must submit an application to KDOT and sufficient state funds must be available in the year of exchange for KDOT to make the transfer. (In general, KDOT will determine the amount of state funds available for exchange annually at the time the federal funding is confirmed for a federal fiscal year.) KDOT administered projects which are grouped into subcategory RES, are similar in nature to locally administered with the only difference being that the State lets the project to construction

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and oversees the work on behalf of the LPAs. Local construction projects in the LOC and RES subcategories are funded with a combination of federal and local funding with a usual funding ratio of 80 percent federal funds and 20 percent local funds. Projects in the LFT subcategory are funded with local and state funds, with the state funds coming from an exchange of LPA federal obligation for the state funds. For more information concerning the fund exchange program, refer to the Program Finance section of this narrative or visit KDOT's website at

<http://www.ksdot.org/burlocalproj/default.asp>.

LPAs select their projects using a number of criteria. Projects are often proposed because of safety concerns, the need to maintain existing facilities or structures, and community needs fueled by growth and other factors. To assist in their selection process, bridge inspection data and other management systems are available to locals to use in their decision making processes.

Local agencies prepare a list of proposed projects and public input is solicited. After the LPAs have gained approval for their projects from their governing bodies, the proposed projects are prioritized and submitted to KDOT's Bureau of Local Projects with proof of public involvement. Projects are then programmed from these lists based upon the availability of funds. The projects identified in these lists are the local entities' portion of the STIP and identify their prioritized road or bridge construction projects.

## **Railroad/Highway Crossing Protection (RRX & RXR)**

This federal-aid program funds protective device installation and hazard elimination at railroad/highway grade crossings on public roads. Federal-aid finances up to 100 percent of the cost of these projects. In accordance with Section 130 of the 1973 Federal-aid Highway Act, KDOT has established a state rail crossing inventory and formula to prioritize all 6,200 at-grade public crossings in Kansas.

The priority formula "hazard index" is used to rate the relative hazard potential for all crossings and is based on highway traffic, train traffic, and a warning device factor. Each year a number of the highest ranked crossings that have not been addressed in prior programs are selected for review. A preliminary review of the crossings is conducted to verify crossing inventory information.

### **Priority Formula For Railroad Crossings**

$$\text{Hazard Index} = \text{AADT} \times \text{T} \times \text{W}$$

Where

AADT = Average Annual Daily Traffic

T = Average Trains per day

W = 0.1 for gates, 0.6 for flashing lights &  
1.0 for cross bucks

Crossings from this list that pass the preliminary review are scheduled for on-site diagnostic reviews. The diagnostic review team consists of KDOT, railroad, and local government staff. This team

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makes recommendations for each crossing as to type of warning system, crossing surface work, approach roadway improvements, drainage improvements, and brush and timber clearing. A rough cost estimate of the recommendations is developed for each crossing.

The on-site review is sent to the local government officials who have maintenance responsibilities for the highway or roadway. When crossing projects receive a commitment from local government, railroads, and the state, a project implementation procedure is started that leads to improvements at the crossing. With the implementation of prior federal transportation acts, KDOT now utilizes 100 percent federal funding for these railroad/highway crossing safety projects.

In conjunction with the United States Department of Transportation's national highway/railroad crossing safety initiatives, KDOT is also addressing railroad corridor highway/railroad crossing safety projects. For corridor project approval there must be a reasonable number of highway/railroad crossing closures. The highest priority highway /railroad crossings in the corridor are improved with active flashing light and gate signal systems. Projects in these two subcategories are reviewed and selected on a yearly basis. While many of the projects for SFY 2012 have been selected and programmed, additional projects may still be programmed throughout the year. These additional projects, if any, will be amended to the STIP when programmed.

### **Safe Routes to Schools (SRT)**

Safe Routes to School (SRTS) is a federal reimbursement program that was authorized under SAFETEA-LU. This program is currently funded with 100 percent federal funds. The SRTS goal is to increase the number of school children who walk or bike to school. SRTS provides reimbursements to local public authorities, school districts, and non-profit associations for projects or activities that will make walking and bicycling to school safe, enjoyable, and routine. In this subcategory, projects are selected by soliciting applications and then selecting projects from the applications submitted. To qualify for consideration applications must meet one of the following three criteria:

- 1) Project provides for infrastructure such as improvements to pedestrian and bicycle crossings, sidewalks, traffic calming, on- and off-street bicycle facilities, secure bicycle parking, and traffic diversions.
- 2) Project provides for non-infrastructure activities such as public awareness campaigns and outreach to press and community leaders, establishing walking school buses and bike trains, traffic education and enforcement, student training on bicycle and pedestrian safety, and funding for training volunteers and staff.
- 3) Project provides for plan development of safe routes to schools,

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with possible future funding to implement the plan.

Applications were solicited from local public authorities, school districts, and non-profit associations in the spring of 2011. Potential projects and activities will be evaluated throughout the summer and selected by October 2011. The next round of applications is anticipated to occur in the spring of 2012 for FFY 2013 projects. However, this is pending the authorization of a new federal program or extension of the current program. At this time, the continued funding of this program past FFY 2012 is uncertain.

### **Transportation Enhancement (TEX)**

Federal statute requires that a minimum of 10 percent of the Federal Surface Transportation Program funding received by the State of Kansas be reserved for Transportation Enhancement projects. Projects in this subcategory must correspond with one of the following three groups: historic, scenic and environmental, or pedestrian and bicycle facilities, and must be directly related to a surface transportation system. This program is funded based on an 80 percent federal/20 percent local match, and applicants need to be able to demonstrate their financial ability to meet their obligation.

Applications are solicited from LPAs (city, county, state, school district or other governing subdivision), evaluated and selected based on the criteria of the program. Application solicitations are

usually held every two years for two federal fiscal years funding. However, for FFY 2013 & 2014, application solicitations, which would normally occur this year, are being postponed pending congressional authorization of a new federal highway program.