

Quotation Number: 006-24
Date Issued:
Closing Date:

03-01-2024
03-25-2024 2:00pm
$\qquad$

## THIS IS NOT AN ORDER

1. In communications, always refer to the above quotation number.
2. All prices and conditions must be shown. Additions or conditions not shown on this bid will not be allowed.
3. Shawnee County reserve the right to accept or reject any part of, or all of, any bid or proposal.
4. All prices quoted are to be less Federal Excise Tax and Kansas Sales Tax.
5. Contractor must be registered and in good standing with SAM.GOV to be considered. This project is receiving federal funds.

## *SHAWNEE COUNTY HAS AN ELECTRONIC BID SYSTEM*

All vendors are required to create an online portal account (www.snco.us/purchasing) in order to receive or submit bid requests.

## ITEM AND DESCRIPTION

## The Shawnee County Public Works is soliciting sealed proposals from qualified firms interested in developing an eligible Comprehensive Safety Action Plan (Action Plan) by enhancing an existing Local Road Safety Program, per the following minimum requirements.

## Shawnee County Project S-601019.00

Shawnee County Board of County Commissioners has authorized the issuance of a "Request for Qualifications" from qualified firms interested in developing an eligible Comprehensive Safety Action Plan (Action Plan) by enhancing an existing Local Road Safety Program.

Shawnee County was awarded a Federal Fiscal Year 2023 Safe Streets and Roads for All (SS4A) Planning and Development Grant to develop an Action Plan.

The Bipartisan Infrastructure Law (BIL) established the SS4A discretionary program.
Shawnee County must have an eligible Action Plan in place before they can apply for one or more Implementation Grants. General information about the SS4A Grant Program and specific information about Action Plans can be found at, https://www.transportation.gov/grants/SS4A and https://www.transportation.gov/grants/ss4a/comprehensive-safety-action-plans, respectively.

Shawnee County's Local Road Safety Program is included.

## SCOPE OF WORK

The final eligible Action Plan must contain all required components necessary to allow Shawnee County to apply for future Implementation Grants opportunities.

Although not a part of this proposal, specific information about Implementation Grants can be found at, https://www.transportation.gov/grants/ss4a/implementation-grants.

No work related to this proposal may occur until a NOTICE TO PROCEED is issued.

## FUNDING

The funding available under this proposal is as follows:
Up to $\$ 168,000.00(80 \%)$ provided by the Federal Highway Administration
Up to $\$ 21,000.00(10 \%)$ provided by the Kansas Department of Transportation Up to $\$ 21,000.00(10 \%)$ provided by the Shawnee County, Kansas
Total Maximum Funds Available $=\$ 210,000.00$

## PROJECT MILESTONE

To allow time prior to an estimated mid-May 2025 deadline to apply for Implementation Grants, the final Action Plan delivery must occur no later than March 31, 2025 nor 365 calendar days after issuance of the NOTICE TO PROCEED, whichever date is later.

## CONTENT OF QUALIFICATIONS SUBMITTAL

Transmittal Letter. The transmittal letter is to serve only as the document covering the consultant's proposed qualifications. This letter should provide the name, title, address and telephone number of the firm's official contact person. This individual or his appointed representative shall have the authority to bind the firm and be available to be contacted by telephone or attend interviews if deemed necessary by the selection committee.

Ability of the firm to successfully perform the required work. The firm's qualification statement shall include a brief description of similar work completed.

Proiect Approach and Timeline. Provide a brief statement as to the firm's approach to the work as well as a proposed timeline.

References. The firm shall include the names, addresses and telephone numbers of cities where similar work has been completed.

Kev Personnel and Organization. Personnel assigned to the project shall be identified and their qualifications provided. A resume indicating key relevant experience and knowledge of each person named must be attached to the qualification statement.

Submittal and Selection Process. The Shawnee County Professional Services Selection Committee will review all qualification statements received and make a determination as to the best-qualified firm for this project.

## BID RESPONSE

Closing Date: Bids will be received until 2:00 p.m. CDT on the scheduled closing date. The online bid portal will not accept any new bids after this time.
Signature of Bids: Each bid must show in the space provided the complete business or mailing address of the bidder and must be signed by him/her with his/her usual signature.

Withdrawal of Bids: Bids already submitted may be withdrawn on the Electronic Bid System or upon proper identification of bidder and provided request is received prior to time of closing. Negligence on the part of the bidder in preparing the bid confers no right for the withdrawal after the time set for closing of bids.

Submitting Multiple Bids: The online bid portal will only allow one file to be uploaded per bid, per company. If you are submitting multiple bids, please complete the Multiple Bids Cover Page and attach as the first page of your bid upload. The document can be found under Purchasing in the bid portal.

Register Your Company: For a mandatory pre bid meeting, you must be registered in our bid portal for us to record you as an attendee. If you are not marked as attended, the system will not allow you to upload a bid response. To receive automatic updates on RFP subscribe to the bid types. If a RFP has a mandatory pre bid meeting it will be clearly marked on the RFP and in the bid portal.
Please Submit Your Bids Early: In case you have problems getting your bid to upload and need assistance, we suggest you submit before $1: 30 \mathrm{pm}$. Please contact us at once if you have issues uploading. Our system will not allow any bids to be uploaded after 2:00 pm. If your pricing changes, you can replace your bid in the system any time before the 2:00 closing.
Bid Openings: All bids submitted before the specified bid closing time shall be opened and properly recorded on the bid tabulation sheet. Subsequent to the bid opening, all bids shall be thoroughly evaluated and a determination made as to their compliance with applicable specifications. The appropriate County department head shall make this determination. Upon completion of the above determination, an analysis of all bids submitted shall be prepared and formally presented to the Board of County Commissioners for acceptance and approval of the lowest and/or best bid. The Board of County Commissioners reserves the right to accept or reject any and/or all bids and to waive any irregularities or informalities therein.
Notice to Successful Bidders: The successful bidder will be notified by email or telephone as soon as possible after bids have been opened, tabulated, and analyzed.
Notice to Unsuccessful Bidders: Unsuccessful bidders will not be notified.
Disclosure of Proposal Content and Proprietary Information: All proposals become the property of the Shawnee County. The Open Records Act (K.S.A. 45-215 et seq) of the State of Kansas requires public information be placed in the public domain at the conclusion of the selection process, and be available for examination by all interested parties. No proposals shall be disclosed until after a contract award has been issued. Shawnee County reserves the right to destroy all proposals if the RFP is withdrawn, a contract award is withdrawn, or in accordance with Kansas law. The online bid portal will not accept late proposals.

How to include Proprietary Information in your proposal: Trade secrets or proprietary information legally recognized as such and protected by law may be requested to be withheld if clearly labeled "Proprietary" on each individual page and provided in a clearly marked and separated with the Proprietary Divider page, section within the pdf file uploaded to the online bid portal. Only
one file is allowed to be uploaded to the bid portal. Pricing information is not considered proprietary and the bidder's entire proposal response package will not be considered proprietary.

Proprietary Divider Page: This document is available to be downloaded in the bid portal underneath the Purchasing section.
All information requested to be handled as "Proprietary" shall be submitted in the separate section from the main proposal and clearly labeled and section off by the divider page. The bidder shall provide detailed written documentation justifying why this material should be considered "Proprietary". Shawnee County reserves the right to accept, amend or deny such requests for maintaining information as proprietary in accordance with Kansas law.

Shawnee County does not guarantee protection of any information which is not submitted as required.

## DEMANDSTAR POSTINGS

Demandstar Website: Shawnee County open projects are posted on Demandstar as a secondary posting. Demandstar tracks broadcast and plan holder data. Bids must be submitted through the Shawnee County Bid Portal.

Shawnee County Bid Portal: When an open project is posted, Shawnee County is not able to track who downloads project information off the bid portal website. Bids must be submitted through the Shawnee County Bid Portal to be considered. All projects are posted on the County website, not all projects are posted on the Demandstar website. Registration is free.

## TERMS AND CONDITIONS

In the event that goods or services delivered by the vendor are unsatisfactory and remain unsatisfactory after a notice and an opportunity to correct the deficiencies, the County reserves the right to purchase substitute goods or services from the other bidders.

Shawnee County reserves the right to negotiate separately with any vendor after the opening of this RFP when such action is considered in its best interest. Subsequent negotiations may be conducted, but such negotiations will not constitute acceptance, rejection or a counteroffer on the part of the County.

Shawnee County interprets the term "lowest responsible and best bidder" as requiring Shawnee County to:
A. Choose between the kinds of materials, goods, wares, or services subject to the proposal, and
B. Determine which proposal is most suitable for its intended use or purpose. Shawnee County can consider among other factors such things as labor cost, service and parts availability and maintenance costs of items upon which proposals are received. Shawnee County can determine any differences or variations in the quality or character of the material, goods, wares or services performed or provided by the respective vendors.

Shawnee County will award the bid. If the successful vendor refuses or fails to make deliveries of the materials/services within the times specified in the RFP, purchase order or contractual agreement, Shawnee County may by written notice, terminate the contract OR purchase order. The successful vendor will certify and warrant that goods, personal property, chattels, and equipment sold and delivered are free and clear of any and all liens, or claims of liens, for materials or services arising under, and by virtue of the provisions of K.S.A. 58-201, et seq., and any other lien, right, or claim of any nature or kind whatsoever.

The vendor hereby certifies that he or she has carefully examined all of the documents for the project, has carefully and thoroughly reviewed this RFP, understands the nature and scope of the work to be done; and that this proposal is based upon the terms, specifications, requirements and conditions of the RFP, and documents. The vendor further agrees that the performance time specified is a reasonable time, having carefully considered the nature and scope for the project as aforesaid.

Shawnee County reserves the right to enter into agreements subject to the provisions of the Cash Basis Law (K.S.A. 10-1112 and 10-1113), the Budget Law (K.S.A.79-2935). Agreements shall be construed and interpreted so as to ensure that the County shall at all times stay in conformity with such laws, and as a condition of agreements the County reserves the right to unilaterally sever, modify, or terminate agreement at any time if, in the opinion of its legal counsel, the Agreement may be deemed to violate the terms of such law.

The vendor certifies that this proposal is submitted without collusion fraud, or misrepresentation as to other vendors, so that all proposals for the project will result from free, open, and competitive proposing among all vendors.

This RFP, responses thereto and any contract documents will be governed by the law of the State of Kansas. Any dispute arising out of the same will be litigated only within the courts of the State of Kansas.

Vendor agrees that all data, documents, and information, regardless of form that is generated as a result of this RFP are the property of Shawnee County. The County shall not be liable to reimburse any vendor for the costs of creating, compiling or delivering the same to the County.

By submission of a response, the proposer agrees that at the time of submittal, it: 1) has no interest (including financial benefit, commission, finder's fee, or any other remuneration) and will not acquire any interest, either direct or indirect, that would conflict in any manner or degree with the performance of proposer's services, or 2) benefit from an award resulting in a "Conflict of Interest." A "Conflict of Interest" will include holding or retaining membership, or employment, on a board, elected office, department, division, or bureau, or committee sanctioned by and/or governed by the Board of Shawnee County Commissioners of the County of Shawnee, Kansas. Proposers will identify any interests, and the individuals involved, on separate paper with the response and will understand that the County may reject their proposal at its sole discretion.

No gifts or gratuities of any kind shall be offered to any County employee at any time.
The Proposer certifies that this proposal is submitted without collusion, fraud, or misrepresentation as to other Proposers, so that all proposals for the project will result from free, open, and competitive proposing.

The County is exempt from the payment of Federal and excise taxes and from Kansas sales tax.
Vendor credit agreements are prohibited. Unless otherwise stated in this document, payment will be made from vendor-submitted invoice(s) via ACH transfer, check, or credit card, net 30 days. Shawnee County will not complete any credit application or agree to credit terms supplied by vendor.

Nondiscrimination: Shawnee County is committed to the concept of equal employment opportunity. All bidders and contractors are expected to comply with the provisions of K.S.A. 44-1030 and 44-1031, copies of which are attached and shall be a part of this contract and other applicable Federal and Kansas laws governing equal employment opportunity.

In accordance with K.S.A 44-1030, vendor hereby agrees to the following:
A. He or she will observe the provision of the Kansas Commission on Human Rights and will not discriminate against any person in the performance of work under the present contract because of race, religion, color, sex, national origin, ancestry, or physical disability.
B. In all solicitations or advertisements for employees, he or she will include the phrase, "Equal Opportunity Employer", or a similar phrase to be approved by the Kansas Commission on Human Rights.
C. If he or she fails to comply with the manner in which he or she will be deemed to have breached the present contract, and it may be canceled, terminated, or suspended, in whole or in part, by Shawnee County, Kansas.
D. If he or she is found guilty of a violation of the Kansas Act Against Human Rights under a decision, or order of the Kansas Commission on Human Rights which has become final, he or she will be deemed to have breached the present contract, and it may be canceled, terminated, or suspended, in whole or in part, by Shawnee County, Kansas; and,
E. He or she will include the provisions of subsections (a) through (d) inclusively of this paragraph in every subcontract or purchase order so that such provision will be binding upon such subcontractor of vendor.

## Provisions of K.S.A. 44-1030 Statute:

Mandatory provisions applicable to contracts of the state and other political subdivisions; cancellation, when; application to subcontract; non-application to certain contract. (a) Except as provided by subsection (c) of this session, every contract for or on behalf of the state or any county or municipality or other political subdivision of the state or any agency of or authority created by any of the foregoing, for the construction, alteration or repair of any public building or public work or for the acquisition of materials, equipment, supplies or services shall contain provisions by which the contractor agrees that:

1. The contractor shall observe the provisions of the Kansas act against discrimination and shall not discriminate against any person in the performance of work under the present contract because of race, religion, color, sex physical handicap unrelated to such person's ability to engage in the particular work, national origin or ancestry.
2. In all solicitations or advertisements for employees, the contractor shall include the phrase, "equal opportunity employer," or a similar phrase to be approved by the commission.
3. If the contractor fails to comply with the manner in which the contractor reports to the commission in accordance with the provisions of K.S.A. 44-1032, the contractor shall be deemed to have breached the present contract and it may be cancelled, terminated or suspended, whole or in part, by the contracting agency.
4. If the contractor is found guilty of a violation of the Kansas act against discrimination under a decision or order of the commission which has become final, the contractor shall be deemed to have breached the present contract and it may be cancelled, terminated or suspended, in whole or in part, by the contracting agency.
5. The contractor shall include the provisions of paragraphs one (1) through four (4) inclusively of this subsection (a) in every subcontract or purchase order so that such provisions will be binding upon such subcontractor or vendor. (b) The Kansas commission on civil rights shall not be prevented hereby from requiring reports of contractors found to be not in compliance with the Kansas act against discrimination. (c) The provisions of this section shall not apply to a contract entered into by a contractor: (1) Who employs fewer than four (4) employees during the term of such contract; or (2) Whose contracts with the governmental entity letting such contract cumulatively total five thousand dollars $(\$ 5,000)$ or less during the fiscal year of such governmental entity.

## Provisions of K.S.A. 44-1031 Statute:

Same; personnel to be used in performing contracts; reports; non-application to certain contractors. Every person, as defined in subsection (a) of K.S.A. 44-1002, who wishes to enter into a contract which is covered by the provisions of K.S.A. 44-1030 shall upon request of the commission, inform the commission in writing of the manner in which such person shall recruit and screen personnel to be used in performing the contract. The report shall be made on forms to be supplied by the commission. The provisions of K.S.A. 44-1030 and of this section shall not apply to any contractor who has already complied with the provisions of such sections by reason of holding a contract with the federal government or a contract involving federal funds.

History: L.1972, ch.184, \& 15; L. 1975, ch. 264, \& 8; L. 1977, ch. 183, \& 2; July 1.

## All questions regarding this bid should be posted on the online Electronic Bid System.

For problems with the online Electronic Bid System, please contact:
Shawnee County Audit Finance Department
e-mail: Auditfinance@snco.us phone: (785) 251 - 4039

## The undersigned agrees with all terms and conditions stated above:

Signature
Printed Name
Title
Email Address
Phone Number

## FEDERAL REQUIREMENTS ADDENDUM

This Contract may be supported by Federal funding. The Federal Government is not a party to any subagreement nor to any solicitations or request for proposals. This Contract is subject to regulations contained in 49 Code of Federal Regulations (CFR) Part 18 and the applicable grant agreement between the County and the Federal Government. The following provisions include, in part, certain standard terms and conditions required by the Federal Government, whether expressly set forth in the following Contract provisions. Anything to the contrary herein notwithstanding, all Federally mandated terms shall be deemed to control in the event of a conflict with other provisions contained in this Contract. The Contractor agrees not to perform any act, fail to perform any act, or refuse to comply with any County requests that would cause the County to be in violation of the Federal terms and conditions.

### 1.1 Changes in Federal laws, Regulations, Policies and Administrative Practices

New federal laws, regulations, policies and administrative practices may be established after the date this Contract is established and may apply to this Contract. To achieve compliance with changing federal requirements, the Contractor agrees to accept all changed requirements that apply to this Contract and require Subcontractors comply with revised requirements as well.

### 1.2 Federal Changes

The Contractor agrees to comply with all applicable regulations, policies, procedures and directives, including without limitation, those listed directly or by reference, as they may be amended or promulgated from time to time during the term of this Contract. Contractor's failure to comply shall constitute a material breach of this Contract.

Ref: 49 CFR Part 18

### 1.3 No Federal Government Obligations to Third Parties

The Contractor agrees that, notwithstanding any concurrence by the Federal Government in or approval of the solicitation or award of this Contract, absent the express written consent by the Federal Government, the Federal Government is not a party to this Contract and shall not be subject to any obligations or liabilities to the Contractor or any other party (whether or not a party to this Contract) pertaining to any matter resulting from this Contract.

The Contractor agrees to include the above clause in each subcontract financed in whole or in part with Federal assistance. It is further agreed that the clause shall not be modified, except to identify the Subcontractor who shall be subject to its provisions.

### 1.4 Equal Employment Opportunity

In connection with the execution of this Contract, the Contractor shall not discriminate against any employee or applicant for employment because of race, color, creed, sex, disability, age, or national origin. The Contractor shall take affirmative action to ensure that the hiring of applicants and treatment of employees during employment is conducted without regard to their race, color, creed, sex, disability, age, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer, recruitment, advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship. Contractor further agrees to insert a similar provision in all Subcontracts, except Subcontracts for standard commercial supplies or raw materials.
The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.

Ref: Executive Order 11246, as amended by Executive Order 11375; Title VII of the Civil Rights Act, as amended, 42 USC $\S 2000$ e;section 4 of the Age Discrimination in Employment Act of 1967, as amended, 29 USC § 623; section 102 of the Americans with Disabilities Act, as amended, 42 USC §§ 12101 et seq.; 29 CFR Part 1630; 41 CFR § 60-1.4.

### 1.5 Title VI Compliance

The Contractor shall comply with and shall ensure the compliance by all Subcontractors under this Contract with all the requirements imposed by Title VI of the Civil Rights Act of 1964 (42 USC 2000d) and, "Nondiscrimination in Federally-Assisted Programs of the Department of Transportation -- Effectuation of Title VI of the Civil Rights Act," 49 CFR Part 21, (hereinafter "Regulations") as they may be amended from time to time. The Federal Government and or the County has a right to seek judicial enforcement with regard to any matter arising under Title IV of the Civil Rights Act and implementing regulations.

## Ref: 49 CFR Part 21.19.

During the performance of this Contract, the Contractor, for itself, its assignees and successors-ininterest agrees as follows:
A. Nondiscrimination-49 CFR Part 26. The Contractor or Subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this Contract. The Contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of federally assisted contracts. Failure by the Contractor to carry out these requirements is a material breach of this Contract, which may result in the termination of this Contract or such other remedy, as the County deems appropriate.
B. Prompt Payment. The Contractor agrees to pay each Subcontractor under this Contract for satisfactory performance of its Contact no later than thirty (30) Days from the receipt of each payment the Contractor receives from the County. The Contractor agrees further to return retainage payments to each Subcontractor within thirty (30) Days after the Subcontractor's Work is satisfactorily completed. Any delay or postponement of payment from the above referenced period may occur only for good cause following written approval of the County. This clause applies to both DBE and non-DBE Subcontractors.
C. Solicitations for Subcontracts, Including Procurements of Materials and Equipment. In all solicitations either by competitive bidding or negotiation made by the Contractor for Work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential Subcontractor or supplier shall be notified by the Contractor of the Contractor's obligations under this Contract and the Regulations relative to nondiscrimination on the grounds of race, color or national origin.
D. Sanctions for Noncompliance. In the event of the Contractor's noncompliance with the nondiscrimination provisions of this Contract, the County shall impose such contract sanctions as it or the Federal Government may determine to be appropriate, including, but not limited to:

1. Withholding of payments to the Contractor under the contract until the Contractor complies, and/or
2. Cancellation, termination, or suspension of the contract, in whole or in part.
E. Incorporation of Provisions. The Contractor shall include the provisions of paragraphs A through D in every Subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations or directives issued pursuant thereto. The Contractor shall take such action with respect to any subcontract or procurement as the County or the Federal Government may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, however, that in the event a Contractor becomes involved in, or is threatened with, litigation with a Subcontractor or supplier as a result of such direction, the Contractor may request the County to enter into such litigation to protect the
interests of the County and, in addition, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.
F. Contractor's List. Contractor is requested to submit the name, address, DBE/Non-DBE status, annual gross receipts, and age of all Subcontractors and suppliers bidding or quoting on Federally funded projects. Compliance with the requirement to report the Contractor's List information is a matter of responsibility. Contractor is requested to submit the Contractor's List prior to Contract Work.

### 1.6 Labor Provisions - Non-Construction Contracts

*** Not Applicable for American Rescue Plan Act - Coronavirus State and Local Fiscal Recovery Funded Projects ***
A. Overtime Requirements

No Contractor or Subcontractor contracting for any part of the Contract Work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any work week in which he or she is employed on such work to work in excess of forty (40) hours in such work week unless such laborer or mechanic receives compensation at a rate not less than one and one-half (1.5) times the basic rate of pay for all hours worked in excess of forty (40) hours in such work week.

Ref: 29 CFR § 5.5(b)(1).
B. Violation: Liability for Unpaid Wages: Liquidated Damages

In the event of any violation of the clause set forth in paragraph A of this section, the Contractor and any Subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such Contractor and Subcontractor shall be liable to the United States (in the case of Work done under Contract for the District of Columbia or a territory, to such district or to such territory) for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of paragraph $A$ of this section in the sum of ten dollars (\$10) for each Day on which such individual was required or permitted to work in excess of the standard work week of forty (40) hours without payment of the overtime wages required by paragraph A of this section.

Ref: 29 CFR § 5.5(b)(2).
C. Withholding for Unpaid Wages and Liquidated Damages

The Federal Government or the County shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any monies payable on account of Work performed by the Contractor or Subcontractor under any such Contract or any other federal Contract with the same prime Contractor, or any other federally-assisted Contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime Contractor, such sums as may be determined to be necessary to satisfy any liabilities of such Contractor or Subcontractor for unpaid wages and liquidated damages as Provided in paragraph B of this section.

Ref: 29 CFR § 5.5(b)(3).
D. Payrolls and Basic Records

The Contractor or Subcontractor shall maintain payrolls and basic payroll records during the course of the Work and shall preserve them for a period of three (3) years from the completion of the Contract for all laborers and mechanics, including guards and watchmen, working on the Contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made and actual wages paid. Further, the records to be maintained under this paragraph shall be made
available by the Contractor or Subcontractor for inspection, copying or transcription by authorized representatives of the Department of Transportation and the Department of Labor, and the Contractor or Subcontractor shall permit such representatives to interview employees during working hours on the job.

Ref: 29 CFR § 5.5(c).
E. Subcontracts

The Contractor or Subcontractor shall insert in any subcontracts the clauses set forth in paragraphs A through E of this section and also a clause requiring the Subcontractors to include these clauses in any lower tier subcontracts. The prime Contractor shall be responsible for compliance by any Subcontractor or lower tier Subcontractor with the clauses set forth in paragraphs A through E of this section.

Ref: 29 CFR § 5.5(b)(4).

### 1.7 Cargo Preference - Use of U.S. Flag Vessels

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*** NOTE: Not Applicable for Services ***
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In the event that ocean shipment or international air transportation is required for any equipment, material or commodities pursuant to this Contract, the Contractor shall:
A. Utilize privately owned United States flag commercial vessels to ship at least fifty percent (50\%) of the gross tonnage involved, computed separately for dry bulk carriers, dry cargo liners and tankers, whenever shipping any equipment, materials or commodities pursuant to this Contract, to the extent such vessels are available at fair and reasonable rates for United States flag commercial vessels.
B. Furnish within twenty (20) working days following the date of loading for shipments originating within the United States, or within thirty (30) working days following the date of loading for shipment originating outside the United States, a legible copy of a rated, "on-board" commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph A of this section, to the County, through the prime Contractor in the case of Subcontractor bills-of-lading, and to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590, marked with appropriate identification of the project.
C. Insert the substance of the provisions of this section in all subcontracts issued pursuant to this Contract when the subcontract may involve the transport of equipment, material, or commodities by ocean vessel.

Ref: 46 USC § 1241; 46 CFR Part 381.

### 1.8 Fly America

*** NOTE: Note only Applicable if Contract may involve flying goods or people outside the USA ***
The Contractor agrees to utilize United States flag air carriers to the extent such carriers Provide the air transportation needed, or accomplish the Contractor's mission. The Contractor agrees to utilize United States flag air carriers even though comparable or a different kind of service can be provided at less cost by a foreign air carrier, a foreign air carrier can be paid for in excess foreign currency, unless Unites States flag air carriers decline to accept excess or near excess foreign currencies for transportation payable only out of those monies. The Contractor shall submit, if a foreign air carrier was used, an appropriate certification or memorandum adequately explaining why service with a U.S. flag air carrier was not available or why it was necessary to use a foreign carrier and shall, in any event, provide a certificate of compliance with the Fly America requirements. The Contractor agrees to include the requirements of this section in all subcontracts that may involve international air transportation.

Ref: 49 USC § 40118; 41 CFR Part 301-310.

### 1.9 Audit and Inspection of Records

In the case of all negotiated Contracts and Contracts for construction, reconstruction or improvement of facilities and equipment, which were entered into under other than competitive proposal procedures, Contractor agrees that the County, the Comptroller General of the United States or any of their duly authorized representatives, shall, for the purpose of audit and examination be permitted to inspect all Work, materials, payrolls, and other data and records with regard to the project, and to audit the books, records and accounts with regard to the project. Further, Contractor agrees to maintain all required records for at least three (3) years after the County makes final payment and all other pending matters are closed.

Ref: 49 USC § 5324; 18 CFR Part 18.36 (i); 49 CFR Part 633.17; and FEDERAL GOVERNMENT Master Agreement MA (10), 10-1-2003, Section 8 (c) and (d).

### 1.10 Buy America

*** NOTE: Not applicable for non Transit funded procurements ***
The Contractor agrees to comply with 49 USC § 5323(j), 49 CFR Part 661, which provides that Federal funds may not be obligated unless steel, iron, and manufactured products used in FEDERAL GOVERNMENT-funded projects are produced in the United States, unless a waiver has been granted by FEDERAL GOVERNMENT or the product is subject to a general waiver.

General waivers are listed in 49 CFR 661.7 and include but are not limited to microcomputer equipment, Software, and small purchases (currently less than $\$ 100,000$ ) made with capital, operating, or planning funds. Separate requirements for rolling stock are set out at 5323(j)(2)(C) and 49 CFR 661.11.

Contracts in excess of $\$ 100,000$ require Attachment H, Buy America Certificate, to be completed and submitted to the County with the Contract, except those subject to a general waiver. A Contract that is not accompanied by a completed Buy America certification shall be rejected and subject to termination. This requirement does not apply to lower tier Subcontractors.

### 1.11 Buy America General Waiver

*** OPTIONAL BUY AMERICA TRANSIT ONLY**
*** NOTE: Not applicable if Contract is less than $\$ 100,000$ ***
The procurement is exempt from FEDERAL GOVERNMENT "Buy America" requirements in 49 USC § $5323(\mathrm{j}), 49$ CFR Part 661 because of a General Waiver.

In accordance with Appendix A to 49 CFR § 661.7 General Waivers (d), "Under the provisions of § 661.7(b) and (c) of this part, microcomputer equipment, including Software, of foreign origin can be procured by grantees."

### 1.12 Privacy

*** NOTE: Not applicable if Contract is only for Goods ***
Should the Contractor, or any of its Subcontractors, or their employees administer any system of records on behalf of the Federal Government, the Privacy Act of 1974, 5 USC § 552a, imposes information restrictions on the party administering the system of records.
For purposes of the Privacy Act, when the Agreement involves the operation of a system of records on individuals to accomplish a government function, the recipient and any Contractors, third party Contractors, Subcontractors and their employees involved therein are considered to be government employees with respect to the government function. The requirements of the Act, including the civil and criminal penalties for violations of the Act, apply to those individuals involved. Failure to comply
with the terms of the Act or this provision of this Contract shall make this Contract subject to termination.

The Contractor agrees to include this clause in all subcontracts awarded under this Contract that involve the design, development, operation, or maintenance of any system of records on individuals subject to the Act.

### 1.13 Access Requirements for Individuals with Disabilities

The County and the Contractor are required to comply with all applicable requirements of the Americans with Disabilities Act of 1990 (ADA), 42 USC $\S \S$ 12101, et seq.; Section 504 of the Rehabilitation Act of 1973, as amended, 29 USC § 794; and 49 USC § 5301(d), and the following regulations and any amendments thereto:
A. U.S. Department of Transportation regulations, "Transportation Services for Individuals with Disabilities (ADA)," 49 CFR Part 37;
B. U.S. Department of Transportation regulations, "Nondiscrimination on the Basis of Disability in Programs and Activities receiving from Federal Financial Assistance," 49 CFR Part 27;
C. U.S. Department of Transportation regulations, "Americans With Disabilities (ADA) Accessibility Specifications for Transportation Vehicles," 49 CFR Part 38;
D. U.S. Department of Justice (DOJ) regulations, "Nondiscrimination on the Basis of Disability in State and Local Government Services," 28 CFR Part 35;
E. U.S. Department of Justice regulations, "Nondiscrimination on the Basis of Disability by Public Accommodations and in Commercial Facilities," 28 CFR Part 36;
F. U.S. General Services Administration regulations, "Construction and Alteration of Public Buildings," 41 CFR Subpart 101-19;
G. U.S. Equal Employment Opportunity Commission (EEOC) "Regulations to Implement the Equal Employment Provisions of the Americans with Disabilities Act," 29 CFR Part 1630;
H. U.S. Federal Communications Commission regulations, "Telecommunications Relay Services and Related Customer Premises Equipment for the Hearing and Speech Disabled," 47 CFR Part 64, Subpart F; and
I. FEDERAL GOVERNMENT regulations, "Transportation for Elderly and Handicapped Persons," 49 CFR Part 609.

### 1.14 Interest of Members of or Delegates of Congress

Pursuant to 41 USC § 22, no member of or delegate to the Congress of the United States shall be admitted to any share or part of this Contract or to any benefit arising there from.

### 1.15 Certification Regarding Debarment, Suspension and Other Responsibility Matters

This Contract is a covered transaction for purposes of 49 CFR Part 29. As such, the Contractor is required to verify that none of the Contractor, its principals, as defined at 49 CFR 29.995, or affiliates, as defined at 49 CFR 29.905, are excluded or disqualified as defined at 49 CFR 29.940 and 29.945.

The Contractor is required to comply with 49 CFR 29, Subpart C and must include the requirement to comply with 49 CFR 29, Subpart C in any lower tier covered transaction it enters into.

By signing and submitting this Contract, the Contractor certifies as follows:

The certification in this clause is a material representation of fact relied upon by the County. If it is later determined that the Contractor knowingly rendered an erroneous certification, in addition to remedies available to the County, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment. The Contractor agrees to comply with the requirements of 49 CFR 29, Subpart C while this offer is valid and throughout the period of any Contract that may arise from this Contract. The Contractor further agrees to include a provision requiring such compliance in its lower tier covered transactions.

### 1.16 Disclosure of Lobbying Activities

*** This subsection and Attachments I and J do not apply if the Contract will be less than \$100,000 and applies only for operational service and turnkey Contracts ***

Contracts in excess of $\$ 100,000$ require Attachment I, Certificate of Lobbying Activities, and Attachment J, Disclosure Form to Report Lobbying and Instructions (if appropriate), to be completed and submitted to the County with the proposal, as required by 49 CFR Part 20, "New Restrictions on Lobbying."

The Contractor certifies that it shall not and has not used Federal appropriated funds to pay any Person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal Contract, grant or any other award covered by the Byrd Anti-Lobbying Amendment, 31 USC § 1352. The Contractor shall disclose the name of any registrant under the Lobbying Disclosure Act of 1995, codified at 2 USC § 1601 et seq., who has made lobbying contacts on its behalf with non-Federal funds with respect to that Federal Contract, grant or award covered by 31 USC § 1352. Such disclosures are to be forwarded to the County.

The Contractor shall include the language of this certification in all subcontract awards at any tier and require that all recipients of subcontract awards in excess of $\$ 100,000$ shall certify and disclose accordingly.

Ref: 49 CFR Part 20, modified as necessary by 31 USC § 1352.

### 1.17 False or Fraudulent Statements or Claims

The Contractor acknowledges that if it makes a false, fictitious, or fraudulent claim, statement, submission, or certification to the County in connection with this project, the County reserves the right to pursue the procedures and impose on the recipient the penalties of 18 USC § 1001, 31 USC $\S \S 3729$ and 3801 et seq., and/or 49 USC §5307(n)(1), as may be appropriate. The terms of Department of Transportation regulations, "Program Fraud Civil Remedies," 49 CFR Part 31, are applicable to this project.
The Contractor agrees to include this clause in all subcontracts awarded under this Contract.

### 1.18 Energy Conservation

The Contractor agrees to comply with mandatory standards and policies relating to energy efficiency that are contained in the State Energy Conservation plan issued in compliance with the Energy Policy and Conservation Act, 42 USC §§ 6321 et seq., and 49 CFR Part 18.

The Contractor agrees to include this clause in all subcontracts awarded under this Contract.

### 1.19 Air Pollution

The Contractor and suppliers may be required to submit evidence to the Project Manager that the governing air pollution criteria shall be met. This evidence and related documents shall be retained by the manager for on-site examination by Federal Government.

### 1.20 Environmental Requirements

The Contractor agrees to comply with all applicable standards, orders or requirements as follows:
A. Environmental Protection
*** Not Applicable for American Rescue Plan Act - Coronavirus State and Local Fiscal Recovery Funded Projects ***

The Contractor agrees to comply with the applicable requirements of the National Environmental Policy Act of 1969, as amended, 42 USC $\S \S 4321$, et seq., consistent with Executive Order No. 11514, as amended, "Protection and Enhancement of Environmental Quality," 42 USC § 4321 note. FEDERAL GOVERNMENT statutory requirements on environmental matters at 49 USC § 5324(b); Council on Environmental Quality regulations on compliance with the National Environmental Policy Act of 1969, as amended, 42 USC § 4321 et seq. and 40 CFR Part 1500, et seq.; and joint FHWA/FEDERAL GOVERNMENT regulations, "Environmental Impact and Related Procedures," 23 CFR Part 771 and 49 CFR Part 622.

## B. Air Quality

*** NOTE: Not applicable if Contract is less than \$100,000 ***
The Contractor agrees to comply with all applicable standards, orders, or regulations issued pursuant to section 306 of the Clean Air Act, as amended, 42 USC $\S \S 7401,7414$, et seq. The Contractor agrees to report each violation to the County and understands and agrees that the County shall, in turn, report each violation as required to assure notification to Federal Government, the county and the appropriate Environmental Protection Agency (EPA) Regional Office.

The Contractor agrees to include this clause in each subcontract exceeding \$100,000 financed in whole or in part with Federal assistance.

Ref: 42 USC § 7606 note; 40 CFR Part 51, Subpart T; 40 CFR Part 85; 40 CFR Part 86; and 40 CFR Part 600.
C. Clean Water
*** NOTE: Not applicable if Contract is less than \$100,000 ***
The Contractor agrees to comply with all applicable standards, orders, or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 USC §§ 1251, 1368, et seq. The Contractor agrees to report each violation to the County and understands and agrees that the County shall, in turn, report each violation as required to assure notification to the county, the Federal Government and the appropriate Environmental Protection Agency (EPA) Regional Office.

The Contractor agrees to protect underground sources of drinking water consistent with the provisions of the Safe Drinking Water Act of 1974, as amended, 42 USC §§ 300h et seq.

The Contractor agrees to include these requirements in each subcontract exceeding \$100,000 financed in whole or in part with Federal assistance.

Ref: 33 USC § 1251.
D. Use of Public Lands
*** NOTE: Not applicable if Contract is less than \$100,000 ***
The Contractor agrees that no publicly owned land from a park, recreation area, or wildlife or waterfowl refuge of national, state, or local significance as determined by the federal, state or local officials having jurisdiction thereof, or any land from a historic site of national, state, or local significance may be used for the Project unless the Federal Government makes the specific findings required by 49 USC § 303.
E. Historic Preservation
*** NOTE: Not applicable if Contract does not include land or buildings ***
The Contractor agrees to assist the Federal Government in complying with section 106 of the National Historic Preservation Act, as amended, 16 USC § 470f, Executive Order No. 11593, "Protection and Enhancement of the Cultural Environment," 16 USC § 470 note, and the Archaeological and Historic Preservation Act of 1974, as amended, 16 USC $\S \S 469 a-1$ et seq. involving historic and archaeological preservation as follows:

1. The Contractor agrees to consult with the State Historic Preservation Officer about investigations to identify properties and resources listed in or eligible for inclusion in the National Register of Historic Places that may be affected by the Project, in accordance with Advisory Council on Historic Preservation regulations, "Protection of Historic and Cultural Properties," 36 CFR Part 800, and notifying Federal Government of those properties so affected.
2. The Contractor agrees to comply with all federal requirements to avoid or mitigate adverse effects on those historic properties.
F. Mitigation of Adverse Environmental Effects

The Contractor agrees that if the Project should cause adverse environmental effects, the Contractor shall take all reasonable steps to minimize those effects in accordance with 49 USC § 5324(b), and all other applicable federal laws and regulations, specifically, the procedures of 23 CFR Part 771 and 49 CFR Part 622.

### 1.21 Preference for Recycled Products

To the extent practicable and economically feasible, the Contractor agrees to Provide a competitive preference for products and services that conserve natural resources and protect the environment and are energy efficient. Examples of such products may include, but are not limited to, products described in the United States EPA Guidelines at 40 CFR Part 247, implementing section 6002 of the Resource Conservation and Recovery Act, as amended, 42 USC § 6962, and Executive Order 12873.

### 1.22 Patent Rights

*** USED ONLY FOR DEVELOPMENT OF A PRODUCT OR INFORMATION ***
If any invention, improvement, or discovery of the Contractor or any of its Subcontractors is conceived or first actually reduced to practice in the course of or under this Contract, and that invention, improvement, or discovery is patentable under the laws of the United States or any foreign country, the Contractor agrees to notify the County immediately and Provide a detailed report. The rights and responsibilities of the Contractor and the County with respect to such invention, improvement or discovery shall be determined in accordance with applicable federal laws, regulations, policies, and any waiver thereof.

Unless the Federal Government later makes a contrary determination in writing, irrespective of the Contractor's status (i.e., a large business, small business, state government or state instrumentality, local government, nonprofit organization, academic institution, individual), the County and the Contractor agree to take the necessary actions to provide those rights in that invention due the Federal Government as described in U.S. Department of Commerce regulations, "Rights to

Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," 37 CFR Part 401.
The Contractor also agrees to include the requirements of this section in each subcontract for experimental, developmental, or research Work financed in whole or in part with Federal assistance.
Ref: 49 CFR Part 19, Appendix A, Section 5 and FEDERAL GOVERNMENT Master Agreement MA (10), 10-1-2003, Section 18 (c).

### 1.23 Rights in Data and Copyrights

*** USED ONLY FOR DEVELOPMENT OF A PRODUCT OR INFORMATION ***
A. The term "subject data" used in this section means recorded information, whether or not copyrighted, that is delivered or specified to be delivered under this Contract. The term includes graphic or pictorial delineation in media such as drawings or photographs; text in specifications or related performance or design-type documents; machine forms such as punched cards, magnetic tape, or computer memory printouts; and information retained in computer memory. Examples include, but are not limited to: computer Software, engineering drawings and associated lists, specifications, standards, process sheets, manuals, technical reports, catalog item identifications, and related information. The term does not include financial reports, cost analyses, and similar information incidental to Contract administration.
B. The following restrictions apply to all subject data first produced in the performance of this Contract:

1. Except for its own internal use, the Contractor may not publish or reproduce subject data in whole or in part, or in any manner or form, nor may the Contractor authorize others to do so, without the written consent of the Federal Government, until such time as the Federal Government may have either released or approved the release of such data to the public; this restriction on publication, however, does not apply to any Contract with an academic institution.
a. In accordance with 49 CFR § 18.34 and 49 CFR § 19.36, the Federal Government reserves a royalty-free, non-exclusive and irrevocable license to reproduce, publish or otherwise use, and to authorize others to use, for "Federal Government purposes."
b. Any subject data developed under this Contract, whether or not a copyright has been obtained; and
c. Any rights of copyright purchased by the Contractor using federal assistance in whole or in part provided by FEDERAL GOVERNMENT.
2. Without the copyright owner's consent, the Federal Government may not extend its Federal license to any other party.
C. When FEDERAL GOVERNMENT awards Federal assistance for a Contract involving experimental, developmental, or research Work, it is FEDERAL GOVERNMENT's general intention to increase transportation knowledge available to the public, rather than to restrict the benefits resulting from the Contract to those parties that have participated therein. Therefore, unless FEDERAL GOVERNMENT determines otherwise, the Contractor understands and agrees to permit FEDERAL GOVERNMENT to make available to the public, either FEDERAL GOVERNMENT's license in the copyright to any subject data developed in the course of this Contract, or a copy of the subject data first produced under this Contract for which a copyright has not been obtained. In the event that this Contract is not completed for any reason whatsoever, all data developed under this Contract shall become subject data as defined in paragraph A of this section and shall be delivered as the County may direct. This paragraph C, however, does not apply to adaptations of automatic data processing equipment or programs for the Contractor's use whose costs are financed in whole or in part with Federal assistance Provided by

FEDERAL GOVERNMENT for transportation capital projects (sections 3, 9, 16, 18 or 25 of the Federal Transit Act, as amended, or Title 23 capital funds).
D. Unless prohibited by State law, the Contractor agrees to indemnify, save and hold harmless the County and the Federal Government, its officers, agents, and employees acting within the scope of their official duties against any liability, including costs and expenses, resulting from any willful or intentional violation by the Contractor of proprietary rights, copyrights, or right of privacy, arising out of the publication, translation, reproduction, delivery, use or disposition of any data furnished under this Contract. The Contractor shall not be required to indemnify the County or the Federal Government for any such liability arising out of the wrongful acts of employees or agents of the County or the Federal Government.
E. Nothing contained in this section on rights in data shall imply a license to the County or the Federal Government under any patent or be construed as affecting the scope of any license or other right otherwise granted to the County or the Federal Government under any patent. Data developed by the Contractor and financed entirely without using Federal assistance provided by the Federal Government that has been incorporated into Work required by the Contract is exempt from the requirements of paragraphs $B, C$, and $D$ of this section, provided that the Contractor identifies that data in writing at the time of delivery of the Contract Work.

Ref: FEDERAL GOVERNMENT Master Agreement MA (10), 10-1-2003, Section 18 (f).
F. Unless the Federal Government later makes a contrary determination in writing, irrespective of the Contractor's status (i.e., a large business, small business, state government or state instrumentality, local government, nonprofit organization, academic institution, individual), the County and the Contractor agree to take the necessary actions to Provide, through FEDERAL GOVERNMENT, those rights in that invention due the Federal Government as described in U.S. Department of Commerce regulations, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements."

Ref: 37 CFR Part 401.
G. The Contractor also agrees to include the requirements of this section in each subcontract for experimental, developmental, or research Work financed in whole or in part with Federal assistance provided by FEDERAL GOVERNMENT.

### 1.24 Termination Provisions Required

All Contracts and subcontracts in excess of $\$ 10,000$ shall contain contractual provisions or conditions that allow for termination for cause and convenience by the County including the manner by which it shall be effected and the basis for settlement.
Ref: FEDERAL GOVERNMENT Circular 4220.1E § 15.b.

### 1.25 Breach Provisions Required

*** NOTE: Not applicable if Contract is less than \$100,000 ***
All Contracts in excess of $\$ 100,000$ shall contain contractual provisions or conditions that shall allow for administrative, contractual, or legal remedies in instances where the Contractor violates or breaches the terms of this Contract, including sanctions and penalties as may be appropriate. The Contractor agrees to include this provisional requirement in all subcontracts in excess of \$100,000 awarded under this Contract.

Ref: FEDERAL GOVERNMENT Circular 4220.1E, § 15.a.
$\qquad$

# Local Road Safety Plan 

## Shawnee County

## Use Restricted 23 U.S.C. § 407

TRANSYSTEMS $\quad$ いऽ|)
Kimley»Horn

## Shawnee County Local Road Safety Plan

## Prepared for:

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TRANSYSTEMS

## Acknowledgements

The Kansas Department of Transportation and Shawnee County employees and partners were instrumental in the development, review, and refinement of this Local Road Safety Plan. The Kansas Department of Transportation, TranSystems, WSP, and Kimley-Horn would like to express their appreciation to the supporting staff and partners for their participation and contributions.

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## Statutory Notice

23 U.S.C. § 407: US Code - Section 407: Discovery and admission as evidence of certain reports and surveys

Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential accident sites, hazardous roadway conditions, or railway-highway crossings, pursuant to sections 130,144 , and 148 of this title or for the purpose of developing any highway safety construction improvement project which may be implemented utilizing Federal-aid highway funds shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

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## Executive Summary

The Kansas Department of Transportation (KDOT), as part of their strategic goal to reduce fatalities and serious injuries within Kansas is conducting Phase 4 of the Local Road Safety Plan (LRSP) process for 20 counties within the state. Four counties were included in the Pilot Phase of this process, which was completed in 2018, and 59 counties were included in Phases 1, 2, and 3. The LRSP concept is built on the foundation established by the Strategic Highway Safety Plan (SHSP). Figure E1 shows the location of the Phase 4 counties as well as the counties in previous LRSP Phases.


Figure E1 - Location of LRSP Counties

## E.1. What is a Local Road Safety Plan (LRSP)?

As defined by the Federal Highway Administration (FHWA), an LRSP provides a framework for identifying, analyzing, and prioritizing roadway safety improvements on local roads. The LRSP development process and content are tailored to local issues and needs. The process results in a prioritized list of issues, risks, actions, and improvements that can be used to reduce fatalities and serious injuries on the local road network. LRSPs are one of the FHWA's Proven Safety Countermeasures based on its proven effectiveness and benefits in reducing serious injuries and fatalities on local roadways throughout the country.

An LRSP is a resource to assist local public authorities as they select and prioritize projects that will have the biggest impact on safety based on the crash types and high-risk roadway characteristics in their jurisdiction. Because of the random nature of crashes - in particular on lower-volume local roads - these plans place an emphasis on low-cost systemic improvements; that is, the approach is proactive rather than a reactive approach based on "hot spots" where crashes are occurring. An LRSP identifies proactive countermeasures, based on a
comprehensive systemic review, that are targeted at enhancing the overall safety for roadway users.

## E.2. Shawnee County's LRSP Routes

The LRSP study routes within Shawnee County generally included all major collectors and all paved roads under the county's jurisdiction except subdivisions with speed limits lower than 35 mph . A total of 450 miles of roadway segments ( $100 \%$ paved, $0 \%$ unpaved), 662 intersections and 242 curves were analyzed as part of the Shawnee County LRSP. Interstate, US and Kansas Highway routes were not included as these are not maintained by the county.

## E.3. LRSP Project Overview

This LRSP includes the following general tasks:

- Data collection - Analyze existing crash data and roadway data that can be used to identify systemic risk factors for the county's LRSP routes.
- Risk factor determination - Determine systemic risk factors associated with existing fatal or serious injury crashes that will be used in a systemic safety analysis.
- Countermeasure selection - Develop potential safety countermeasures to address the approved risk factors.
- Safety workshop - Engage county stakeholders in the LRSP process and gather feedback on potential safety countermeasures.
- Development of safety projects - Determine prioritized safety projects for the county's LRSP routes based on a systemic risk factor analysis of all LRSP segments, intersections, and curves.
- Final report - Document the LRSP process and findings in a final report. TRANSYSTEMS


## E.4. Shawnee County's Recommended Improvements

The ten recommended safety improvement project locations identified as part of this LRSP, along with an opinion of their probable cost are shown in Table E1. The segment, intersection, and curve project sheets for Shawnee County are provided in Appendix M of this plan.

Table E1 - Shawnee County LRSP Project Locations and Opinion of Probable Cost

| ID | Project Location Description | Opinion of Probable Cost |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Short Term Improvements | Longer Term Improvements | Additional <br> Potential <br> Improvements | Estimated Project Total* |
| Segments $\text { 30, } 40$ | NE Meriden Road/ NE 70th Street and NE Silver Road from NE 62nd Street to NE 70th Street | \$84,000 | \$852,000 | \$313,000 | \$2,079,000 |
| Segments $17,70$ | NW/NE 62nd Street from NW Green Hills Road to NE Meriden Road | \$91,000 | \$871,000 | \$359,000 | \$2,194,000 |
| $\begin{gathered} \text { Segments } \\ 142,144, \\ 145 \end{gathered}$ | SE 37th Street from SE Croco Road to SE Shawnee Heights Road | \$101,000 | \$779,000 | \$184,000 | \$1,785,000 |
| Segments $113,115$ | NW Rochester Road from NW Menninger Road to NW 46th Street | \$52,000 | \$463,000 | \$113,000 | \$1,077,000 |
| Segments $43,44,47$ | NE 35th Street from US-75 to NW Topeka Boulevard | \$125,000 | \$742,000 | \$388,000 | \$2,088,000 |
| $\begin{aligned} & \text { Segments } \\ & 239,240 \text {, } \\ & 241,242 \end{aligned}$ | SW 53rd Street from SW Auburn Road to SW Burlingame Road | \$186,000 | \$1,366,000 | \$393,000 | \$3,184,000 |
| $\begin{aligned} & \text { Segments } \\ & 259,261 \end{aligned}$ | SW Auburn Road from SW 85th Street to K-4 | \$229,000 | \$1,899,000 | \$465,000 | \$4,213,000 |
| Intersections 640, 641 | SW Valencia Road at SW 57th Street and SW 61st Street | \$50,000 | \$400,000 | \$90,000 | \$926,000 |
| $\begin{aligned} & \text { Curves } \\ & 38,92 \end{aligned}$ | NW 42 Street at NW Carlson Road and NW Rossville Road | \$20,000 | \$16,000 | \$13,000 | \$86,000 |
| $\begin{gathered} \text { Curves } \\ 198,199 \end{gathered}$ | SW Gage Boulevard curves 0.08 and 0.15 miles north of SW 49th Street | \$18,000 | \$15,000 | \$8,000 | \$72,000 |
|  | Total | \$956,000 | \$7,403,000 | \$2,326,000 | \$17,704,000 |

* Includes estimates for mobilization, traffic control, contingency, design engineering, and construction inspection as identified on project sheet.


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## List of Acronyms

| A | Serious Injury Crash |
| :--- | :--- |
| AASHTO | American Association of State Highway and Transportation Officials |
| ADT | Average Daily Traffic |
| BLP | Bureau of Local Projects |
| CMF | Crash Modification Factor |
| DASC | Kansas Data Access and Support Center |
| FHWA | Federal Highway Administration |
| GIS | Geographic Information System |
| HRRR | High Risk Rural Roads |
| HSM | Highway Safety Manual |
| K | Fatal Crash |
| KDOT | Kansas Department of Transportation |
| LRSP | Local Road Safety Plan |
| mph | Miles per Hour |
| MUTCD | Manual on Uniform Traffic Control Devices |
| NG911 | Next Generation 911 |
| SHSP | Strategic Highway Safety Plan |
| TEAP | Traffic Engineering Assistance Program |

## 1. Introduction

The Kansas Department of Transportation (KDOT), as part of their strategic goal to reduce fatalities and serious injuries within Kansas is conducting Phase 4 of the Local Road Safety Plan (LRSP) process for 20 counties within the state. Four counties were included in the Pilot Phase of this process, which was completed in 2018, and 59 counties were included in Phases 1, 2, and 3. The LRSP concept is built on the foundation established by the Strategic Highway Safety Plan (SHSP). Figure 1 shows the location of the Phase 4 counties as well as the counties in previous LRSP Phases.


Figure 1 - Location of LRSP Counties

### 1.1. What is an LRSP?

As defined by the Federal Highway Administration (FHWA), an LRSP provides a framework for identifying, analyzing, and prioritizing roadway safety improvements on local roads. The LRSP development process and content are tailored to local issues and needs. The process results in a prioritized list of issues, risks, actions, and improvements that can be used to reduce fatalities and serious injuries on the local road network. LRSPs are one of the FHWA's Proven Safety Countermeasures based on its proven effectiveness and benefits in reducing serious injuries and fatalities on local roadways throughout the country.

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### 1.2. Background and Purpose of the LRSP

Traffic on local roads in Kansas accounts for approximately 42\% of the total vehicle miles traveled, and according to the Kansas SHSP 2020, crash data between 2014 and 2018 shows that $46 \%$ of fatalities and $55 \%$ of disabling injuries occurred on roads owned by local public authorities. Since the overall goal of the Kansas SHSP is to halve fatalities and serious injuries over the 20-year period ending in 2029, locally owned roads must be included as a significant part of the plan. With limited funds, a county needs a plan to make an effective impact on reducing the fatalities and serious injuries on their roadways.

An LRSP is a resource to assist local public authorities as they select and prioritize projects that will have the biggest impact on safety based on the crash types and high-risk roadway characteristics in their jurisdiction. Because of the random nature of crashes-in particular on lower-volume local roads-these plans place an emphasis on low-cost systemic improvements; that is, the approach is proactive rather than reactive. An LRSP identifies several proactive measures, based on a comprehensive systemic review, that are targeted at enhancing the overall safety for roadway users.

The final LRSP provides a prioritized list of safety improvement projects with a preliminary opinion of probable cost. The prioritization is based on the systemic review process and risk factors determined as part of the LRSP process. Each project sheet includes low-cost, short-term safety recommendations, as well as longer term improvements, and is a resource for the county to use in applying for safety funds through the KDOT Bureau of Local Projects' (BLP) High Risk Rural Roads (HRRR) Program.

### 1.3. Shawnee County's LRSP Routes

The LRSP study routes within Shawnee County generally included all major collectors and all paved roads under the county's jurisdiction except subdivisions with speed limits lower than 35 mph . The location of the LRSP study routes within Shawnee County are identified on the map included in Appendix A. A total of 450 miles of roadway segments ( $100 \%$ paved, $0 \%$ unpaved), 662 intersections and 242 curves were analyzed as part of the Shawnee County LRSP. For the purposes of the analysis, a curve was defined using the following parameters: radius less than 2,500 feet and a length greater than 100 feet. Interstate, US and Kansas Highway routes were not included as these are not maintained by the county.

### 1.4. LRSP Project Overview

This LRSP includes the following general tasks:

- Data collection
- Crash analysis
- Roadway data analysis
- Risk factor determination
- Countermeasure selection
- County input and safety workshop
- Development of safety projects
- Final report


### 1.5. Document Organization

This LRSP is organized into the following sections:

- Section 1 presents an introduction to the LRSP, along with the background and purpose.
- Section 2 summarizes the LRSP data collection and crash analysis.
- Section 3 introduces risk factors and identifies the approved risk factors for the project.
- Section 4 provides a list of potential safety countermeasures to address the approved risk factors for the project.
- Section 5 describes the process for selecting safety projects from the Shawnee County LRSP segments, intersections, and curves. It also includes the prioritized list of safety improvement projects.
- Section 6 summarizes the recommended improvements and potential next steps.
- Appendices


## 2. Data Collection

### 2.1. Crash Analysis

For this LRSP, the crash analyses conducted during the previous LRSP Phases were determined to be applicable to the LRSP Phase 4 project. For reference, the Crash Analysis Technical Memorandum from Phase 1 of the LRSP process is included in Appendix B.

### 2.2. Crash Data for Shawnee County LRSP Routes

This section provides a summary of the crash data for the Shawnee County LRSP routes using records from the KDOT crash database for the project (2016-2020 data). Table 1 contains a tabular summary of the Shawnee County LRSP route crashes by roadway type and Figure 2 contains a graphical summary of the data. It is important to note that this information is exclusively for the LRSP study routes within the county rather than all county roads. For Shawnee County, all the LRSP study routes are paved roads.

Table 1 - Shawnee County LRSP Route Crashes by Roadway Type

| Roadway Type |  | Total Crashes |  | Fatal and Serious Injury (K \& A) Crashes |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Count | Percent | Count | Percent |
| County Paved | Intersection | 565 | 29\% | 23 | 33\% |
|  | Non-Intersection (on curve) | 86 | 4\% | 5 | 7\% |
|  | Non-Intersection (off curve) | 1,329 | 67\% | 41 | 59\% |
|  | Other/Unknown | 0 | 0\% | 0 | 0\% |
|  | Total | 1,980 |  | 69 |  | TRANSYSTEMS



Figure 2 - Shawnee County LRSP Route Crashes by Roadway Type
The above findings indicate that from 2016 to 2020, there were a total of 1,980 crashes on the Shawnee County LRSP routes, including 69 fatal or serious injury crashes. Similar to the findings from the crash analysis for counties throughout the state (as included in Appendix B), roadway segment crashes (non-intersection, off-curve crashes) accounted for the majority of the total crashes ( $67 \%$ ) for paved roads, as well as $59 \%$ of the fatal or serious injury crashes. Total crashes were less frequent at intersections or on curves, although intersection crashes accounted for $33 \%$ of the overall fatal or serious injury crashes along the Shawnee County LRSP routes.

### 2.2.1. Crash Location Map and Crash Heat Map

Although LRSPs use a proactive approach to identifying safety improvement locations rather than a reactive approach based on "hot spots" where crashes are occurring, the crash records for the 2016 to 2020 period were used to prepare a graphical representation of the total crashes along the Shawnee County LRSP routes in the form of a crash location and crash heat map. The map was prepared for the county's use and is included in Appendix C. Warmer colors on the map indicate locations with a higher number of crashes.

### 2.2.2. Crash Frequencies

In addition to the crash location and crash heat map, a list of high crash locations for the LRSP study routes was prepared for the county's use. High crash locations were determined based on a comparison between the actual crash frequency (crashes per year) and the predicted average crash frequency using procedures outlined in the Highway Safety Manual (HSM). Tables of the Actual versus HSM Predicted Crash Frequencies for all the Shawnee County LRSP segments, intersections, and curves are included in Appendix C. It should be noted that crash frequencies

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were only included for locations that experienced a crash in the 5-year analysis period (2016 to 2020).

### 2.3. Roadway Data

A comprehensive Geographic Information Systems (GIS) database that includes pertinent roadway data that can be used to identify systemic risk factor rankings for the LRSP study routes was not available for use on the project. As a result, data was obtained by the project team through a variety of sources, including existing KDOT maps, county GIS data, maps of various existing features, readily available aerial photography (Google, Bing, etc.), and field inspections. A GIS database was created to store the attribute data collected for the LRSP segments, intersections, and curves.

### 2.3.1. KDOT Maps

KDOT District, county, and city traffic count maps were used as the primary source to obtain Average Daily Traffic (ADT) volumes on the LRSP study routes. If applicable, an additional source for obtaining ADTs was previous Traffic Engineering Assistance Program (TEAP) studies conducted at various locations throughout the county. Where ADT data was unavailable, estimates were used based on county input or neighboring segment ADT.

### 2.3.2. County Data

### 2.3.2.1. GIS Data

The Kansas Data Access and Support Center (DASC) provided GIS mapping of the county's current roadway centerline files and 911 address points. The roadway centerline files were used primarily to define segment names and length. Segments along the LRSP study routes were also identified based on attributes that generally remained similar along the segments, such as pavement or shoulder widths. Segments were also defined if there were major alignment changes in the route (i.e., a change from north/south alignment to east/west), or if the segment intersected a state highway or another LRSP route, particularly where traffic volume and characteristics changed.

The 911 address points file was developed according to the state specifications for Next Generation 911 (NG911), and for the most part, address points were identified on the buildings and not at the driveway entrances.

### 2.3.2.2. County Maps

Maps were provided to the counties for their use in identifying the location of various existing conditions and safety features along the LRSP study routes. Maps for the following items were provided for county input, and if returned, are included in Appendix $\mathbf{D}$ (no map is included if data was unavailable or not provided):

- Intersection lighting
- Overhead/Stop sign flashing beacons
- Centerline rumble strips
- Edgeline and/or shoulder rumble strips
- Transverse rumble strips
- Pavement width and type (material)
- Shoulder width and type (material)
- Edgeline pavement markings
- Centerline pavement markings
- Curve warning signs
- Curve superelevation

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### 2.3.3. Aerial Photography

Readily available aerial photography sources (Google, Bing, etc.) were used to identify various data along the LRSP study routes, including the following data elements:

- Pavement width, where county data was unavailable
- Access points (driveways and intersections)
- Intersection skew angle
- Curve length and radius


### 2.3.4. Field Inspections

Field inspections of each LRSP study route were conducted by driving each roadway in the spring of 2022 and collecting pertinent field data that can be used to determine the presence of an approved risk factor. Geospatial video data was also recorded as part of this effort. Primary data elements collected as part of the field inspections or video review included:

- Edge condition rating
- Roadside assessment rating
- Shoulder width and type (material), where county data was unavailable
- Speed limit
- Intersection control

Data collection for some of the above items was more general in nature. For example, database entries for the presence of curve warning signs and curve superelevation were a simple "yes/no" or "present/not present". An assessment of the existing curve superelevation or the appropriate Manual on Uniform Traffic Control Devices (MUTCD) curve signage could be a recommendation for a high-ranking curve, but these aspects were not reviewed in detail as part of this systemic review. For other items (e.g., intersection sight distance, edge condition and roadside assessment), general subjective ratings were identified based on field inspections or review of video data. For example, ratings of "adequate" or "limited" were used for intersection sight distance based on the video review. For edge condition and roadside assessment, ratings of "good", "average", or "poor" were also identified during the field work. Some photos which illustrate examples of the general subjective ratings, along with maps which show a graphical representation of the edge condition and roadside assessment ratings for the Shawnee County LRSP routes are included in Appendix E.

- Intersection sight distance
- Supplemental confirmation of other data elements provided by the county (e.g., lighting, curve signs, curve superelevation, etc.) TRANSYSTEMS


## 3. RISK FACTORS

### 3.1. Systemic Safety Risk Factors

The purpose of the LRSP project is to identify locations where systemic safety improvements can be implemented on county roads. The systemic approach focuses on risk and takes a broader view and looks at risk across an entire roadway system, rather than only applying improvements to locations where crashes have previously occurred.

When developing systemic safety improvements, it is important to note risk factors associated with the crash types. The FHWA, as part of their Systemic Safety Project Selection Tool, has developed a list of potential risk factors that can be utilized to identify locations for systemic safety improvements. While all of the risk factors outlined below were not utilized for the LRSP project due to data availability and crash types to be addressed, they have been included below for reference.

- Roadway and Intersection Features:


## - Number of lanes

- Lane width
- Shoulder surface width and type
- Median width and type
- Horizontal curvature, superelevation, delineation, or advance warning devices
- Horizontal curve density
- Horizontal curve and tangent speed differential
- Presence of a visual trap at a curve or combinations of vertical grade and horizontal curvature
- Roadway gradient
- Pavement condition and friction
- Roadside or edge hazard rating (potentially including sideslope design)
- Driveway presence, design, and density
- Presence of shoulder or centerline rumble strips
- Presence of lighting
- Presence of on-street parking
- Intersection skew angle
- Intersection traffic control device
- Number of signal heads versus number of lanes
- Presence of backplates
- Presence of advanced warning signs
- Intersection located in or near horizontal curve
- Presence of left-turn or right-turn lanes
- Left-turn phasing
- Allowance of right-turn-on-red
- Overhead versus pedestalmounted signal heads
- Pedestrian crosswalk presence, crossing distance, signal head type
- Traffic Volume:
- Average daily traffic volumes
- Average daily entering vehicles
- Other Features:
- Posted speed limit or operating speed
- Presence of nearby railroad crossing
- Presence of automated enforcement
- Proportion of commercial vehicles in traffic stream
- Adjacent land use type (e.g., schools, commercial, or alcoholsales establishments)
- Location and presence of bus stops


### 3.2. Approved Risk Factors

Based on the Crash Analysis Technical Memorandum prepared during previous phases of the KDOT LRSP project included in Appendix B, approved risk factors were reviewed and considered appropriate for use in the LRSP Phase 4 project. Each of the approved risk factors was used to analyze potential risk for the Shawnee County LRSP segments, intersections, and curves.

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## 4. Countermeasure Selection

As part of the LRSP, potential safety countermeasures were developed for the project based on the approved risk factors. Details of the safety countermeasures for this project are documented in the Countermeasures Technical Memorandum which is included in Appendix F. A workshop was held with each of the Phase 4 LRSP counties to discuss the LRSP project, crash characteristics and safety countermeasures.

### 4.1. County Workshop

The Shawnee County LRSP Safety Workshop was held on the afternoon of Wednesday, July 27, 2022. The minutes of the meeting are included in Appendix G. Invitees included a wide range of stakeholders from the "Five E's" of highway safety.

### 4.1.1. Five E's of Safety

The first four "E's" refer to the Engineering, law Enforcement, Education, and Emergency response communities, while the fifth "E" refers to "everyone" and can include any stakeholders with a passion for roadway safety, such as elected officials, paratransit service providers, insurance providers, parents, or other civic groups. Each of these groups were invited to participate in the LRSP process.

This type of multidisciplinary approach is essential to enhancing overall safety of the roadway system. Studies have shown that over $90 \%$ of crashes are a result of driver factors, with the most common errors including recognition (41\%), decision (33\%) and performance (11\%). All disciplines can play a role in developing strategies to both prevent crashes as well as lessen the severity of crashes. A number of topics were discussed during the workshop, including:

- Engineering measures: LRSP development, system enhancements, and "hot spot" analyses
- Enforcement measures: traffic-related enforcement, targeted enforcement using datadriven approaches to crime and traffic safety - identifying areas that have high incidences of crime and crashes to deploy law enforcement more effectively
- Education measures: public education and outreach programs, Seatbelts Are For Everyone (SAFE) outreach in schools
- Emergency response measures: "golden hour" - the first hour after the occurrence of a traumatic injury, considered the most critical for successful emergency treatment
A list of Kansas and nationally available safety resources was provided to the workshop attendees and is included in Appendix H.


### 4.1.2. Attendee Input and Feedback

Participants at the workshop were encouraged to provide feedback and input throughout the meeting. Specific group feedback times were provided to discuss locations of concern along the county's LRSP routes, along with the potential safety countermeasures that were presented. For the latter, photos and descriptions of many of the potential safety countermeasures were provided to the attendees as part of the workshop discussion (see Appendix G).

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### 4.1.2.1. Locations of Concern

Participant input on specific locations of concern is documented as part of the meeting minutes in Appendix G, but included the following locations on the Shawnee County LRSP routes:

- NW Rochester Road and NW 62nd Street
- NW 62nd Street between NW Rochester Road and NW Topeka Boulevard
- NW 46th Street between NW Green Hills and NW Rochester Roads
- SW Urish Road and SW 33rd Street
- SW Wanamaker Road between SW 47th and SW 61st Streets
- SW Topeka Boulevard at SW 57th Street
- NW 46th Street between NW Hoch and NW Brickyard Roads
- Curve on SW Burlingame Road near SW 61st Street
- SE 53rd Street and SE Croco Road
- SE 53rd Street between SE Croco and SE Shawnee Heights Roads
- SW Auburn Road and SW 53rd Street
- SW Auburn Road and SW 61st Street
- SW Auburn Road and SW 29th Street
- SW Valencia Road and SW 57th Street
- SW Valencia Road and SW 61st Street
- Washington Street (SW Auburn Road) within the city of Auburn
- SE 45th Street and SE Shawnee Heights Road
- SW 61st Street between SW Wanamaker and SW Fairlawn Roads
- NW Rossville/NW Capper Road from Rossville to the Jackson County line
- NW Topeka Boulevard and NW 62nd Street
- NW Carlson Road between the I-70 Frontage Road and the city of Willard
- NW 42nd Street curve at NW Rossville Road
- NW 42nd Street curve at NW Carlson Road
- SW 13th Street curve at SW Glick Road
- SW 13th Street curve at SW Valencia Road
- SW Topeka Boulevard and SW 93rd Street
- SE Shawnee Heights Road and SE 29th Street
- SE Shawnee Heights Road between SE 37th Street and SE Comanche Drive
- SE Stubbs Road and SE 45th Street

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### 4.1.2.2. Potential Safety Countermeasures

Participant input on the potential safety countermeasures is documented as part of the meeting minutes in Appendix G, but treatments that were considered favorable or effective included:

- Centerline and edgeline pavement markings
- Clearing and grubbing
- Centerline rumble strips
- Delineating culverts and roadside hazards
- Post-mounted delineators in selected locations
- Removing fixed objects in the right of way
- Constructing paved or aggregate shoulders, and use of the Safety Edge
- Improving edge rut conditions with aggregate at edge drop-off locations
- Flattening and widening foreslopes
- Signing improvements and larger warning signs
- Retroreflective strips on sign posts
- Dynamic speed feedback signs
- Transverse rumble strips in advance of Stop signs or curves
- Flashing beacons on Stop signs
- Signs with LED flashing lights incorporated into the sign border
- Intersection lighting
- Geometric improvements at intersections, such as auxiliary left-turn and right-turn lanes
- Realigning intersection approaches to reduce or eliminate skew angles
- Retroreflective backplates on the signal indications
- Roundabouts
- On-pavement markings for speed control in advance of intersections or curves
- In-lane curve warning pavement markings
- Speed-activated flashers on Chevrons
- Curve superelevation correction
- High-friction surface treatment on curves


### 4.2. Approved Countermeasures

The approved segment, intersection, and curve countermeasures for this project, along with the corresponding Crash Modification Factors (CMFs) and estimated costs are included in the Countermeasures Technical Memorandum in Appendix F. It should be noted that the estimated costs were generally determined using estimated quantities with typical project unit costs applied. Due to the timing of the completion of the Technical Memorandum and the development of safety project recommendations, some of the costs for the items were adjusted to address increases in construction costs. More representative cost information was requested from each county, and if provided, was applied in the development of the final improvement project estimates.

## 5. Safety Project Development

### 5.1. Methodology

Using the GIS database that was created from the attribute data described in Section 2 of this plan, each of the LRSP segments, intersections, and curves within the county were analyzed and assigned rankings based on the KDOT approved risk factors. The rankings of the LRSP segments, intersections, and curves were provided to the county, along with recommended safety improvement project locations. Based on the county's feedback, the recommended safety improvement project locations were finalized, the risk factors for each location were compared to the countermeasure project selection thresholds, and draft project sheets were developed. After review of the draft project sheets, final project sheets were developed which incorporated comments and additional improvements from the county. The subsections that follow further describe the major steps of the methodology.

### 5.1.1. GIS Database

Data obtained in coordination with KDOT and the county were incorporated into a GIS database along with roadway data collected by the project team. Data associated with each roadway segment, intersection, and horizontal curve was used in the analysis of risk along the LRSP routes throughout the county. The database elements are described in Section 2 of this plan.

### 5.1.2. Risk Factor Ranking

Segments, intersections, and curves were analyzed throughout the county for risk factors identified in Section 3 of this plan. Risk factors were determined to identify locations that have a higher likelihood of crashes involving serious injuries and/or fatalities. For every segment, intersection, and curve along the LRSP routes, risk factors were evaluated, and each location was ranked based on these risk factors. Risk factor scoring criteria was determined during the previous phases of the LRSP project and reviewed as part of the Phase 4 project. The review is documented in the Risk Factor Ranking and Countermeasure Selection Technical Memorandum which is included in Appendix I. The revised scoring criteria, which includes LRSP Phase 4 modifications, are identified in further detail in later subsections of Section 5. Some items of note:

- Volume is considered a significant risk factor since the probability of a crash is higher as volume (exposure) increases. The scoring has been weighted accordingly and criteria were established separately for each county based on the data that were collected as part of this project. (i.e., only volumes on Shawnee County Roads were compared to Shawnee County Roads as opposed to comparing volumes to other counties.)
- Scoring thresholds for several risk factors (e.g., edge condition and roadside assessment) were established separately for each county based on the data that were collected as part of this project.
- Crash experience is included in the scoring for all segments, intersections, and curves. However, this does not carry an overly significant weight since the intent is a systemic process rather than overvaluing "hot spot" locations.
- Access density scores were eliminated for intersections with ADT less than or equal to 400 vehicles per day (based on the American Association of State Highway and Transportation Officials' (AASHTO) guidelines for a very low-volume local road) and for segments and curves where the posted speed limit is less than or equal to 30 miles per

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hour. Also, if a segment, intersection, or curve is located within a census-designated corporate area, it received no risk factor points for access density.
Specific risk factor scores determined for all of Shawnee County's LRSP segments, intersections, and curves are included in Appendix J, Appendix K, and Appendix L. Based on a review of the risk factor scores, the crash frequency lists, and locations of concern expressed during the Safety Workshop, the project team coordinated with KDOT and the county to develop a list of recommended safety improvement project locations (10 total) for the LRSP study routes.

### 5.1.3. Countermeasure Project Selection Thresholds

Countermeasure project selection thresholds for roadway segments, intersections, and curves were developed during previous phases of the LRSP project and reviewed as part of the Phase 4 project. The review is documented in the Risk Factor Ranking and Countermeasure Selection Technical Memorandum in Appendix I. Revised threshold tables developed as part of the review are included in the Technical Memorandum and allow uniform recommendations to be provided across the counties. Establishing thresholds allows for a unique set of recommendations to meet the specific safety needs of each location. Some items of note in the development of the thresholds are summarized below:

- Clearing and grubbing is recommended for all projects. For specific roadway segment project locations, the associated cost is based on a review of the site videos.
- A general threshold of an ADT greater than 400 vehicles per day was applied for several project types based on AASHTO's guidelines for a very low-volume local road.
- Edgeline or centerline rumble strip installation is recommended to include a feasibility review, primarily in consideration of the existing pavement types and/or width.
- New pavement treatments for segments or curves are recommended to include an appropriate amount of full depth reconstruction to accommodate the treatment, whether this is just partial reconstruction (e.g., shoulder paving to accommodate use of a safety edge) or full depth reconstruction to completely repave a roadway.
- Flattening and widening foreslopes is a long-term countermeasure that typically includes the extension of existing drainage pipes/culverts. The general intent of this is to complete as much shoulder and foreslope improvements as possible within the available right-of-way. Where applicable, the extension of existing drainage pipes/culverts was added as a site-specific countermeasure for segments where there may be a delay in funding for the ultimate long-term improvements.
- The use of retroreflective strips on stop signs and curve signage (chevrons) are low-cost effective treatments included for all projects.
- Installation of an additional "Stop" sign and "Stop Ahead" sign for an intersection approach includes these additional signs on the left side of the approach. The threshold identified for this countermeasure (minor road ADT greater than 400) was set to include this treatment on higher volume minor approaches and avoid overuse.
- Vertical grade modifications for intersections with a sight distance concern were not included as part of the project selection thresholds but can be added as a site-specific countermeasure for selected intersections based on county input.
- Curve countermeasure thresholds are consistent whether evaluated as part of a curve or a segment project.


### 5.1.4. Project Sheets

Unique project sheets were developed for each of the recommended safety improvement project locations ( 10 total). The draft project sheets were reviewed by the county and final project sheets were developed which incorporated the comments received as well as any additional improvements requested by the county. The final project locations and project sheets for Shawnee County are provided in Appendix M of this plan. Each project sheet includes the project location, project type, proposed improvements, and an opinion of probable cost. The project selection thresholds were applied to each location to assist in identifying which countermeasures should be applied to the location based on the attributes. Other things to note on the project sheets, include the following:

- Where multiple segments (or intersections or curves) are identified on a project sheet, the risk factor scoring information is for the highest ranked segment (or intersection or curve).
- The table on the back page of the project sheets is where additional site-specific improvements can be identified, such as culvert extensions, vertical grade adjustments, or in the case of some curves, total reconstruction.
- For projects along an LRSP segment (or group of segments) that also contain one or more LRSP curves, the project sheets include improvements for the curves. Some LRSP intersection improvements (e.g., transverse rumble strips on paved stop-controlled minor roads) may be included on the corresponding segment project sheets. Where applicable, these additional project benefits are generally identified on the back side of the project sheet.
- When a curve reconstruction project impacts an adjacent intersection, costs were included on the back of the project sheet for tying in the affected intersection legs.
- The project sheets are designed to provide the county with information needed when applying for HRRR funding through KDOT. For example, a crash history table has been added to the project sheet to assist the county in preparing their HRRR funding application.
- The estimated project cost summary on the back side of the project sheets includes line items for general items (e.g., mobilization, traffic control, design engineering, and construction inspection), as determined during the previous phases of the LRSP project, along with a contingency factor. It should be noted that the overall project cost summary reflects the total of the recommended safety improvements, rather than a smaller subset that the county might select for HRRR funding.


### 5.2. Segments

The following sections summarize the risk factor ranking criteria, project locations, and recommendations for the segments analyzed along the LRSP study routes.

### 5.2.1. Segment Risk Factor Ranking Criteria

Risk factor ranking criteria for the LRSP segments, including their associated point values, are illustrated in Table 2. Specific scores for all of Shawnee County's LRSP segments, along with the point breakdown for each risk factor, and a graphical representation of the scores are included in Appendix J.

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Table 2 - Segment Risk Factor Scoring Criteria

| Risk Factor | Measurement | Points | Max Points Available |
| :---: | :---: | :---: | :---: |
| Average Daily Traffic (ADT) volume | Average roadway segment volume per county | 0: ADT within 0\%-14.3\% percentile range | 6 |
|  |  | 1: ADT within 14.3\%-28.6\% percentile range |  |
|  |  | 2: ADT within $28.6 \%-42.9 \%$ percentile range |  |
|  |  | 3: ADT within 42.9\%-57.1\% percentile range |  |
|  |  | 4: ADT within $57.1 \%-71.4 \%$ percentile range |  |
|  |  | 5: ADT within 71.4\%-85.7\% percentile range |  |
|  |  | 6: ADT within $85.7 \%-100 \%$ percentile range |  |
| Access density | Density of intersections and driveways per mile | 0 : Bottom third of the access density Crash Modification Factor (CMF)* or $\leq 30 \mathrm{mph}$ | 2 |
|  |  | 1: Middle third of the access density $\mathrm{CMF}^{*}$ |  |
|  |  | 2: Top third of the access density CMF* |  |
| Edge condition | Observed condition rating | 0 : Rating of 2.75-3 | 3 |
|  |  | 1: Top third of remaining ratings |  |
|  |  | 2: Middle third of remaining ratings |  |
|  |  | 3: Bottom third of remaining ratings |  |
| Roadside assessment | Observed condition rating | 0 : Rating of 2.75-3 | 3 |
|  |  | 1: Top third of remaining ratings |  |
|  |  | 2: Middle third of remaining ratings |  |
|  |  | 3: Bottom third of remaining ratings |  |
| Roadway width | Width in feet | 0 : Roadway width greater than or equal to 22 feet | 2 |
|  |  | 2: Roadway width less than 22 feet |  |
| Shoulder width | Width in feet of recoverable area prior to a ditch or fill slope | 0 : 4-foot shoulder and greater, curb and gutter, or unpaved road | 2 |
|  |  | 1: 2-foot shoulder to 4-foot shoulder |  |
|  |  | 2: less than 2-foot shoulder |  |
| Lane departure crash rate | Lane departure crashes per MVMT | 0 : Bottom fourth of roadway departure crash rates along the roadway segments | 3 |
|  |  | 1: Second lowest fourth of roadway departure crash rates along the roadway segments |  |
|  |  | 2: Second highest fourth of roadway departure crash rates along the roadway segments |  |
|  |  | 3: Top fourth of roadway departure crash rates along the roadway segments |  |
| Presence of pavement markings | Observed presence of markings | 0 : Both centerline and edgeline present, or unpaved road | 2 |
|  |  | 1: Centerline or edgeline present |  |
|  |  | 2: Neither centerline nor edgeline present |  |
| Surface type | Paved or unpaved | 0: Paved | 1 |
|  |  | 1: Unpaved |  |

* Access Density CMF Equation as presented in the Highway Safety Manual (Equation 13-7).


### 5.2.2. Segment Project Location Recommendations

Based on a review of the risk factor scores for all of Shawnee County's LRSP segments, as shown in Appendix J, the project team coordinated with the county to develop a list of recommended safety improvement project locations (up to a maximum of 10) for their LRSP. In addition to the risk factor scoring, input from the Safety Workshop and findings from the crash frequency listings were also considered as part of the project location selection. The following segments were identified for improvements:

- NE Meriden Road/NE 70th Street and NE Silver Road from NE 62nd Street to NE 70th Street
- NW/NE 62nd Street from NW Green Hills Road to NE Meriden Road
- SE 37th Street from SE Croco Road to SE Shawnee Heights Road
- NW Rochester Road from NW Menninger Road to NW 46th Street
- NE 35th Street from US-75 to NW Topeka Boulevard
- SW 53rd Street from SW Auburn Road to SW Burlingame Road
- SW Auburn Road from SW 85th Street to K-4 TRANSYSTEMS


### 5.2.3. Prioritized Segment Recommendations

The final segment project sheets for Shawnee County are provided in Appendix M of this plan. Costs identified on the project sheets for the recommended improvements are shown in Table 3.

Table 3 - Opinion of Probable Cost for Segment Project Locations

| ID | Segment <br> Description | Short <br> Term <br> Improvem | Longer Term <br> Improvements | Additional <br> Potential <br> Improvements | Estimated <br> Project <br> Total * |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | 20, 40 | NE Meriden Road/ <br> NE 70th Street and <br> NE Silver Road from <br> NE 62nd Street to <br> NE 70th Street | $\$ 84,000$ | $\$ 852,000$ | $\$ 313,000$ |

* Includes estimates for mobilization, traffic control, contingency, design engineering, and construction inspection as identified on project sheet.


### 5.3. Intersections

The following sections describe the intersection risk factor ranking criteria, locations for improvements, and recommended improvements.

### 5.3.1. Intersection Risk Factor Ranking Criteria

Risk factor ranking criteria for the LRSP intersections, including their associated point values, are shown in Table 4. Specific scores for all of Shawnee County's LRSP intersections, along with the point breakdown for each risk factor, are included in Appendix K.

Table 4 - Intersection Risk Factor Scoring Criteria

| Risk Factor | Measurement | Points | Max Points Available |
| :---: | :---: | :---: | :---: |
| Average Daily Traffic (ADT) | ADT on all approaches per intersection with a paved approach per county | 0: ADT within 0\%-14.3\% percentile range | 6 |
|  |  | 1: ADT within 14.3\%-28.6\% percentile range |  |
|  |  | 2: ADT within $28.6 \%-42.9 \%$ percentile range |  |
|  |  | 3: ADT within 42.9\%-57.1\% percentile range |  |
|  |  | 4: ADT within 57.1\%-71.4\% percentile range |  |
|  |  | 5: ADT within 71.4\%-85.7\% percentile range |  |
|  |  | 6: ADT within $85.7 \%-100 \%$ percentile range |  |
| Proximity of driveway or another intersection | Number of driveways or intersections within 500 feet of the intersection | 0 : None (or ADT less than 400 or within census corporate limits) | 2 |
|  |  | 1: 1 or 2 access points |  |
|  |  | 2: More than 2 access points |  |
| Sight distance | Based on field observations | 0: Adequate | 3 |
|  |  | 3: Limited |  |
| Location on a curve | Intersection on a curve | 0: No | 3 |
|  |  | 3: Yes |  |
| Crash history | Fatal or debilitating injury crashes | 0: None | 3 |
|  |  | 3: 1 or more |  |
| Distance from previous stop sign (along the LRSP routes) | Miles - based on field data collection | 0: 1.5 miles or less | 3 |
|  |  | 2: 1.5 miles to less than 5 miles |  |
|  |  | 3: 5 miles or more |  |
| Skew | Degrees | 0: 75-degree to 90 -degree intersection approaches | 3 |
|  |  | 3: 75 degree or less intersection approach |  |
| Intersection control | Observed control type | 0: Yield/none | 1 |
|  |  | 1: Stop |  |

### 5.3.2. Intersection Project Location Recommendations

Based on a review of the risk factor scores for all of Shawnee County's LRSP intersections, as shown in Appendix K, the project team coordinated with the county to develop a list of recommended safety improvement project locations (up to a maximum of 10) for their LRSP. In addition to the risk factor scoring, input from the Safety Workshop and findings from the crash frequency listings were also considered as part of the project location selection. Based on the analysis, the intersection of SW Valencia Road at SW 57th Street and SW 61st Street was selected.

### 5.3.3. Prioritized Intersection Recommendations

The final intersection project sheet for Shawnee County is provided in Appendix M of this plan. Estimated costs identified on the project sheet for the recommended improvements are shown in Table 5.

Table 5 - Opinion of Probable Cost for Intersection Project Locations

| ID | Intersection <br> Description | Short Term <br> Improvements | Longer Term <br> Improvements | Additional <br> Imotential <br> Improvements | Estimated <br> Project Total * |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | SW Valencia Road <br> at SW 57th Street <br> and SW 61st Street | $\$ 50,000$ | $\$ 400,000$ | $\$ 90,000$ | $\$ 926,000$ |

* Includes estimates for mobilization, traffic control, contingency, design engineering, and construction inspection as identified on project sheet.


### 5.4. Curves

The following sections contain the risk factor ranking criteria, locations, and recommendations for curve improvements.

### 5.4.1. Curve Risk Factor Ranking Criteria

Risk factor ranking criteria for the LRSP curves, including their associated point values, are shown in Table 6. Specific scores for all of Shawnee County's LRSP curves, along with the point breakdown for each risk factor, are included in Appendix L. TRANSYSTEMS

Table 6 - Curve Risk Factor Scoring Criteria

| Risk Factor | Measurement | Points | Max Points Available |
| :---: | :---: | :---: | :---: |
| Average Daily Traffic (ADT) volume | Average curve volume per county | 0: ADT within $0 \%-14.3 \%$ percentile range | 6 |
|  |  | 1: ADT within $14.3 \%-28.6 \%$ percentile range |  |
|  |  | 2: ADT within $28.6 \%-42.9 \%$ percentile range |  |
|  |  | 3: ADT within $42.9 \%-57.1 \%$ percentile range |  |
|  |  | 4: ADT within $57.1 \%-71.4 \%$ percentile range |  |
|  |  | 5: ADT within $71.4 \%-85.7 \%$ percentile range |  |
|  |  | 6: ADT within $85.7 \%-100 \%$ percentile range |  |
| Curve radius | Radius of curve in feet per county | 0 : Top fourth of curve radii | 3 |
|  |  | 1: Second highest fourth of curve radii |  |
|  |  | 2: Second lowest fourth of curve radii |  |
|  |  | 3: Bottom fourth of curve radii |  |
| Access density | Intersections or driveways within 500 feet of the curve | 0 : None or speed limit $\leq 30 \mathrm{mph}$ | 2 |
|  |  | 1: 1 or 2 access points |  |
|  |  | 2: More than 2 access points |  |
| Shoulder width | Width in feet of recoverable area prior to a ditch or fill slope | 0: 4-foot shoulder and greater, curb and gutter, or unpaved road | 2 |
|  |  | 1: 2-foot shoulder to 4-foot shoulder |  |
|  |  | 2: less than 2-foot shoulder |  |
| Edge condition | Observed condition rating | 0 : Rating of 3 | 2 |
|  |  | 1: Rating of 2 |  |
|  |  | 2: Rating of 1 |  |
| Roadside assessment | Observed condition rating | 0 : Rating of 3 | 2 |
|  |  | 1: Rating of 2 |  |
|  |  | 2: Rating of 1 |  |
| Superelevation | Presence of superelevation | 0: Yes | 2 |
|  |  | 2: No |  |
| Crash history | Fatal or debilitating injury crashes | 0 : None | 3 |
|  |  | 3: 1 or more |  |
| Presence of warning signs | Observed presence | 0: Present | 2 |
|  |  | 2: Not present |  | TRANSYSTEMS

### 5.4.2. Curve Project Location Recommendations

Based on a review of the risk factor scores for all of Shawnee County's LRSP curves, as shown in Appendix L, the project team coordinated with the county to develop a list of recommended safety improvement project locations (up to a maximum of 10) for their LRSP. In addition to the risk factor scoring, input from the Safety Workshop and findings from the crash frequency listings were also considered as part of the project location selection. Based on the analysis, the following curves were identified for improvements:

- NW 42 Street at NW Carlson Road and NW Rossville Road
- SW Gage Boulevard curves 0.08 and 0.15 miles north of SW 49th Street


### 5.4.3. Prioritized Curve Recommendations

The final curve project sheets for Shawnee County is provided in Appendix M of this plan. Costs identified on the project sheets for the recommended improvements are included in Table 7.

Table 7 - Opinion of Probable Cost for Curve Project Locations

| ID | Curve <br> Description | Short Term <br> Improvements | Longer Term <br> Improvements | Additional <br> Potential <br> Improvements | Estimated <br> Project Total * |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | $\$ 20,000$ | $\$ 16,000$ | $\$ 13,000$ | $\$ 86,000$ |
|  |  | $\$ 18,000$ | $\$ 15,000$ | $\$ 8,000$ | $\$ 72,000$ |
|  | $\$ 38,000$ | $\$ 31,000$ | $\$ 21,000$ | $\$ 158,000$ |  |

* Includes estimates for mobilization, traffic control, contingency, design engineering, and construction inspection as identified on project sheet.


## 6. Summary

### 6.1. Recommended Improvements

The ten recommended safety improvement project locations identified as part of this LRSP, along with an opinion of their probable cost are shown in Table 8.

Table 8 - Opinion of Probable Cost for Shawnee County LRSP Project Locations

| ID | Project Location Description | Opinion of Probable Cost |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Short Term Improvements | Longer Term Improvements |  | Estimated Project Total* |
| Segments | NE Meriden Road/ NE 70th Street and NE Silver Road from NE 62nd Street to NE 70th Street | \$84,000 | \$852,000 | \$313,000 | \$2,079,000 |
| Segments $17,70$ | NW/NE 62nd Street from NW Green Hills Road to NE Meriden Road | \$91,000 | \$871,000 | \$359,000 | \$2,194,000 |
| $\begin{gathered} \text { Segments } \\ 142,144, \\ 145 \end{gathered}$ | SE 37th Street from SE Croco Road to SE Shawnee Heights Road | \$101,000 | \$779,000 | \$184,000 | \$1,785,000 |
| Segments $113,115$ | NW Rochester Road from NW Menninger Road to NW 46th Street | \$52,000 | \$463,000 | \$113,000 | \$1,077,000 |
| Segments $43,44,47$ | NE 35th Street from US-75 to NW Topeka Boulevard | \$125,000 | \$742,000 | \$388,000 | \$2,088,000 |
| $\begin{aligned} & \text { Segments } \\ & 239,240, \\ & 241,242 \end{aligned}$ | SW 53rd Street from SW Auburn Road to SW Burlingame Road | \$186,000 | \$1,366,000 | \$393,000 | \$3,184,000 |
| Segments 259, 261 | SW Auburn Road from SW 85th Street to K-4 | \$229,000 | \$1,899,000 | \$465,000 | \$4,213,000 |
| $\begin{aligned} & \text { Intersections } \\ & 640,641 \end{aligned}$ | SW Valencia Road at SW 57th Street and SW 61st Street | \$50,000 | \$400,000 | \$90,000 | \$926,000 |
| $\begin{aligned} & \text { Curves } \\ & 38,92 \end{aligned}$ | NW 42 Street at NW Carlson Road and NW Rossville Road | \$20,000 | \$16,000 | \$13,000 | \$86,000 |
| $\begin{gathered} \text { Curves } \\ 198,199 \end{gathered}$ | SW Gage Boulevard curves 0.08 and 0.15 miles north of SW 49th Street | \$18,000 | \$15,000 | \$8,000 | \$72,000 |
| Total |  | \$956,000 | \$7,403,000 | \$2,326,000 | \$17,704,000 |

* Includes estimates for mobilization, traffic control, contingency, design engineering, and construction inspection as identified on project sheet.


### 6.2. Next Steps

The process established as part of the Phase 4 LRSP project for KDOT has resulted in the identification of several recommended safety improvement projects throughout Shawnee County based on a systemic review of their LRSP study routes. Unique project sheets have been developed for each of these projects and have been designed to provide the county with the information needed to apply for HRRR funding through KDOT. An important and logical next step for the county would be to utilize these resources to implement safety improvements on their roadway network. Simply by completing this LRSP, the county is in a highly advantageous position to obtain some of these competitive safety funds.

Going forward, the project team recommends that the county consider designating a safety champion to lead the effort in implementing the results of this LRSP. This person could also lead, develop, or participate in a local safety coalition that takes part in the planning, implementing, evaluating, and updating of this LRSP. Stakeholders from all of the "Five E's" should be included, starting with representatives who participated in this process by attending the Shawnee County Safety Workshop. As noted previously, this type of multidisciplinary approach is essential to enhancing overall safety of the roadway system.

Finally, an LRSP is intended to be a "living" document. As such, it would be appropriate to review, or update the plan on a regular basis (e.g., every five years or so) by reevaluating crash trends and changes to roadway characteristics. This review will aid in reprioritizing safety improvements for segments, intersections, and curves based on current local needs and priorities.

## APPENDIX A LRSP Study Routes



## APPENDIX B Crash Analysis Technical Memorandum (From Previous LRSP Phases)

# KDOT Local Road Safety Plans <br> (LRSPs) - Phase 1 <br> KDOT PROJECT NO: 106 C-4790-02 

CLARK, COMANCHE, COWLEY, CRAWFORD, DOUGLAS, ELLIS, FORD, GRANT, GRAY, HASKELL, JEFFERSON, KIOWA, LYON, MARION, MEADE, MONTGOMERY, NESS, PAWNEE, REPUBLIC, AND RICE COUNTIES

Prepared for:
KDOT Bureau of Local Projects
Eisenhower State Office Building
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Topeka, Kansas 66603-3745
785-296-3861

Prepared by:

## Tran Systems

EXPERIENCE | Transportation

## Kimley»Horn

May 2019
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# KDOT Local Road Safety Plans (LRSPs) - <br> Phase 1 

KDOT PROJECT NO: 106 C-4790-02

Prepared for:<br>KDOT Bureau of Local Projects

Eisenhower State Office Building
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## LIST OF ACRONYMS

| A | Serious Injury Crash |
| :--- | :--- |
| ADT | Average Daily Traffic |
| CMF | Crash Modification Factor |
| FHWA | Federal Highway Administration |
| K | Fatal Crash |
| KDOT | Kansas Department of Transportation |
| LRSP | Local Road Safety Plan |
| SHSP | Strategic Highway Safety Plan |

## 1. Introduction

The Kansas Department of Transportation (KDOT), as part of their strategic goal to reduce fatalities and serious injuries within Kansas is conducting Phase 1 of the Local Road Safety Plan (LRSP) process for twenty counties within the state. Four counties were included in the Pilot Phase of this process, which was completed in 2018. The LRSP concept is built on the foundation established by the Strategic Highway Safety Plan (SHSP). Based on discussions with KDOT, crashes within a 37 -county area, inclusive of KDOT District 3 and District 6, were analyzed as part of the LRSP Phase 1 project. As part of the Pilot Phase, the crash history within the 19-county region, included in the Kansas Department of Health and Environment's South Central Healthcare Coalition, was analyzed. Figure 1 shows the location of the Phase 1 Crash Tree Analysis Area (District 3 and District 6 counties), the Phase 1 LRSP counties, the Pilot Phase Crash Tree Analysis Area (19-county region), and the Pilot Phase counties.


Figure 1 - Location of Crash Tree Analysis Regions and LRSP Counties

### 1.1. Purpose

This document has been prepared to provide a comparison of the crash trees developed for the LRSP Phase 1 project to the crash trees that were developed during the LRSP Pilot Phase. Based on the information contained in the crash trees and other known safety research, risk factors have been identified for determining the attributes for data collection, which are summarized in this document.

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### 1.2. Document Organization

This Crash Analysis Technical Memorandum is organized into the following sections:

- Section 1 presents the project background and purpose of the Technical Memorandum.
- Section 2 summarizes the crash tree development and contains a comparison of the Phase 1 and Pilot Phase crash trees.
- Section 3 details the risk factors recommended for the LRSP project.
- Section 4 provides a summary of recommendations.
- Section 5 includes the next steps in the project.


## 2. Crash Trees

The following sections describe the process of developing the Pilot Phase Crash Trees and a comparison to the Phase 1 Crash Trees.

### 2.1. LRSP Pilot Phase Crash Trees (19-County Region)

The Pilot Phase Crash Tree Analysis Area included the following counties:
$\left.\begin{array}{llllll}\text { - } & \text { Barber } & \text { - } & \text { Edwards } & \text { - } & \text { Marion }\end{array}\right)$.

### 2.1.1. Crash Data

Crash data was provided by KDOT including five years of data from 2011 to 2015. Over 86,000 crash records were included in the crash database. The database includes data on the crash level, vehicle level, and person level. For the purposes of this analysis the crash and vehicle level information were used.

The KABCO injury severity scale (National Safety Council, 1990) is used to summarize the crash data in the following charts. The KABCO scale is used by the investigating police officer on the scene to classify injury severity for occupants with five categories:

- K, killed;
- A, disabling injury;
- B, evident injury;
- C, possible injury;

> The focus of the LRSP is to identify systemic safety improvements that target reductions in fatal (Type K)
> and serious injury (Type A) crashes.

- O, no apparent injury.

These definitions may vary slightly for different police agencies. Within this memorandum "K" signifies a fatal crash and " $A$ " represents a serious injury crash.

Figure 2 shows a summary of the crashes within the 19-county region, all crashes as well as fatal and serious injury crashes. It should be noted that while only $15 \%$ of the region's crashes occur on county roads, $24 \%$ of the fatal or serious injury crashes occur on county roads.



K \& A Crashes


Figure 2 - Crashes within the Pilot Phase Crash Tree Analysis Area (2011-2015)

### 2.1.2. Crash Tree Development

Crash trees were developed using the Kansas DOT Crash Database. Crashes were included over the period from January 1, 2011 through December 31, 2015. Crashes were grouped into three categories: State, City, and County. Any crash that occurred on an Interstate, US, or Kansas highway was counted as a State crash. Crashes that did not fall into this category but occurred outside of a city were counted as County crashes. All remaining crashes within a City were counted as City crashes. In the crash database, the attribute "Surface Type" was used to determine if the crash occurred on a paved or unpaved roadway. Then, to determine if a crash occurred at an intersection, the "Accident Location" field was used. The "Traffic Controls" attribute was used to group intersection crashes by control type. Finally, to determine if non-intersection crashes occurred on a curve, the "Road Character" attribute was used.

### 2.1.2.1. Vehicle Action and Manner of Crash

"Vehicle Action" and "Manner of Crash" statistics are provided in the crash trees and are based on total crashes. The fatal and serious injury crashes had similar characteristics as the total crashes for the counties. Due to limited space, only the top four vehicle actions and manners of crash were typically listed under each category.

### 2.1.3. 19-County Region Crash Trees

In order to define the types of roadway features associated with crashes, a crash tree was developed for the 19-county region in the south-central part of the state. The crash tree includes total crashes as well as fatal and serious injury crashes; however, the vehicle action of the crash and manner of crash are reported only for total crashes. The fatal and serious injury crashes had similar vehicle actions and manners of crash as the total crashes for 19-county region. Figure 3 shows the crash tree for paved county roads and Figure 4 shows a crash tree for the unpaved county roads. Within the 19-county region, $71.5 \%$ of all of county road crashes occurred on paved roadways, also $\mathbf{6 2 . 5} \%$ of the county road fatal and serious injury crashes occurred on paved roads within the region. Also, 54.6\% of the county road crashes occurred on straight roadway segments along a paved county road, not at an intersection and not at a curve. These roadway crashes could be effectively mitigated with low-cost countermeasures such as clearing and
grubbing along the roadway, adding wider edgeline striping, widening the shoulder and/or installing rumble strips.

For both paved and unpaved roads, it should be noted that animal crashes were not removed from the analysis since there are some countermeasures that could be implemented to address these, primarily clearing the roadside foliage. However, these crashes generally do not result in a fatality or serious injury. Within the 19-county region, $2.5 \%$ of the county road fatal and serious injury (K\&A) crashes involved an animal collision.

During the study period, $37.5 \%$ of the K\&A crashes occurred on unpaved county roads. Just over $80 \%$ of those K\&A crashes occurred on straight roadway segments.


Figure 3 - LRSP Pilot Phase Crash Tree - Paved (19-County Region)



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NOTE:

- Vehicle Action and Manner of Crash Statistics are based on Total
Crashes.
K\&A Crashes had similar Vehicle Action and Manner of Crash.
ADDITIONAL INF ORMATION:
- All percentages based on total County Road Crashes.
- "Non-Collision" - refers to a crash where the crash record did not
have the "manner of crash" coded as a collision, which could be when
a vehicle did not collide with another vehicle, such as a run off the
road crash, jackknife, fire, tire or brake failure, etc.
"Animal" - crash type refers to a crash that involved a collision with
an animal.
- "Motor Vehicle in Transport" - vehicle action refers to a crash
between two or more in-motion vehicles (as opposed to a crash with
a parked vehicle).
"Straight/following road" - refers to the vehicle action just prior to
the unstabilized situation (loss of control, etc.).

Figure 4 - LRSP Pilot Phase Crash Tree - Unpaved (19-County Region)

Table 1 contains a tabular summary of the Pilot Phase Crash Tree Analysis Area crashes by roadway type and Figure 5 contains a graphical summary of the crashes, which is the same information that is presented in the crash trees.

Table 1 - Pilot Phase Crash Tree Data - Crashes by Roadway Type


Figure 5 - Pilot Phase Crash Tree Data - Crashes by Roadway Type

### 2.2. LRSP Phase 1 Crash Trees (KDOT District 3 and District 6)

The development of the Phase 1 crash trees followed the same methodology as was described in the Section 2.1 LRSP Pilot Phase Crash Trees.

The Phase 1 Crash Tree Analysis Area included the following counties:

- Cheyenne
- Greeley
- Norton
- Smith
- Clark
- Hamilton
- Osborne
- Stanton
- Decatur
- Haskell
- Phillips
- Stevens
- Ellis
- Hodgeman
- Rawlins
- Thomas
- Finney
- Kearny
- Ford
- Lane
- Gove
- Logan
- Graham
- Meade
- Rooks
- Trego
- Russell
- Wallace
- Scott
- Seward
- Grant
- Morton
- Sheridan
- Gray
- Ness
- Sherman


### 2.2.1. Crash Data

Crash data was provided by KDOT including five years of data from 2013 to 2017. Over 25,000 crash records were included in the crash database. The database includes data on the crash level, vehicle level, and person level. For the purposes of this analysis the crash and vehicle level information were used.

Figure 6 shows a summary of the crashes within KDOT District 3 and District 6, all crashes as well as fatal and serious injury crashes. It should be noted that while only $14 \%$ of the area's crashes occur on county roads, $22 \%$ of the fatal or serious injury crashes occur on county roads. Based on data trends in other states, data analyzed during the Pilot Phase, and the nature of the county road system (design standards, etc.), it is expected that county roads in Kansas typically experience lower traffic volumes than state or city roads. It is anticipated that the fatal and serious injury crash rate on the county roads would be higher than the crash rate on state or city roads.


Figure 6 - Crashes within the Phase 1 Crash Tree Analysis Area (2013-2017)

### 2.2.2. KDOT District 3 and District 6 Crash Trees

In order to define the types of roadway features associated with crashes for Phase 1 of the LRSP project, a crash tree was developed for the KDOT District 3 and District 6 counties. Similar to the crash trees from the Pilot Phase, the crash tree includes total crashes as well as fatal and serious injury crashes; however, the vehicle action of the crash and manner of crash are reported only for total crashes. The fatal and serious injury crashes had similar vehicle actions and manners of crash as the total crashes for the KDOT District 3 and District 6 counties. Figure 7 shows the crash tree for paved county roads and Figure 8 shows a crash tree for the unpaved county roads. Within the KDOT District 3 and District 6 counties, $46.9 \%$ of all county road crashes occurred on paved roadways, and $38.4 \%$ of the county road K\&A crashes occurred on paved roads within the area. Also, $32.7 \%$ of the paved county road crashes occurred on straight roadway segments, not at an intersection and not at a curve. Similarly, as noted for the pilot phase crash analysis, these roadway crashes could be effectively mitigated with low-cost countermeasures such as clearing and grubbing along the roadway, adding wider edgeline striping, widening the shoulder and/or installing rumble strips.
Similar to the methodology in the pilot phase, for both paved and unpaved roads, animal crashes were not removed from the analysis since there are some countermeasures that could be implemented to address these, primarily clearing the roadside foliage. However, these crashes generally do not result in a fatality or serious injury. Within the KDOT District 3 and District 6 counties, $1.3 \%$ of the county road K\&A crashes involved an animal collision.

Crashes on unpaved county roads within the KDOT District 3 and District 6 counties accounted for $53.1 \%$ of the total crashes and $61.6 \%$ of the K\&A crashes. $82.7 \%$ of the K\&A crashes on county unpaved roadways occurred on straight roadway segments.
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## Kimley»Horn



Figure 7 - LRSP Phase 1 Crash Tree - Paved (KDOT District 3 and District 6)

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|  |
| :---: |
| NOTE: <br> - Vehicle Action and Manner of Crash Statistics are based on Total Crashes. <br> - K\&A Crashes had similar Vehicle Action and Manner of Crash. <br> ADDITIONAL INFORMATION: <br> - All percentages based on total County Road Crashes. <br> - "Non-Collision" - refers to a crash where the crash record did not have the "manner of crash" coded as a collision, which could be when a vehicle did not collide with another vehicle, such as a run off the road crash, jackknife, fire, tire or brake failure, etc. <br> - "Animal" - crash type refers to a crash that involved a collision with an a nimal. <br> - "Motor Vehicle in Transport" - vehide action refers to a crash between two or more in-motion vehicles (as opposed to a crash with a parked vehicle). <br> - "Straight/following road" - refers to the vehicle action just prior to the unstabilized situation (loss of control, etc.). |




## Kimley»Horn


Figure 8 - LRSP Phase 1 Crash Tree - Unpaved (KDOT District 3 and District 6)

|  |  |
| :---: | :---: |

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Table 2 contains a tabular summary of the KDOT District 3 and District 6 crashes by roadway type and Figure 9 contains a graphical summary of the crash data, which is the same information that is presented in the crash trees.

Table 2 - Phase 1 Crash Tree Data - Crashes by Roadway Type

| Roadway Type |  | Total Crashes |  | Fatal and Serious Injury (K \& A) Crashes |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Count | Percent | Count | Percent |
| County Paved | Intersection | 309 | 9\% | 14 | 9\% |
|  | Non-Intersection (on curve) | 194 | 5\% | 13 | 8\% |
|  | Non-Intersection (off curve) | 1,182 | 33\% | 32 | 20\% |
|  | Other/Unknown | 11 | 0\% | 2 | 1\% |
|  | Subtotal | 1,696 | 47\% | 61 | 38\% |
| County Unpaved | Intersection | 146 | 4\% | 12 | 8\% |
|  | Non-Intersection (on curve) | 158 | 4\% | 5 | 3\% |
|  | Non-Intersection (off curve) | 1,597 | 44\% | 81 | 51\% |
|  | Other/Unknown | 22 | 1\% | 0 | 0\% |
|  | Subtotal | 1,923 | 53\% | 98 | 62\% |
|  | Total | $3,619$ |  | 159 |  |
|  County Paved <br>  1,696 Total, $61 \mathrm{~K} \& \mathrm{~A}$ <br>  $(47 \%$ Total, $38 \% \mathrm{~K} \& \mathrm{~A})$ |  |  | County Unpaved <br> 1,923 Total, $98 \mathrm{~K} \& A$ (53\% Total, $62 \%$ K \& A) |  |  |
| 50\% |  |  | 51\% |  |  |
|  |  |  | 44\% |  |  |
| 40\% $\longrightarrow 33 \%$ |  |  |  |  |  |
| $30 \%$$20 \%$ |  |  |  |  |  |
| $\begin{array}{cc} 10 \% & 9 \% \\ 0 \% & \\ \hline \end{array}$ |  | $\begin{array}{ll\|l\|ll}  & & & 8 \% & 4 \% \\ 0 \% & 1 \% & 4 \% & & 4 \% \\ \hline \end{array}$ |  |  | 1\% 0\% |
|  |  |  |  |  |  |

Figure 9 - Phase 1 Crash Tree Data - Crashes by Roadway Type

[^1]
### 2.3. Comparison of Crash Trees

The Phase 1 crash tree has a larger percentage of unpaved county road crashes. It is our understanding that this corresponds to the larger percentage of unpaved county roads in the western, more rural portion of the state. The total number of crashes included in the Phase 1 crash tree was over 25,000 with 1,696 occurring on paved county roadways, while the Pilot Phase crash tree included over 86,000 crashes, with 9,222 occurring on paved county roadways. While the Phase 1 crash tree analysis area includes nearly twice the number of counties, there were less than one-third the number of total crashes as compared to the Pilot Phase due to the rural nature of the counties in the Phase 1 crash tree analysis area. The Phase 1 crash tree had a higher percentage of K\&A crashes that occurred on state roadways than the Pilot Phase (61\% compared to $39 \%$ ), while the percentage of K\&A crashes on county roads was similar ( $24 \%$ in Pilot Phase, $22 \%$ in Phase 1). This likely corresponds to higher K\&A crash rates along county roads in Phase 1 and may be attributed to having fewer city roads in this area compared to the 19-county region.

The trends of the locations of crashes were similar, with the majority of crashes along straight roadway segments, fewer at intersections and the least at curves. In the Pilot Phase, 78\% of the crashes occurred on straight segments, as well as $67 \%$ of K\&A crashes. Similarly, in Phase 1, straight roadway segments accounted for $77 \%$ of the crashes and $71 \%$ of the K\&A crashes. Figure 10 shows the breakdown for all crashes for both the Pilot Phase and Phase 1 and Figure 11 shows a similar comparison of K\&A crashes.

There were a larger percentage of crashes on unpaved county roads within the KDOT District 3 and District 6 counties (Phase 1: 53.1\%) than in the 19-county region (Pilot Phase: 28.5\%). K\&A crashes on unpaved county roads also accounted for a larger percentage of the total within KDOT District 3 and District 6, $61.6 \%$ compared to $37.5 \%$ in the 19 -county region. Over $80 \%$ of the K\&A crashes on county unpaved roadways occurred on straight roadway segments for both the Phase 1 and Pilot crash trees. As noted, the higher prevalence of unpaved county roads likely corresponds to these higher percentages in the Phase 1 crash tree analysis area.

The vehicle actions and manner of crashes were similar between the two crash trees, with many of the actions and manners following the same distribution order, with "ran off road right" being followed by "ran off road left", for example.

Based on these findings, it is recommended that the risk factors developed during the Pilot Phase be used in the LRSP Phase 1 project. Using the same risk factors will also allow for more even comparison between counties and their recommended projects from the Pilot Phase, Phase 1, and future LRSP phases. The following section describes the risk factors used during the Pilot Phase.

County Paved
County Unpaved


Figure 10 - All Crashes by Roadway Type (Phase 1 and Pilot Phase)


Figure 11 - K\&A Crashes by Roadway Type (Phase 1 and Pilot Phase)

## 3. KANSAS LRSP RISK FACTORS

The purpose of the LRSP project is to identify locations where systemic safety improvements can be implemented on county roads. The systemic approach focuses on risk and takes a broader view and looks at risk across an entire roadway system, rather than applying improvements to locations where crashes have previously occurred.

While there are many risk factors that could be used in systemic safety analysis, the following sections provide the risk factors approved by KDOT in the LRSP Pilot Phase, along with the safety issue or risk that they correspond and the method for collecting the associated data.

### 3.1. $\quad$ Segment Risk Factors

Table 3 shows the risk factors, based on the crash analysis of the crash trees for segments. Each of these risk factors can be used to analyze potential risk.
> "The systemic approach to safety involves widely implemented improvements based on high-risk roadway features correlated with specific severe crash types. The approach provides a more comprehensive method for safety planning and implementation that supplements and complements traditional site analysis. It helps agencies broaden their traffic safety efforts and consider risk as well as crash history when identifying where to make low cost safety improvements."
> FHWA - Office of Traffic Safety

Table 3 - Segment Risk Factors

| Risk Factor | Issue |
| :---: | :---: |
| Average Daily Traffic (ADT) volumes | Exposure |
| Surface type (paved or unpaved) | Surface type |
| Roadway width | Staying on the roadway |
| Shoulder width | Staying on the roadway, recovery from crash |
| Access density | Conflicting movements along the segment |
| Presence of pavement markings | Staying on the roadway |
| Lane departure crash rate | History of issues staying on roadway |
| Edge condition | Ability of vehicle to recover from a roadway departure |
| Roadside assessment | Roadside collision hazard |

### 3.2. Intersection Risk Factors

For analysis of the risk factors included in Table 5, data for every intersection along the study routes will be required with relevant information pertaining to each intersection. Each of these risk factors will be used to analyze potential crash risk.

Table 4 - Intersection Risk Factors

| Risk Factor | Issue |
| :---: | :---: |
| Average Daily Traffic (ADT) on all <br> approaches | Exposure |
| Distance from previous stop sign (along the <br> LRSP routes) | Running the intersection |
| Location on a curve | Running the intersection, sight visibility |
| Skew | Running the intersection, sight visibility |
| Sight distance | Running the intersection, sight visibility |
| Proximity of driveway or another intersection | Conflicting movements near intersection |
| Fatal or serious injury crash history | History of potential safety issues |
| Intersection control | Control type |

### 3.3. Curve Risk Factors

As shown in Table 5, many of the risk factor data associated with curves can be obtained simultaneously with the segment risk factors. One important distinction in curve risk factors, is to consider the use of curve radius, as research suggests, generally, that curves with larger radii historically have seen fewer crashes. Each of these risk factors will be used to analyze potential crash risk.

Table 5 - Horizontal Curve Risk Factors

| Risk Factor | Issue |
| :---: | :---: |
| Average Daily Traffic (ADT) volumes | Exposure |
| Curve radius | Staying on roadway |
| Shoulder width | Staying on roadway, recovering from crash |
| Access density | Conflicting movements near horizontal curve, sight <br> visibility |
| Fatal or serious injury crash history | Sistory of potential safety issues |
| Presence of warning signs | Staying on roadway |
| Superelevation | Ability of vehicle to recover from a roadway departure |
| Edge condition | Roadside collision hazard |
| Roadside assessment |  |

## 4. SUMMARY

The review of the Phase 1 Crash Tree Analysis Area (KDOT District 3 and District 6) found more crashes on unpaved roads than in the LRSP Pilot Phase analysis of the 19-county region. It is expected that this is likely due to the increased percentage of the number of unpaved roadways in western Kansas. The breakdown of individual crash characteristics (vehicle action and manner of crash) were similar between the Phase 1 and Pilot Phase crash trees as associated with roadway geometry and intersection control. Based on the findings of this review, it is recommended that the same risk factors be used for analysis of the LRSP Phase 1 project as were approved by KDOT for the LRSP Pilot project. These risk factors were developed to systemically assess crash risk along roadway segments, at intersections, and at horizontal curves as part of the LRSP process.

## 5. Next Steps

The next steps include collection of data to support the risk factors. Workshops will also be conducted with each of the twenty LRSP Phase 1 counties to discuss transportation safety strategies and countermeasures.

After the workshops are conducted, a systemic analysis will be conducted for the twenty LRSP Phase 1 counties to calculate risk factor scores for each roadway segment, intersection, and curve along the LRSP study routes. Project sheets will be created for the locations with the highest risk factor scores with associated recommended safety countermeasures.

Finally, a LRSP report will be produced for each county, providing a summary of the project, risk factor information, and the project sheets.

TRANSYSTEMS

# APPENDIX C <br> Crash Location Map, Crash Heat Map, and Crash Frequencies 



## Shawnee County

## Local Road Safety Plan (LRSP)

## Segment Crash Frequencies (Actual vs. Predicted)

Five-Year Analysis Period: 2016-2020

| ID | LRSP Segment | Location | Total Crashes | Lane Departure Crashes | Animal Crashes | Crash Frequency (crashes per year) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  | Actual | Highway Safety Manual (HSM) Predicted Average | Difference (actual predicted) |
| 286 | SW Topeka Blvd | From SW 49th St to SW 57th St | 37 | 14 | 2 | 7.40 | 3.17 | 4.23 |
| 285 | SW Topeka Blvd | From SW 57th St to SW Gary Ormsby Dr | 31 | 18 | 1 | 6.20 | 3.18 | 3.02 |
| 217 | SW Westview Rd/ SW University Blvd | From SW Topeka Blvd to SW 69th Ter | 12 | 6 | 0 | 2.40 | 0.32 | 2.08 |
| 297 | SW Wanamaker Rd | From SW 53rd St to SW 61st St | 25 | 2 | 1 | 5.00 | 2.95 | 2.05 |
| 249 | SW 61st St | From SW Wanamaker Rd to SW Auburn Rd | 27 | 15 | 6 | 5.40 | 3.45 | 1.95 |
| 53 | NW 46th St | From NW Rochester Rd to NW Green Hills Rd (W) | 21 | 0 | 6 | 4.20 | 2.28 | 1.92 |
| 60 | NE 46th St | From NE Meriden Rd to NW Topeka Blvd | 17 | 1 | 11 | 3.40 | 1.56 | 1.84 |
| 183 | SE Croco Rd | From SE 45th St to SE 61st St | 9 | 1 | 6 | 1.80 | 0.14 | 1.66 |
| 58 | NW 46th St | From NW Huxman Rd to NW Hoch Rd (E) | 15 | 3 | 11 | 3.00 | 1.37 | 1.63 |
| 269 | SW Crawford Rd | From SW 57th St to SW 89th St | 10 | 6 | 4 | 2.00 | 0.40 | 1.60 |
| 258 | SW 93rd St | From SW Wanamaker Rd to N Washington St | 13 | 4 | 8 | 2.60 | 1.22 | 1.38 |
| 253 | SW 85th St | From SW Wanamaker Rd to N Hanover St | 8 | 2 | 5 | 1.60 | 0.22 | 1.38 |
| 177 | SE Berryton Rd | From SE 93rd St to SE 101st St | 7 | 7 | 0 | 1.40 | 0.05 | 1.35 |
| 247 | SW 61st St | From SW Burlingame Rd to SW Wanamaker Rd | 30 | 8 | 6 | 6.00 | 4.66 | 1.34 |
| 125 | NW Topeka Blvd | From NW 62nd St to NW 46th St | 20 | 7 | 5 | 4.00 | 2.69 | 1.31 |
| 6 | NE 35th St | From NE Meriden Rd to N Kansas Ave | 9 | 7 | 2 | 1.80 | 0.68 | 1.12 |
| 126 | NW Topeka Blvd | From NE 82nd St to NE 62nd St | 16 | 7 | 5 | 3.20 | 2.14 | 1.06 |
| 103 | NW Hoch Rd | From NW 94th St to NW 60th St | 7 | 2 | 5 | 1.40 | 0.36 | 1.04 |
| 255 | SW 93rd St | From SW Jordan Rd to SW Burlingame Rd | 8 | 1 | 7 | 1.60 | 0.59 | 1.01 |
| 112 | NW Rochester Rd | From NW 78th St to NW 62nd St | 6 | 3 | 3 | 1.20 | 0.22 | 0.98 |
| 264 | SW Burlingame Rd | From SW 57th St to SW 61st St | 9 | 3 | 5 | 1.80 | 0.88 | 0.92 |
| 167 | SE 69th St | From SE Ratner Rd to SE Berryton Rd | 6 | 4 | 2 | 1.20 | 0.28 | 0.92 |
| 263 | SW Burlingame Rd | From SW 45th St to SW 57th St | 19 | 9 | 9 | 3.80 | 2.95 | 0.85 |
| 272 | SW Gage Blvd | From SW 45th St to SW 53rd | 10 | 10 | 0 | 2.00 | 1.17 | 0.83 |
| 174 | SE 93rd St | From SE Berryton Rd to SW Topeka Blvd | 14 | 6 | 7 | 2.80 | 2.01 | 0.79 |
| 260 | SW Auburn Rd | From SW 93rd St to 0.35 mi North of SW 103rd St | 8 | 3 | 4 | 1.60 | 0.83 | 0.77 |


| ID | LRSP Segment | Location | Total Crashes | Lane Departure Crashes | Animal Crashes | Crash Frequency (crashes per year) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  | Actual | Highway Safety Manual (HSM) Predicted Average | Difference (actual predicted) |
| 248 | SW 61st St | From SW Auburn St to SW Valencia Rd | 9 | 2 | 5 | 1.80 | 1.07 | 0.73 |
| 216 | SE Ward Rd | From SE Stanley Rd to SE Shawnee Heights Rd | 4 | 3 | 1 | 0.80 | 0.11 | 0.69 |
| 187 | SE Dupont Rd | From SE 2nd St to SE 10th St | 4 | 3 | 0 | 0.80 | 0.14 | 0.66 |
| 204 | SE Stanley Rd | From SE 61st St to SE 77th St | 4 | 3 | 1 | 0.80 | 0.15 | 0.65 |
| 69 | NW 62nd St | From NW Green Hills Rd to US 75 HWY | 13 | 4 | 6 | 2.60 | 1.98 | 0.62 |
| 117 | NW Rochester Rd | From NW 94th St to NW 78th St | 4 | 2 | 2 | 0.80 | 0.19 | 0.61 |
| 130 | SE 101st St | From SE Shadden Rd to SE Paulen Rd | 4 | 1 | 3 | 0.80 | 0.20 | 0.60 |
| 26 | NE Indian Creek Rd | From NE 82nd St to NE 62nd St | 4 | 3 | 1 | 0.80 | 0.21 | 0.59 |
| 48 | NW 39th St | From NW Rochester Rd to NW Button Rd | 7 | 5 | 1 | 1.40 | 0.82 | 0.58 |
| 164 | SE 61st St | From SE Stanley Rd to SE Berryton Rd | 15 | 12 | 2 | 3.00 | 2.46 | 0.54 |
| 9 | NE 43rd St | From NE Kimbal Rd to NW Topeka Blvd | 4 | 2 | 2 | 0.80 | 0.27 | 0.53 |
| 234 | SW 37th St | From SW Auburn Rd to SW Hodges Rd | 3 | 1 | 2 | 0.60 | 0.07 | 0.53 |
| 163 | SE 53rd St | From SE Croco Rd to SE Berryton Rd | 4 | 3 | 1 | 0.80 | 0.28 | 0.52 |
| 201 | SE Shawnee Heights Rd | From SE 61st St to SE 69th St | 3 | 2 | 0 | 0.60 | 0.11 | 0.49 |
| 229 | $\begin{gathered} \text { SW 29th St/ } \\ \text { SW Hodges Rd } \end{gathered}$ | From K 4 HWY to SW Hodges Rd | 3 | 3 | 0 | 0.60 | 0.12 | 0.48 |
| 135 | SE 29th St | From SE Stubbs Rd to SE Stanley Rd | 3 | 3 | 0 | 0.60 | 0.12 | 0.48 |
| 267 | SW Burlingame Rd | From SW 77th St to SW 93rd St | 4 | 1 | 3 | 0.80 | 0.32 | 0.48 |
| 184 | SE Croco Rd | From SE 61st St to SE 69th St | 4 | 3 | 1 | 0.80 | 0.33 | 0.47 |
| 62 | NW 50th St | From NW Topeka Blvd to NW Rochester Rd | 4 | 3 | 0 | 0.80 | 0.36 | 0.44 |
| 116 | NW Rochester Rd | From NW 50th St to NW 46th St | 11 | 2 | 0 | 2.20 | 1.77 | 0.43 |
| 302 | NE 82nd St | From NE Silver Rd to NE Brown Road | 4 | 2 | 2 | 0.80 | 0.37 | 0.43 |
| 139 | SE 2nd St | From SE Green Rd to Shawnee/Douglas County Line | 3 | 1 | 1 | 0.60 | 0.18 | 0.42 |
| 52 | NW 46th St | From NW Green Hill Rd to US 75 HWY | 20 | 6 | 11 | 4.00 | 3.58 | 0.42 |
| 169 | SE 85th St | From SE Paulen Rd to SE Berryton Rd | 3 | 1 | 0 | 0.60 | 0.18 | 0.42 |
| 251 | SW 77th St | From SW Burlingame Rd to SW Wanamaker Rd | 5 | 2 | 3 | 1.00 | 0.59 | 0.41 |
| 141 | SE 2nd St | From SE Green Rd to NE Goodell Rd | 6 | 5 | 0 | 1.20 | 0.81 | 0.39 |
| 210 | SE Stubbs Rd | From SE 45th St to SE 69th St | 6 | 2 | 4 | 1.20 | 0.82 | 0.38 |
| 83 | NW 86th St | From NW Hoch Rd to NW Capper Rd | 3 | 1 | 2 | 0.60 | 0.22 | 0.38 |
| 71 | NW 62nd St/ NW 66th St | From NW Landon Rd to NW Hoch Rd | 8 | 4 | 3 | 1.60 | 1.22 | 0.38 |


| ID | LRSP Segment | Location | Total Crashes | Lane Departure Crashes | Animal Crashes | Crash Frequency (crashes per year) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  | Actual | Highway Safety Manual (HSM) Predicted Average | Difference (actual predicted) |
| 266 | SW Burlingame Rd | From SW 61st St to SW 77th St | 4 | 2 | 1 | 0.80 | 0.43 | 0.37 |
| 265 | SW Burlingame Rd | From SW 93rd St to SW 97th St | 2 | 1 | 0 | 0.40 | 0.03 | 0.37 |
| 27 | NE Kincaid Rd | From NE 62nd St to NE 46th St | 3 | 1 | 1 | 0.60 | 0.23 | 0.37 |
| 283 | SW Stewart Rd | From SW 103rd St to SW 109th St | 2 | 2 | 0 | 0.40 | 0.04 | 0.36 |
| 168 | SE 77th St | From SE Berryton Rd to SE Gary Ormsby Dr | 6 | 1 | 5 | 1.20 | 0.85 | 0.35 |
| 37 | NE Seward Ave | From K 4 HWY to NE Croco Rd | 3 | 1 | 1 | 0.60 | 0.26 | 0.34 |
| 66 | NW 62nd St/NW Oldham Rd | From US 24 HWY to NW Maple Hill Rd | 2 | 2 | 0 | 0.40 | 0.07 | 0.33 |
| 202 | SE Shawnee Heights Rd | From US 40 HWY to SE Ward Rd | 7 | 5 | 2 | 1.40 | 1.08 | 0.32 |
| 87 | NW Brickyard Rd | From NW 35th St to NW 25th St | 3 | 0 | 2 | 0.60 | 0.29 | 0.31 |
| 128 | NW Wilson Rd / NW Elmont Rd | From NW 94th St to NW 65th St | 3 | 3 | 0 | 0.60 | 0.29 | 0.31 |
| 294 | SW Valencia Rd | From I-70 to SW 13th St | 2 | 0 | 2 | 0.40 | 0.10 | 0.30 |
| 250 | SW Lewelling Rd/ SW 65th St | From SW Morrill Rd to SW Burlingame Rd | 3 | 2 | 0 | 0.60 | 0.31 | 0.29 |
| 108 | NW Maple Hill Rd | From NW 62nd St to Kansas River Crossing | 6 | 2 | 4 | 1.20 | 0.91 | 0.29 |
| 226 | SW 21st St | From K 4 HWY to SW Hodges Rd | 2 | 1 | 0 | 0.40 | 0.13 | 0.27 |
| 172 | SE 89th St | From SE Clinton Wildlife Rd to SE Shadden Rd | 3 | 2 | 1 | 0.60 | 0.35 | 0.25 |
| 118 | NW Rossville Rd/ NW Capper Rd | From NW 94th St to NW 54th St | 20 | 11 | 8 | 4.00 | 3.75 | 0.25 |
| 45 | NW 35th St | From NW Brickyard Rd to NW Menoken Rd | 3 | 1 | 1 | 0.60 | 0.35 | 0.25 |
| 49 | NW 39th St | From N Kansas Ave to NW Topeka Blvd | 2 | 2 | 0 | 0.40 | 0.17 | 0.23 |
| 64 | NW 54th St | From US 24 HWY to NW Maple Hill Rd | 2 | 1 | 1 | 0.40 | 0.18 | 0.22 |
| 157 | SE 53rd St | From SE Stubbs Rd to SE Shawnee Heights Rd | 2 | 0 | 1 | 0.40 | 0.19 | 0.21 |
| 34 | NE Meriden Rd | From NE 46th St to NE 39th St | 3 | 2 | 0 | 0.60 | 0.39 | 0.21 |
| 127 | NW Valencia Rd | From NW 17th St to I-70 | 2 | 1 | 1 | 0.40 | 0.21 | 0.19 |
| 129 | SW Morrill Rd | From SW 65th St to SW Gary Ormsby Rd | 6 | 6 | 0 | 1.20 | 1.02 | 0.18 |
| 100 | NW Green Hills Rd | From NW 62nd St to NW 46th St | 5 | 2 | 2 | 1.00 | 0.82 | 0.18 |
| 225 | SW 21st St | From SW Hodges Rd to 0.3 mi west of SW Hodges Rd | 1 | 1 | 0 | 0.20 | 0.02 | 0.18 |
| 65 | NW 62nd St | From US 75 HWY to NW Landon Rd | 8 | 4 | 4 | 1.60 | 1.43 | 0.17 |
| 198 | SE Shadden Rd | From SE 89th St to Shawnee/Osage County Line | 3 | 2 | 1 | 0.60 | 0.43 | 0.17 |
| 23 | NE 86th St | From NE Indian Creek Rd to NE Marple Rd | 1 | 0 | 1 | 0.20 | 0.03 | 0.17 |


| ID | LRSP Segment | Location | Total Crashes | Lane Departure Crashes | Animal Crashes | Crash Frequency (crashes per year) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  | Actual | Highway Safety Manual (HSM) Predicted Average | Difference (actual predicted) |
| 35 | NE Rice Rd | From NE Seward Ave to SE 2nd St | 2 | 2 | 0 | 0.40 | 0.23 | 0.17 |
| 280 | SW Indian Hills Rd | From SW 37th St to SW 53rd St | 4 | 2 | 2 | 0.80 | 0.64 | 0.16 |
| 142 | SE 37th St | From SE Shawnee Heights Rd to SE Tecumseh Rd | 6 | 4 | 2 | 1.20 | 1.04 | 0.16 |
| 252 | SW 77th St | From US 75 HWY to SW Burlingame Rd | 3 | 2 | 0 | 0.60 | 0.45 | 0.15 |
| 132 | SE 10th St | From SE Shawnee Heights Rd to SE Dupont Rd | 1 | 1 | 0 | 0.20 | 0.06 | 0.14 |
| 244 | SW 57th St | From SW Valencia Rd to K 4 HWY | 8 | 4 | 4 | 1.60 | 1.47 | 0.13 |
| 137 | SE 2nd St | From SE Croco Rd to SE Rice Rd | 2 | 1 | 1 | 0.40 | 0.27 | 0.13 |
| 160 | SE 53rd St | From SE Stubbs Rd to SE Woodring Rd | 1 | 0 | 1 | 0.20 | 0.07 | 0.13 |
| 32 | NE Meriden Rd/ NE 74th St | From NE 78th St to NE Silver Rd | 1 | 1 | 0 | 0.20 | 0.08 | 0.12 |
| 77 | NW 78th St | From NW Wilson Rd to US 75 HWY | 1 | 1 | 0 | 0.20 | 0.08 | 0.12 |
| 227 | SW 29th St | From SW Urish Rd to SW Indian Hills Rd | 16 | 3 | 2 | 3.20 | 3.08 | 0.12 |
| 72 | NW 66th St | From NE Indian Creek Rd to NW Topeka Blvd | 1 | 1 | 0 | 0.20 | 0.08 | 0.12 |
| 205 | SE Stanley Rd | From SE 53rd St to SE 61st St | 1 | 0 | 1 | 0.20 | 0.09 | 0.11 |
| 179 | SE California Ave | From SE 45th St to SE 53rd St | 2 | 0 | 1 | 0.40 | 0.29 | 0.11 |
| 292 | I-70 Frontage Road | From NW Valencia Rd to NW Docking Rd | 1 | 0 | 0 | 0.20 | 0.10 | 0.10 |
| 195 | SE Paulen Rd | From SE 101st St to SE 105th St | 1 | 0 | 1 | 0.20 | 0.11 | 0.09 |
| 181 | SE Croco Rd | From SE 69th St to SE 85th St | 3 | 2 | 1 | 0.60 | 0.51 | 0.09 |
| 18 | NE 74th St | From NE Silver Rd to NE Sherman Rd | 1 | 0 | 1 | 0.20 | 0.12 | 0.08 |
| 232 | SW 33rd St | From K 4 HWY to SW Carlson Rd | 1 | 0 | 1 | 0.20 | 0.13 | 0.07 |
| 8 | NE 43rd St | From NE Meriden Rd to NE Wenonah Rd | 2 | 0 | 2 | 0.40 | 0.33 | 0.07 |
| 293 | SW Valencia Rd | From SW 57th St to SW 61st St | 1 | 1 | 0 | 0.20 | 0.13 | 0.07 |
| 105 | NW Huxman Rd/ NW 17th St | From Topeka CL to US 24 HWY | 5 | 5 | 0 | 1.00 | 0.94 | 0.06 |
| 207 | SE Stubbs Rd | From SE 29th St to SE 45th St | 1 | 0 | 1 | 0.20 | 0.14 | 0.06 |
| 203 | SE Stanley Rd | From SE 29th St to SE 45th St | 1 | 1 | 0 | 0.20 | 0.14 | 0.06 |
| 74 | NW 70th St/ NW Docking Rd | From NW Hoch Rd to NW 62nd St | 1 | 0 | 1 | 0.20 | 0.15 | 0.05 |
| 76 | NW Nickell Rd | From NW 78th St to NW 62nd St | 1 | 0 | 1 | 0.20 | 0.16 | 0.04 |
| 218 | SW 97th St/ SW 103rd St | From SW Topeka Rd to SW Stewart Rd | 1 | 1 | 0 | 0.20 | 0.16 | 0.04 |
| 7 | NE 39th St | From K 4 HWY to NE Meriden Rd | 9 | 3 | 5 | 1.80 | 1.76 | 0.04 |
| 257 | SW 93rd St | From SW Topeka Blvd to SW Jordan Rd | 2 | 0 | 2 | 0.40 | 0.37 | 0.03 |
| 245 | SW 57th St | From US 75 HWY to SW Burlingame Rd | 3 | 0 | 1 | 0.60 | 0.57 | 0.03 |


| ID | LRSP Segment | Location | Total Crashes | Lane Departure Crashes | Animal Crashes | Crash Frequency (crashes per year) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  | Actual | Highway Safety <br> Manual (HSM) <br> Predicted Average | Difference (actual predicted) |
| 284 | SW Topeka Blvd | From SW Gary Ormsby Dr to US 75 HWY | 6 | 2 | 3 | 1.20 | 1.18 | 0.02 |
| 219 | SW 10th St | From SW Urish Rd to SW Indian Hills Rd | 5 | 4 | 1 | 1.00 | 0.98 | 0.02 |
| 191 | SE Indian Hills Rd | From SW 53rd St to SW 61st St | 2 | 1 | 1 | 0.40 | 0.39 | 0.01 |
| 110 | NW Menoken Rd | From US 24 HWY to NW 17th St | 1 | 1 | 0 | 0.20 | 0.19 | 0.01 |
| 90 | NW Button Rd | From NW 62nd St to NW 46th St | 8 | 6 | 2 | 1.60 | 1.60 | 0.0003 |
| 99 | NW Green Hills Rd | From NW 39th St to NW 35th St | 1 | 1 | 0 | 0.20 | 0.20 | -0.0004 |
| 211 | SE Tecumseh Rd | From SE 45th St to SE 53rd St | 1 | 1 | 0 | 0.20 | 0.20 | -0.005 |
| 171 | SE 89th St | From SE Shadden Rd to SE Ratner Rd | 3 | 1 | 2 | 0.60 | 0.62 | -0.02 |
| 193 | SE Paulen Rd | From SE 29th St to SE 45th St | 3 | 0 | 3 | 0.60 | 0.62 | -0.02 |
| 165 | SE 61st St | From SE Stubbs Rd to SE Stanley Rd | 1 | 0 | 1 | 0.20 | 0.22 | -0.02 |
| 106 | NW Landon Rd | From NW 62nd Rd to NW 46th St | 1 | 0 | 1 | 0.20 | 0.23 | -0.03 |
| 256 | SW 93rd St | From SW Burlingame Rd to SW Wanamaker Rd | 3 | 1 | 2 | 0.60 | 0.63 | -0.03 |
| 54 | NW 46th St | From NW Menoken Rd to NW Landon Rd | 2 | 0 | 2 | 0.40 | 0.44 | -0.04 |
| 59 | NW 46th St | From NW Topeka Blvd to NW Rochester Rd | 7 | 2 | 1 | 1.40 | 1.45 | -0.05 |
| 199 | SE Shawnee Heights Rd | From SE 45th St to SE 61st St | 3 | 1 | 2 | 0.60 | 0.65 | -0.05 |
| 156 | SE 53rd St | From SE Paulen Rd to SE Croco Rd | 2 | 0 | 2 | 0.40 | 0.45 | -0.05 |
| 180 | SE California Ave | From SE 53rd St to SE 61st St | 1 | 0 | 1 | 0.20 | 0.27 | -0.07 |
| 150 | SE 45th St | From SE Croco Rd to SE Berryton Rd | 8 | 4 | 3 | 1.60 | - 1.67 | -0.07 |
| 145 | SE 37th St | From SE Tecumseh Rd to SE Paulen Rd | 1 | 0 | 1 | 0.20 | 0.28 | -0.08 |
| 57 | NW 46th St | From NW Landon Rd to NW Huxman Rd | 1 | 0 | 1 | 0.20 | 0.28 | -0.08 |
| 39 | NE Shaffer Rd | From NE 62nd St to NE 46th St | 1 | 1 | 0 | 0.20 | 0.28 | -0.08 |
| 15 | NE 62nd St | From NE Kincaid Rd to NE Meriden Rd | 2 | 2 | 0 | 0.40 | 0.49 | -0.09 |
| 134 | SE 29th St | From SE Shawnee Heights Rd to SE Tecumseh Rd | 8 | 6 | 2 | 1.60 | 1.72 | -0.12 |
| 92 | NW Button Rd | From NW 35th St to NW Frontage Rd | 1 | 0 | 1 | 0.20 | 0.32 | -0.12 |
| 38 | $\begin{aligned} & \text { NE Seward Ave / NE } \\ & \text { Goodell Rd } \\ & \hline \end{aligned}$ | From SE 2nd St to K 4 HWY | 2 | 1 | 1 | 0.40 | 0.53 | -0.13 |
| 282 | SE Paulen Rd | From SE 45th St to SE 61st St | 3 | 2 | 1 | 0.60 | 0.74 | -0.14 |
| 40 | NE Silver Rd | From NE 82nd St to NE 70th St | 4 | 4 | 0 | 0.80 | 0.94 | -0.14 |
| 114 | NW Rochester Rd | From NW 62nd St to NW 50th St | 8 | 3 | 1 | 1.60 | 1.75 | -0.15 |
| 144 | SE 37th St | From SE Paulen Rd to SE Croco Rd | 2 | 2 | 0 | 0.40 | 0.56 | -0.16 |


| ID | LRSP Segment | Location | Total Crashes | Lane Departure Crashes | Animal Crashes | Crash Frequency (crashes per year) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  | Actual | Highway Safety Manual (HSM) Predicted Average | Difference (actual predicted) |
| 51 | NW 43rd St | From NW Topeka Blvd to NW Rochester Rd | 1 | 0 | 0 | 0.20 | 0.36 | -0.16 |
| 233 | SW 33rd St | From SW Indian Hills Rd (W) to SW Auburn Rd | 1 | 1 | 0 | 0.20 | 0.36 | -0.16 |
| 209 | SE Stubbs Rd | From SE 69th St to SE 89th St | 2 | 0 | 2 | 0.40 | 0.56 | -0.16 |
| 41 | NW 25th St | From NW Menoken Rd to US 24 HWY | 1 | 0 | 1 | 0.20 | 0.37 | -0.17 |
| 238 | SW 45th St/ SW 47th St | From SW Gage Blvd to SW Wanamaker Rd | 7 | 3 | 4 | 1.40 | 1.59 | -0.19 |
| 271 | SW Fairlawn Rd | From SW 45th St to SW 53rd St | 1 | 1 | 0 | 0.20 | 0.41 | -0.21 |
| 268 | SW Carlson Rd | From I-70 to SW 33rd St | 5 | 1 | 4 | 1.00 | 1.22 | -0.22 |
| 295 | SW Wanamaker Rd | From SW 77th St to SW 93rd St | 5 | 2 | 3 | 1.00 | 1.23 | -0.23 |
| 91 | NW Button Rd | From NW 46th St to NW 35th St | 2 | 2 | 0 | 0.40 | 0.66 | -0.26 |
| 273 | SW Gary Ormsby Dr | From SW Topeka Blvd to US 75 HWY | 5 | 4 | 0 | 1.00 | 1.26 | -0.26 |
| 151 | SE 45th St | From SE Berryton Rd to SE California Ave | 17 | 6 | 7 | 3.40 | 3.68 | -0.28 |
| 173 | $\begin{gathered} \hline \text { SE 89th St/ } \\ \text { SE 93rd St } \end{gathered}$ | From SE Ratner Rd to SE Berryton Rd | 5 | 2 | 2 | 1.00 | 1.28 | -0.28 |
| 279 | SW Indian Hills Rd | From SW 33rd St to SW 37th St | 3 | 2 | 0 | 0.60 | 0.88 | -0.28 |
| 175 | SE 94th St | From NW Topeka Blvd to NW Wilson Rd | 5 | 1 | 4 | 1.00 | 1.30 | -0.30 |
| 121 | NW Topeka Blvd | From NW 94th St to NW 86th St | 2 | 0 | 2 | 0.40 | 0.71 | -0.31 |
| 122 | NW Topeka Blvd | From NW 86th St to NW 82nd St | 1 | 0 | 1 | 0.20 | 0.51 | -0.31 |
| 196 | SE Ratner Rd | From SE 61st St to SE 89th St | 2 | 1 | 1 | 0.40 | 0.76 | -0.36 |
| 21 | NE 82nd St | From NE Brown Rd to NE Sherman Rd | 1 | 0 | 0 | 0.20 | 0.57 | -0.37 |
| 109 | NW Menninger Rd | From NE Topeka Blvd to NW Rochester Rd | 2 | 2 | 0 | 0.40 | 0.78 | -0.38 |
| 61 | NW 50th St | From NW Rochester Rd to NW Green Hills Rd | 4 | 3 | 1 | 0.80 | 1.22 | -0.42 |
| 291 | SW Urish Rd | From SW 41st St to SW 53rd St | 1 | 0 | 1 | 0.20 | 0.63 | -0.43 |
| 159 | SE 53rd St | From SE Shawnee Heights Rd to SE Paulen Rd | 2 | 2 | 0 | 0.40 | 0.83 | -0.43 |
| 107 | NW Landon Rd/ NW 94th St | From O4 Rd to NW 62nd St | 1 | 0 | 1 | 0.20 | 0.65 | -0.45 |
| 243 | SW 53rd St | From SW Auburn St to SW Hodges Rd | 1 | 1 | 0 | 0.20 | 0.66 | -0.46 |
| 290 | SW Urish Rd | From SW 33rd St to SW 37th St | 7 | 5 | 2 | 1.40 | 1.86 | -0.46 |
| 161 | SE 53rd St | From SE California Ave to SW Topeka Blvd | 6 | 3 | 1 | 1.20 | 1.68 | -0.48 |
| 300 | W 8th St | From N Washington St to Auburn CL | 1 | 1 | 0 | 0.20 | 0.68 | -0.48 |
| 4 | N Kansas Ave | From NE 35th St to NW Menninger Rd | 3 | 1 | 1 | 0.60 | 1.08 | -0.48 |
| 262 | SW Auburn Rd | From 0.35 mi North of SW 103rd St to SW 109th St | 8 | 0 | 7 | 1.60 | 2.09 | -0.49 |


|  |  |  |  |  |  | Crash Frequency (crashes per year) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| ID | LRSP Segment | Location | Total Crashes | Lane Departure Crashes | Animal Crashes | Actual | Highway Safety <br> Manual (HSM) Predicted Average | Difference (actual predicted) |
| 104 | NW Huxman Rd | From NW 46th St to US 24 HWY | 3 | 2 | 0 | 0.60 | 1.09 | -0.49 |
| 270 | SW Fairlawn Rd | From SW 53rd St to SW 61st St | 1 | 0 | 1 | 0.20 | 0.72 | -0.52 |
| 30 | NE Meriden Rd/ NE 70th St | From NE Silver Rd to NE 62nd St | 3 | 2 | 1 | 0.60 | 1.15 | -0.55 |
| 214 | SE Tecumseh Rd | From US 40 HWY to SE 21st St | 2 | 1 | 0 | 0.40 | 0.96 | -0.56 |
| 149 | SE 45th St | From SE Shawnee Heights Rd to SE Croco Rd | 32 | 9 | 14 | 6.40 | 7.00 | -0.60 |
| 200 | SE Shawnee Heights Rd | From SE Ward Rd to SE 45th St | 15 | 3 | 5 | 3.00 | 3.61 | -0.61 |
| 33 | NE Meriden Rd | From NE 39th St to NE Collier Rd | 3 | 1 | 1 | 0.60 | 1.21 | -0.61 |
| 111 | NW Menoken Rd | From NW 46th St to US 24 HWY | 4 | 2 | 1 | 0.80 | 1.41 | -0.61 |
| 11 | NE 46th St | From K 4 HWY to NE Meriden Rd | 7 | 4 | 3 | 1.40 | 2.02 | -0.62 |
| 113 | NW Rochester Rd | From NW 46th St to NW 43rd St | 3 | 1 | 1 | 0.60 | 1.22 | -0.62 |
| 162 | SE 53rd St | From SE Berryton Rd to SE California Rd | 4 | 3 | 1 | 0.80 | 1.44 | -0.64 |
| 43 | NW 35th St | From NW Rochester Rd to NW Green Hill Rd | 3 | 1 | 0 | 0.60 | 1.26 | -0.66 |
| 185 | SE Croco Rd | From NE Seward Ave to SE 6th Ave | 2 | 2 | 0 | 0.40 | 1.07 | -0.67 |
| 124 | NW Topeka Blvd | From NW 46th St to NW 43rd St | 4 | 0 | 3 | 0.80 | 1.51 | -0.71 |
| 88 | NW Brickyard Rd | From NW 46th St to NW 35th St | 5 | 2 | 2 | 1.00 | 1.72 | -0.72 |
| 240 | SW 53rd St | From SW Fairlawn Rd to SW Wanamaker Rd | 7 | 3 | 2 | 1.40 | 2.12 | -0.72 |
| 147 | SE 45th St | From SE California Ave to SE Adams St | 15 | 3 | 1 | 3.00 | 3.76 | -0.76 |
| 20 | NE 82nd St | From NE Silver Rd to NW Topeka Blvd | 4 | 3 | 1 | 0.80 | 1.65 | -0.85 |
| 3 | Main St | From NW 54th St to US 24 HWY | 4 | 3 | 0 | 0.80 | 1.65 | -0.85 |
| 239 | SW 53rd St | From SW Burlingame Rd to SW Fairlawn Rd | 8 | 3 | 5 | 1.60 | 2.48 | -0.88 |
| 301 | SW Urish Rd | From SW 29th St to SW 33rd St | 4 | 1 | 1 | 0.80 | 1.78 | -0.98 |
| 237 | SW 41st St | From SW Urish Rd to Topeka CL | 1 | 1 | 0 | 0.20 | 1.18 | -0.98 |
| 298 | SW Wanamaker Rd | From SW 61st St to SW 77th St | 4 | 3 | 0 | 0.80 | 1.79 | -0.99 |
| 119 | NW Rossville Rd/ <br> NW 42nd St/ <br> NW Carlson Rd | From W 1st St to Rossville CL | 13 | 8 | 2 | 2.60 | 3.61 | -1.01 |
| 5 | N Washington St | From W 14th St to E 1st St | 7 | 3 | 0 | 1.40 | 2.49 | -1.09 |
| 47 | NW 35th St | From NW Green Hills Rd to US 75 HWY | 8 | 4 | 3 | 1.60 | 2.72 | -1.12 |
| 152 | SE 45th St | From Topeka CL to SE Adams St | 3 | 2 | 0 | 0.60 | 1.73 | -1.13 |
| 102 | NW Hoch Rd | From NW 62nd St to E Railroad Ave | 7 | 3 | 2 | 1.40 | 2.58 | -1.18 |
| 31 | NE Meriden Rd | From NE 62nd St to NE 46th St | 1 | 1 | 0 | 0.20 | 1.41 | -1.21 |


| ID | LRSP Segment | Location | Total Crashes | Lane Departure Crashes | Animal Crashes | Crash Frequency (crashes per year) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  | Actual | Highway Safety Manual (HSM) Predicted Average | Difference (actual predicted) |
| 241 | SW 53rd St | From SW Wanamaker Rd to SW Urish Rd | 3 | 2 | 1 | 0.60 | 1.99 | -1.39 |
| 93 | NW Carlson Rd | From W 1st St to SW I-70 Frontage Rd | 2 | 1 | 1 | 0.40 | 2.82 | -1.42 |
| 289 | SW Urish Rd | From SW 10th St to SW 21st St | 17 | 8 | 9 | 3.40 | 4.86 | -1.46 |
| 215 | SE Tecumseh Rd | From SE 29th St to SE 45th St | 4 | 2 | 2 | 0.80 | 2.28 | -1.48 |
| 287 | SW Topeka Blvd | From US 75 HWY to Shawnee/Osage County Line | 14 | 7 | 5 | 2.80 | 4.29 | -1.49 |
| 236 | SW 41st St | From SW Urish Rd to SW Indian Hills Rd | 2 | 1 | 1 | 0.40 | 1.89 | -1.49 |
| 224 | SW 21st St | From SW Urish Rd to SW Indian Hills Rd | 9 | 1 | 4 | 1.80 | 3.34 | -1.54 |
| 228 | SW 29th St | From SW Urish Rd to Topeka CL | 6 | 2 | 0 | 1.20 | 2.75 | -1.55 |
| 230 | SW 29th St | From SE Indian Hills Rd to SW Auburn Rd | 1 | 1 | 0 | 0.20 | 1.89 | -1.69 |
| 254 | SW 89th St | From Auburn CL to Shawnee/ Wabaunsee County Line | 22 | 7 | 15 | 4.40 | 6.10 | -1.70 |
| 70 | NW 62nd St | From NW Topeka Blvd to NW Green Hills Rd | 6 | 3 | 0 | 1.20 | 3.00 | -1.80 |
| 68 | NW 62nd St | From NW Hoch Rd to NW Rossville Rd | 5 | 1 | 4 | 1.00 | 2.83 | -1.83 |
| 115 | NW Rochester Rd | From NW 43rd St to NW Menninger Rd | 24 | 10 | 6 | 4.80 | 6.84 | -2.04 |
| 36 | NE Seward Ave | From NE Croco Rd to NE Rice Rd | 1 | 1 | 0 | 0.20 | 2.27 | -2.07 |
| 154 | SE 45th St | From Shawnee/Douglas County Line to SE Shawnee Heights Rd | 13 | 6 | 7 | 2.60 | 4.68 | -2.08 |
| 178 | SE Berryton Rd | From SE 61st St to SE 93rd St | 3 | 1 | 1 | 0.60 | 2.84 | -2.24 |
| 148 | SE Berryton Rd | From SE 45th St to SE 61st St | 4 | 2 | 1 | 0.80 | 3.11 | -2.31 |
| 223 | SW 21st St | From SW Indian Hills Rd to K 4 HWY | 3 | 1 | 1 | 0.60 | 2.91 | -2.31 |
| 186 | SE Croco Rd | From SE 29th St to SE 45th St | 14 | 2 | 7 | 2.80 | 5.12 | -2.32 |
| 242 | SW 53rd St | From SW Urish Rd to SW Auburn Rd | 4 | 0 | 4 | 0.80 | 3.70 | -2.90 |
| 296 | SW Wanamaker Rd | From SW 47th St to SW 53rd St | 5 | 0 | 0 | 1.00 | 4.15 | -3.15 |
| 136 | SE 29th St | From SE Tecumseh Rd to SE Croco Rd | 6 | 2 | 2 | 1.20 | 4.93 | -3.73 |
| 89 | NW Brickyard Rd | From NW 62nd St to NW 46th St | 3 | 2 | 0 | 0.60 | 4.42 | -3.82 |
| 56 | NW 46th St | From NW Brickyard Rd to NW Menoken Rd | 7 | 2 | 4 | 1.40 | 5.71 | -4.31 |
| 182 | SE Croco Rd | From SE 6th St to SE 29th St | 14 | 4 | 5 | 2.80 | 7.29 | -4.49 |
| 17 | NE 62nd St | From NE Meriden Rd to NW Topeka Blvd | 3 | 2 | 0 | 0.60 | 5.41 | -4.81 |
| 259 | SW Auburn Rd | From SW 61st St to SW 85th St | 24 | 9 | 11 | 4.80 | 9.86 | -5.06 |
| 123 | NW Topeka Blvd | From NE 43rd St to NW Menninger Rd | 24 | 8 | 1 | 4.80 | 10.21 | -5.41 |
| 261 | SW Auburn Rd | From K 4 HWY to SW 61st St | 47 | 18 | 17 | 9.40 | 19.18 | -9.78 |

## Shawnee County

Local Road Safety Plan (LRSP)

## Curve Crash Frequencies (Actual vs. Predicted)

Five-Year Analysis Period: 2016-2020

| ID | LRSP Curve | Total Crashes | Crash Frequency (crashes per year) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Actual | Highway Safety Manual (HSM) Predicted Average | Difference (actual predicted) |
| 130 | SE Berryton Rd 0.13 mi south of SE 93rd St | 4 | 0.80 | 0.07 | 0.73 |
| 183 | SW Birch Rd \& SW 47th St | 5 | 1.00 | 0.28 | 0.72 |
| 87 | NW Oldham Rd \& NW 62nd St | 2 | 0.40 | 0.05 | 0.35 |
| 155 | SE Ward Rd 0.38 mi east of SE Shawnee Heights Rd | 2 | 0.40 | 0.07 | 0.33 |
| 83 | NW Maple Hill Rd \& NW 46th St | 2 | 0.40 | 0.08 | 0.32 |
| 239 | SW Valencia Rd \& SW 57th St | 2 | 0.40 | 0.11 | 0.29 |
| 230 | SW University Blvd 0.13 mi west of SW Topeka Blvd | 2 | 0.40 | 0.13 | 0.27 |
| 38 | NW 42nd St \& NW Carlson Rd | 4 | 0.80 | 0.60 | 0.20 |
| 76 | NW Hoch Rd 0.46 mi north of NW 70th St | 1 | 0.20 | 0.01 | 0.19 |
| 113 | SE 2nd St 0.05 mi west of SE Herschell Rd | 1 | 0.20 | 0.01 | 0.19 |
| 133 | SE Berryton Rd 0.23 mi south of SE 93rd St | 1 | 0.20 | 0.02 | 0.18 |
| 131 | SE Berryton Rd 0.16 mi south of SE 93rd St | 1 | 0.20 | 0.02 | 0.18 |
| 197 | SW Douglas Rd 0.56 mi south of SW 69th St | 1 | 0.20 | 0.02 | 0.18 |
| 212 | SW Jordan Rd \& SW 103rd St | 1 | 0.20 | 0.02 | 0.18 |
| 142 | SE Shadden Rd \& SE Camp Creek Rd | 1 | 0.20 | 0.03 | 0.17 |
| 196 | SW Douglas Rd 0.32 mi south of SW 69th St | 1 | 0.20 | 0.03 | 0.17 |
| 226 | SW Stewart Rd \& SW 109th St | 1 | 0.20 | 0.05 | 0.15 |
| 229 | SW University Blvd 0.04 mi west of SW Topeka Blvd | 1 | 0.20 | 0.06 | 0.14 |
| 119 | SE 2nd St 0.36 mi east of SE Herschell Rd | 1 | 0.20 | 0.07 | 0.13 |
| 187 | SW Burlingame Rd \& SW Lewelling Rd | 1 | 0.20 | 0.07 | 0.13 |
| 128 | SE 89th St 0.25 mi east of SE Clinton Wildlife Rd | 1 | 0.20 | 0.07 | 0.13 |
| 151 | SE Stubbs Rd 0.34 mi north of SE 69th St | 1 | 0.20 | 0.08 | 0.12 |
| 248 | SW Westview Rd 0.03 mi north of SW Greenview Dr | 1 | 0.20 | 0.12 | 0.08 |
| 51 | NW 78th St 0.40 mi east of US-75 HWY | 1 | 0.20 | 0.12 | 0.08 |
| 31 | NE Seward Ave 0.30 mi east of NE Kincaid Rd | 1 | 0.20 | 0.13 | 0.07 |
| 108 | SE 29th St 0.05 mi east of SE Stanley Rd | 1 | 0.20 | 0.14 | 0.06 |
| 23 | NE Kimbal Rd \& NE 35th St | 2 | 0.40 | 0.36 | 0.04 |
| 188 | SW Burlingame Rd 0.45 mi south of SW 57th St | 2 | 0.40 | 0.36 | 0.04 |
| 91 | NW Rossville Rd \& NW 78th St | 1 | 0.20 | 0.17 | 0.03 |
| 35 | NW 13th St 0.10 mi west of NW Valencia Rd | 1 | 0.20 | 0.18 | 0.02 |
| 137 | SE Paulen Rd \& SE 89th St | 1 | 0.20 | 0.21 | -0.01 |
| 60 | NW Capper Rd \& NW 78th St | 1 | 0.20 | 0.22 | -0.02 |
| 138 | SE Paulen Rd \& SE 93rd St | 1 | 0.20 | 0.25 | -0.05 |
| 181 | SW Auburn Rd 0.29 south of SW 93rd St | 1 | 0.20 | 0.25 | -0.05 |
| 182 | SW Auburn Rd 0.42 mi north of SW 103rd St | 1 | 0.20 | 0.27 | -0.07 |
| 222 | SW Nottingham Rd 0.47 mi south of SW 33rd St | 1 | 0.20 | 0.27 | -0.07 |
| 29 | NE Meriden Rd 0.29 mi north of NE Collier Rd | 1 | 0.20 | 0.35 | -0.15 |
| 216 | SW Montara Pkwy \& SW Gary Ormsby Dr | 1 | 0.20 | 0.36 | -0.16 |


| ID | LRSP Curve | Total Crashes | Crash Frequency (crashes per year) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Actual | Highway Safety Manual (HSM) Predicted Average | Difference (actual predicted) |
| 168 | SW 10th St 0.37 mi west of SW Urish Rd | 1 | 0.20 | 0.37 | -0.17 |
| 164 | SW 10th St 0.19 mi east of SW Indian Hills Rd | 1 | 0.20 | 0.40 | -0.20 |
| 26 | NE Meriden Rd \& NE 74th St | 1 | 0.20 | 0.44 | -0.24 |
| 163 | SW 10th St 0.09 mi east of SW Indian Hills Rd | 1 | 0.20 | 0.49 | -0.29 |
| 221 | SW Nottingham Rd 0.34 mi south of SW 33rd St | 1 | 0.20 | 0.58 | -0.38 |
| 94 | NW Rossville Rd 0.01 mi south of NW 46th St | 1 | 0.20 | 0.73 | -0.53 |
| 184 | SW Burlingame Rd \& SW 53rd St | 3 | 0.60 | 1.23 | -0.63 |
| 110 | SE 29th St 0.26 mi west of SE Shawnee Heights Rd | 1 | 0.20 | 0.86 | -0.66 |
| 210 | SW Indian Hills Rd 0.05 mi north of SW Blue Inn PI | 1 | 0.20 | 0.98 | -0.78 |
| 92 | NW Rossville Rd \& NW 42nd St | 2 | 0.40 | 1.24 | -0.84 |
| 117 | SE 2nd St \& SE Arapaho Rd (W) | 1 | 0.20 | 1.13 | -0.93 |
| 68 | NW Hoch Rd \& NW 46th St (W) | 1 | 0.20 | 1.31 | -1.11 |
| 9 | N Washington St 0.01 mi south of W 14th St | 2 | 0.40 | 1.75 | -1.35 |
| 111 | SE 29th St 0.33 mi west of SE Shawnee Heights Rd | 2 | 0.40 | - 1.82 | -1.42 |
| 198 | SW Gage Blvd 0.15 mi north of SW 49th St | 3 | 0.60 | 2.06 | -1.46 |
| 129 | SE 2nd St \& SE Arapaho Rd (E) | 1 | 0.20 | 1.69 | -1.49 |
| 24 | NE Meriden Rd \& NE 39th St | 2 | 0.40 | 2.04 | -1.64 |
| 232 | SW Urish Rd \& SW Fountaindale Rd | 2 | 0.40 | 2.08 | -1.68 |
| 199 | SW Gage Blvd 0.08 mi north of SW 49th St | 2 | 0.40 | 2.10 | -1.70 |
| 28 | NE Meriden Rd \& NE 35th St (W) | 1 | 0.20 | 2.50 | -2.30 |
| 220 | SW Nottingham Rd 0.05 mi north of SW 37th St | 1 | 0.20 | 4.56 | -4.36 |

## Shawnee County Local Road Safety Plan (LRSP) <br> Intersection Crash Frequencies (Actual vs. Predicted) <br> Five-Year Analysis Period: 2016-2020

| ID | LRSP Intersection | Total Crashes | Crash Frequency (crashes per year) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Actual | Highway Safety Manual (HSM) Predicted Average | Difference (actual predicted) |
| 615 | SW Topeka Blvd \& SE University Blvd | - 31 | 6.20 | 0.73 | 5.47 |
| 315 | SE Croco Rd \& SE 29th St | 22 | 4.40 | 1.12 | 3.28 |
| 456 | SW Auburn Rd \& SW 29th St | 21 | 4.20 | 0.95 | 3.25 |
| 612 | SW Topeka Blvd \& SW 57th St | 18 | 3.60 | 1.12 | 2.48 |
| 283 | SE Adams St \& SE 45th St | 14 | 2.80 | 1.06 | 1.74 |
| 462 | SW Auburn Rd \& SW 61st St | 12 | 2.40 | 0.66 | 1.74 |
| 251 | NW Topeka Blvd \& NW 35th St | 12 | 2.40 | 0.78 | 1.62 |
| 173 | NW Hunters Ridge Dr/NW Oakley Ave \& NW 46th St | 10 | 2.00 | 0.41 | 1.59 |
| 558 | SW Kingsrow Rd (N) \& SW 29th St | 8 | 1.60 | 0.27 | 1.33 |
| 253 | NW Topeka Blvd \& NW 46th St | 9 | 1.80 | 0.47 | 1.33 |


| ID | LRSP Intersection | Total Crashes | Crash Frequency (crashes per year) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Actual | Highway Safety <br> Manual (HSM) Predicted Average | Difference (actual predicted) |
| 655 | SW Wanamaker Rd \& SW 61st St | 8 | 1.60 | 0.31 | 1.29 |
| 111 | NW Button Rd (N) \& NW 46th St | 8 | 1.60 | 0.53 | 1.07 |
| 613 | SW Topeka Blvd \& SE Gary Ormsby Dr | 9 | 1.80 | 0.75 | 1.05 |
| 256 | NW Topeka Blvd \& NW 58th St | 6 | 1.20 | 0.16 | 1.04 |
| 230 | NW Rochester Rd \& NW 46th St | 8 | 1.60 | 0.59 | 1.01 |
| 450 | SE West Edge Rd/SE Berryton Rd \& SE 45th St | 7 | 1.40 | 0.44 | 0.96 |
| 611 | SW Topeka Blvd \& SE Airport Dr | 8 | 1.60 | 0.66 | 0.94 |
| 438 | SE Tecumseh Rd \& SE 37th St | 6 | 1.20 | 0.27 | 0.93 |
| 623 | SW Urish Rd \& SW 29th St | 8 | 1.60 | 0.71 | 0.89 |
| 262 | NW Topeka Blvd \& NW Menninger Rd | 8 | 1.60 | 0.73 | 0.87 |
| 376 | SE Peck Rd \& SE 29th St | 5 | 1.00 | 0.17 | 0.83 |
| 226 | NW Rochester Rd \& NW 35th St | 7 | 1.40 | 0.65 | 0.75 |
| 476 | SW Burlingame Rd \& SW 45th St | 6 | 1.20 | 0.47 | 0.73 |
| 231 | NW Rochester Rd \& NW 50th St | 6 | 1.20 | 0.49 | 0.71 |
| 420 | SE Starlite Dr \& SE 29th St | 4 | 0.80 | 0.13 | 0.67 |
| 366 | SE Paulen Rd \& SE 37th St | 4 | 0.80 | 0.14 | 0.66 |
| 333 | SE Croco Rd \& SE Cyprus Dr | 7 | 1.40 | 0.74 | 0.66 |
| 616 | SW Topeka Blvd \& SW 93rd St | 6 | 1.20 | 0.55 | 0.65 |
| 401 | SE Shawnee Heights Rd \& SE 45th St | 6 | 1.20 | 0.57 | 0.63 |
| 323 | SE Croco Rd \& SE 45th St | 5 | 1.00 | 0.38 | 0.62 |
| 324 | SE Croco Rd \& SE 53rd St | 3 | 0.60 | 0.04 | 0.56 |
| 453 | SW Albright Dr \& SW 33rd St | 3 | 0.60 | 0.05 | 0.55 |
| 538 | SW Indian Hills Rd \& SW 21st St | 5 | 1.00 | 0.45 | 0.55 |
| 101 | NW Button Rd \& NW 25th St | 3 | 0.60 | 0.09 | 0.51 |
| 234 | NW Rochester Rd \& NW 62nd St | 4 | 0.80 | 0.31 | 0.49 |
| 37 | NE Indian Creek Rd \& NE 62nd St | 3 | 0.60 | 0.11 | 0.49 |
| 31 | NE Croco Rd \& NE 39th St | 3 | 0.60 | 0.14 | 0.46 |
| 152 | NW Green Hills Rd (N) \& NW 46th St | 4 | 0.80 | 0.35 | 0.45 |
| 459 | SW Auburn Rd \& SW 45th St | 3 | 0.60 | 0.15 | 0.45 |
| 224 | NW Redwood Dr \& NW 46th St | 3 | 0.60 | 0.15 | 0.45 |
| 142 | NW Green Hills Rd \& NW 35th St | 3 | 0.60 | 0.18 | 0.42 |
| 628 | SW Urish Rd \& SW 61st St | 3 | 0.60 | 0.18 | 0.42 |
| 334 | SE Croco Rd \& SE East Edge Rd | 3 | 0.60 | 0.19 | 0.41 |
| 236 | NW Rochester Rd \& NW 78th St | 2 | 0.40 | 0.01 | 0.39 |
| 663 | SW Westview Rd \& SW 65th St | 2 | 0.40 | 0.01 | 0.39 |
| 13 | N Kansas Ave \& NE/NW 43rd St | 2 | 0.40 | 0.02 | 0.38 |
| 561 | SW Lewelling Rd \& SW 65th St | 2 | 0.40 | 0.02 | 0.38 |
| 508 | SW El Cerrito Dr/SW Indian Hills Rd \& SW 33rd St | 3 | 0.60 | 0.22 | 0.38 |
| 518 | SW Gage Blvd \& SW 53rd St | 3 | 0.60 | 0.23 | 0.37 |
| 571 | SW Morrill Rd \& SW 65th St | 2 | 0.40 | 0.04 | 0.36 |
| 479 | SW Burlingame Rd \& SW 57th St | 4 | 0.80 | 0.44 | 0.36 |
| 182 | NW Jennings Rd \& NW 62nd St | 2 | 0.40 | 0.04 | 0.36 |
| 353 | SE Howey Rd \& SE 37th St | 2 | 0.40 | 0.04 | 0.36 |


| ID | LRSP Intersection | Total Crashes | Crash Frequency (crashes per year) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Actual | Highway Safety <br> Manual (HSM) <br> Predicted Average | Difference (actual predicted) |
| 102 | NW Button Rd \& NW 35th St | 3 | 0.60 | 0.26 | 0.34 |
| 284 | SE Adams St \& SE 53rd St | 3 | 0.60 | 0.26 | 0.34 |
| 252 | NW Topeka Blvd \& NW 39th St | 5 | 1.00 | 0.67 | 0.33 |
| 566 | SW Maxfield Rd \& SW 29th St | 3 | 0.60 | 0.28 | 0.32 |
| 325 | SE Croco Rd \& SE 61st St | 2 | 0.40 | 0.08 | 0.32 |
| 484 | SW Burlingame Rd \& SW 93rd St | 2 | 0.40 | 0.09 | 0.31 |
| 607 | SW Topeka Blvd \& SE 58th St | 3 | 0.60 | 0.30 | 0.30 |
| 36 | NE Indian Creek Rd \& NE 46th St | 2 | 0.40 | 0.10 | 0.30 |
| 511 | SW Fairlawn Rd \& SW 61st St | 3 | 0.60 | 0.31 | 0.29 |
| 255 | NW Topeka Blvd \& NW 50th St | 3 | 0.60 | 0.32 | 0.28 |
| 614 | SW Topeka Blvd \& SW 49th St | 5 | 1.00 | 0.72 | 0.28 |
| 319 | SE Croco Rd \& SE 35th St | 3 | 0.60 | 0.32 | 0.28 |
| 327 | SE Croco Rd \& SE 6th St | 4 | 0.80 | 0.53 | 0.27 |
| 652 | SW Wanamaker Rd \& SW 53rd St | 4 | 0.80 | 0.56 | 0.24 |
| 570 | SW Montara Pkwy \& SW Gary Ormsby Dr | 2 | 0.40 | 0.16 | 0.24 |
| 310 | SE Croco Rd \& SE 23rd Ter | 3 | 0.60 | 0.36 | 0.24 |
| 458 | SW Auburn Rd \& SW 37th St | 3 | 0.60 | 0.37 | 0.23 |
| 347 | SE Gemstone Ln \& SE 45th St | 2 | 0.40 | 0.17 | 0.23 |
| 263 | NW Topeka Blvd \& NW 43rd St | 4 | 0.80 | 0.58 | 0.22 |
| 659 | SW Wanamaker Rd \& SW 93rd St | 2 | 0.40 | 0.19 | 0.21 |
| 317 | SE Croco Rd \& SE 30th Ter | 2 | 0.40 | 0.20 | 0.20 |
| 336 | SE Croco Rd \& SE Howard Dr | 3 | 0.60 | 0.40 | 0.20 |
| 397 | SE Shawnee Heights Rd \& SE 29th St | 2 | 0.40 | 0.20 | 0.20 |
| 439 | SE Tecumseh Rd \& SE 3rd St | 1 | 0.20 | 0.01 | 0.19 |
| 209 | NW Menoken Rd \& NW 33rd St | 1 | 0.20 | 0.01 | 0.19 |
| 198 | NW Landon Rd (S) \& NW 46th St | 1 | 0.20 | 0.01 | 0.19 |
| 162 | NW Hoch Rd \& NW 86th St | 1 | 0.20 | 0.02 | 0.18 |
| 578 | SW Nottingham Rd \& SW 37th St | 2 | 0.40 | 0.22 | 0.18 |
| 422 | SE Stubbs Rd \& SE 29th St | 1 | 0.20 | 0.02 | 0.18 |
| 238 | NW Rochester Rd \& NW 86th St | 1 | 0.20 | 0.02 | 0.18 |
| 276 | NW Wilson Rd \& NW 88th St | 1 | 0.20 | 0.02 | 0.18 |
| 416 | SE Stanley Rd \& SE 53rd St | 1 | 0.20 | 0.02 | 0.18 |
| 543 | SW Indian Hills Rd \& SW 85th St | 1 | 0.20 | 0.02 | 0.18 |
| 228 | NW Rochester Rd \& NW 39th St | 3 | 0.60 | 0.42 | 0.18 |
| 531 | SW Hodges Rd \& SW 61st St | 1 | 0.20 | 0.02 | 0.18 |
| 640 | SW Valencia Rd \& SW 57th St | 1 | 0.20 | 0.02 | 0.18 |
| 260 | NW Topeka Blvd \& NW 82nd St | 2 | 0.40 | 0.22 | 0.18 |
| 52 | NE Kincaid Rd \& NE 62nd St | 1 | 0.20 | 0.03 | 0.17 |
| 345 | SE East Edge Rd \& SE 45th St | 2 | 0.40 | 0.23 | 0.17 |
| 33 | NE Croco Rd \& NE Seward Ave | 3 | 0.60 | 0.44 | 0.16 |
| 254 | NW Topeka Blvd \& NW 48th Ter | 1 | 0.20 | 0.04 | 0.16 |
| 247 | NW Stinson Rd \& NW 35th St | 1 | 0.20 | 0.04 | 0.16 |
| 326 | SE Croco Rd \& SE 69th St | 1 | 0.20 | 0.04 | 0.16 |


| ID | LRSP Intersection | Total Crashes | Crash Frequency (crashes per year) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Actual | Highway Safety <br> Manual (HSM) Predicted Average | Difference (actual predicted) |
| 668 | Wabaunsee St/NW Carlson Rd \& W 2nd St | 1 | 0.20 | 0.04 | 0.16 |
| 426 | SE Stubbs Rd \& SE 53rd St | 1 | 0.20 | 0.04 | 0.16 |
| 379 | SE Ratner Rd \& SE 29th St | 1 | 0.20 | 0.04 | 0.16 |
| 103 | NW Button Rd \& NW 39th St | 1 | 0.20 | 0.04 | 0.16 |
| 481 | SW Burlingame Rd \& SW 69th St | 1 | 0.20 | 0.05 | 0.15 |
| 258 | NW Topeka Blvd \& NW 66th St | 1 | 0.20 | 0.05 | 0.15 |
| 624 | SW Urish Rd \& SW 33rd St | 3 | 0.60 | 0.45 | 0.15 |
| 245 | NW Rossville Rd / Main St \& NW 54th St | 1 | 0.20 | 0.05 | 0.15 |
| 348 | SE Goodell Rd \& SE 2nd St | 1 | 0.20 | 0.05 | 0.15 |
| 184 | NW Kendall Ave \& NW 35th St | 1 | 0.20 | 0.05 | 0.15 |
| 301 | SE California Ave \& SE 53rd St | 2 | 0.40 | 0.25 | 0.15 |
| 594 | SW South Pointe Dr \& SW 61st St | 1 | 0.20 | 0.06 | 0.14 |
| 642 | SW Valencia Rd \& SW 89th St | 1 | 0.20 | 0.06 | 0.14 |
| 65 | NE Meriden Rd (S) \& NE 35th St | 1 | 0.20 | 0.06 | 0.14 |
| 120 | NW Church Ln \& NW 62nd St | 1 | 0.20 | 0.06 | 0.14 |
| 497 | SW Crawford Rd (E) \& SW 89th St | 1 | 0.20 | 0.06 | 0.14 |
| 24 | N Washington St \& Park Dr | 1 | 0.20 | 0.06 | 0.14 |
| 398 | SE Shawnee Heights Rd \& SE 37th St | 2 | 0.40 | 0.26 | 0.14 |
| 205 | NW Maple Hill Rd \& NW 62nd St | 1 | 0.20 | 0.06 | 0.14 |
| 68 | NE Shaffer Rd \& NE 46th St | 1 | 0.20 | 0.07 | 0.13 |
| 512 | SW Fairlawn Rd \& SW 45th St | 1 | 0.20 | 0.07 | 0.13 |
| 29 | NE Brian Rd/NE Meriden Rd (S) \& NE 46th St | 2 | 0.40 | 0.27 | 0.13 |
| 357 | SE McMahan Ct \& SE 45th St | 1 | 0.20 | 0.08 | 0.12 |
| 535 | SW Indian Hills Rd \& SW 10th St | 1 | 0.20 | 0.09 | 0.11 |
| 520 | SW Gamwell Rd \& SW 41st St | 1 | 0.20 | 0.10 | 0.10 |
| 632 | SW Urish Rd \& SW Hamptonshire Ln | 1 | 0.20 | 0.10 | 0.10 |
| 608 | SW Topeka Blvd \& SE 61st St | 2 | 0.40 | 0.30 | 0.10 |
| 654 | SW Wanamaker Rd \& SW 58th St | 1 | 0.20 | 0.11 | 0.09 |
| 657 | SW Wanamaker Rd \& SW 77th St | 1 | 0.20 | 0.11 | 0.09 |
| 542 | SW Indian Hills Rd \& SW 61st St | 1 | 0.20 | 0.11 | 0.09 |
| 448 | SE Walnut Dr \& SE 29th St | 1 | 0.20 | 0.12 | 0.08 |
| 332 | SE Croco Rd \& SE Beach Ter | 1 | 0.20 | 0.12 | 0.08 |
| 19 | N Washington St \& E / W 14th St | 1 | 0.20 | 0.12 | 0.08 |
| 441 | SE Tecumseh Rd \& SE 45th St | 3 | 0.60 | 0.52 | 0.08 |
| 242 | NW Rossville Rd \& NW 62nd St | 1 | 0.20 | 0.14 | 0.06 |
| 10 | N Commercial St \& W 8th St | 1 | 0.20 | 0.14 | 0.06 |
| 415 | SE Stanley Rd \& SE 45th St | 1 | 0.20 | 0.14 | 0.06 |
| 421 | SE Stone Creek Rd \& SE 45th St | 1 | 0.20 | 0.15 | 0.05 |
| 361 | SE Oak Bend Dr \& SE 45th St | 1 | 0.20 | 0.16 | 0.04 |
| 601 | SW Stutley Rd \& SW 41st St | 1 | 0.20 | 0.16 | 0.04 |
| 633 | SW Urish Rd \& SW Huntoon St | 2 | 0.40 | 0.37 | 0.03 |
| 292 | SE Berryton Rd \& SE 53rd St | 2 | 0.40 | 0.37 | 0.03 |
| 77 | NE Silver Rd \& NE 82nd St | 1 | 0.20 | 0.18 | 0.02 |


| ID | LRSP Intersection | Total Crashes | Crash Frequency (crashes per year) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Actual | Highway Safety <br> Manual (HSM) Predicted Average | Difference (actual predicted) |
| 516 | SW Gage Blvd \& SW 45th St | 1 | 0.20 | 0.18 | 0.02 |
| 318 | SE Croco Rd \& SE 31st St | 1 | 0.20 | 0.18 | 0.02 |
| 464 | SW Auburn Rd \& SW 77th St | 1 | 0.20 | 0.18 | 0.02 |
| 66 | NE Rice Rd \& NE Seward Ave | 1 | 0.20 | 0.19 | 0.01 |
| 471 | SW Berkshire Dr \& SW 29th St | 1 | 0.20 | 0.19 | 0.01 |
| 108 | NW Button Rd \& NW 62nd St | 1 | 0.20 | 0.20 | 0.002 |
| 296 | SE Berryton Rd \& SE 77th St | 1 | 0.20 | 0.21 | -0.01 |
| 573 | SW Morrill Rd \& SW 69th St | 1 | 0.20 | 0.21 | -0.01 |
| 567 | SW Millers Glen Dr \& SW 21st St | 1 | 0.20 | 0.21 | -0.01 |
| 185 | NW Kendall Dr \& NW 46th St | 1 | 0.20 | 0.22 | -0.02 |
| 316 | SE Croco Rd \& SE 2nd St | 1 | 0.20 | 0.23 | -0.03 |
| 321 | SE Croco Rd \& SE 37th St | 2 | 0.40 | 0.43 | -0.03 |
| 229 | NW Rochester Rd \& NW 43rd St | 1 | 0.20 | 0.24 | -0.04 |
| 308 | SE Croco Rd \& SE 21st St | 1 | 0.20 | 0.26 | -0.06 |
| 651 | SW Wanamaker Rd \& SW 47th St (W) | 2 | 0.40 | 0.46 | -0.06 |
| 365 | SE Paulen Rd \& SE 29th St | 1 | 0.20 | 0.26 | -0.06 |
| 541 | SW Indian Hills Rd \& SW 53rd St | 1 | 0.20 | 0.26 | -0.06 |
| 627 | SW Urish Rd \& SW 53rd St | 1 | 0.20 | 0.26 | -0.06 |
| 650 | SW Wanamaker Rd \& SW 47th St (E) | 3 | 0.60 | 0.68 | -0.08 |
| 312 | SE Croco Rd \& SE 25th St | 1 | 0.20 | 0.29 | -0.09 |
| 313 | SE Croco Rd \& SE 27th St | 1 | 0.20 | 0.29 | -0.09 |
| 455 | SW Asbury Dr \& SW 29th St | 1 | 0.20 | 0.29 | -0.09 |
| 472 | SW Bingham Rd \& SW 29th St | 1 | 0.20 | 0.29 | -0.09 |
| 487 | SW Cannock Chase Rd \& SW 29th St | 1 | 0.20 | 0.29 | -0.09 |
| 587 | SW Romar Rd \& SW 29th St | 1 | 0.20 | 0.29 | -0.09 |
| 621 | SW Urish Rd \& SW 18th St | 1 | 0.20 | 0.30 | -0.10 |
| 468 | SW Auburn Rd \& SW 53rd St | 4 | 0.80 | 0.92 | -0.12 |
| 452 | SE Wisconsin Ave \& SE 45th St | 1 | 0.20 | 0.32 | -0.12 |
| 240 | NW Rochester Rd \& NW Menninger Rd | 2 | 0.40 | 0.55 | -0.15 |
| 436 | SE Tecumseh Rd \& SE 29th St | 2 | 0.40 | 0.56 | -0.16 |
| 591 | SW Santa Fe Cir \& SW 29th St | 1 | 0.20 | 0.37 | -0.17 |
| 454 | SW Ancaster Rd \& SW 29th St | 1 | 0.20 | 0.37 | -0.17 |
| 21 | N Washington St \& E/W 8th St | 1 | 0.20 | 0.38 | -0.18 |
| 625 | - SW Urish Rd \& SW 41st St | 1 | 0.20 | 0.39 | -0.19 |
| 478 | SW Burlingame Rd \& SW 53rd St | 1 | 0.20 | 0.41 | -0.21 |
| 138 | NW Fielding Rd \& NW 46th St | 1 | 0.20 | 0.41 | -0.21 |
| 367 | SE Paulen Rd \& SE 45th St | 1 | 0.20 | 0.42 | -0.22 |
| 90 | NW Brickyard Rd \& NW 46th St | 4 | 0.80 | 1.03 | -0.23 |
| 539 | SW Indian Hills Rd \& SW 29th St | 1 | 0.20 | 0.47 | -0.27 |
| 605 | SW Topeka Blvd \& SE/SW 53rd St | 5 | 1.00 | 1.30 | -0.30 |
| 620 | SW Urish Rd \& SW 17th St | 1 | 0.20 | 0.51 | -0.31 |
| 362 | SE Oakview Ln \& SE 45th St | 1 | 0.20 | 0.54 | -0.34 |
| 619 | SW Urish Rd \& SW 10th Ave/St | 2 | 0.40 | 0.91 | -0.51 |
| 307 | SE Croco Rd \& SE 10th St/SE Sycamore Dr | 1 | 0.20 | 0.76 | -0.56 |

## APPENDIX D <br> Data Maps

| From: | Niehaus, Curt [Curt.Niehaus@snco.us](mailto:Curt.Niehaus@snco.us) |
| :--- | :--- |
| Sent: | Tuesday, May 10, 2022 9:43 AM |
| To: | James Stanek |
| Subject: | RE: Shawnee County LRSP Data Request |
| Attachments: | Curves.pdf; SpeedLimit.pdf |

Hello James,


Below in red is the best information that we can come with at this time.

## Curt Niehaus

Public Works Director
Shawnee County
785-251-6077

From: James Stanek [jjstanek@transystems.com](mailto:jjstanek@transystems.com)
Sent: Wednesday, April 27, 2022 8:38 AM
To: Niehaus, Curt [Curt.Niehaus@snco.us](mailto:Curt.Niehaus@snco.us)
Cc: Lindsay Francis [Lindsay.Francis@wsp.com](mailto:Lindsay.Francis@wsp.com); David Church (David.Church@wsp.com) [David.Church@wsp.com](mailto:David.Church@wsp.com); Kiara V. Gallegos [kvgallegos@transystems.com](mailto:kvgallegos@transystems.com); Chris S.P. Roberts [csproberts@transystems.com](mailto:csproberts@transystems.com)
Subject: Shawnee County LRSP Data Request

Your attachment(s) were cleaned by Check Point Sandblast Threat Extraction. It has been scanned for viruses and determined safe to open. Links it may have contained to websites have been removed, if you require the original document request instructions are at the bottom of this e-mail.

Curt:
In order to enhance the quality of your LRSP, we would like to obtain the following sets of information regarding the LRSP routes in your County. Please indicate the following information within your County on the attached maps:

1. Intersection Lighting: Please indicate which intersections along the County LRSP routes have intersection lighting. All signalized intersections are lighted. All roundabouts are lighted.
2. Overhead/Stop Sign Flashing Beacons: Please indicate which intersections along the County LRSP routes have overhead or stop sign flashing beacons. Five intersection locations - SW $29^{\text {th }} \&$ Auburn Rd, SW $61^{\text {st }} \&$ Auburn Rd, SE $45^{\text {th }} \&$ Shawnee Heights Rd, SE $2^{\text {nd }} \&$ Arapahoe, $62^{\text {nd }} \& N$ Topeka Blvd
3. Centerline Rumble Strips: Please provide locations of centerline rumble strips along the County LRSP routes if these are available. We have none.
4. Edge line and/or Shoulder Rumble Strips: Please provide locations of edge line and/or shoulder rumble strips along the County LRSP routes if these are available. We have none.
5. Transverse Rumble Strips: Please provide locations of transverse rumble strips at intersections along the County LRSP routes if these are available. We have none.
6. Pavement width and type (material): Please provide information regarding the pavement width and type along the County LRSP routes if it is available. Please note that we do not need exact measurements in numerous locations. We're looking for the typical average pavement width for the majority of the particular LRSP segment, and rounded to the nearest $1 / 2-1$ foot. Width information unknown. Township maintained roads are either HMA surfaced or unpaved. County maintained roads are HMA surfaced with the following exceptions:

PCCP - Interchange at US-75 and NW $46^{\text {th }}$ St
PCCP - Intersection at SE $45^{\text {th }}$ and Adams
PCCP - SE Croco Rd between SE $21^{\text {st }}$ St and Sycamore Ramp
PCCP - Intersection of NW $25^{\text {th }}$ at Stover Rd
PCCP - Stover Rd from just north of the US-24 bridge to NW $25^{\text {th }}$ St
PCCP - Interchange at I-70 and Carlson Rd
PCCP - SE $6^{\text {th }}$ from Croco Rd to SB K-4 off ramp (just finished being covered with HMA)
Unpaved - SE $105^{\text {th }}$ from SE Paulen Rd to SE Shawnee Heights Rd (2 miles). We plan to pave the western most 1mile portion later this year.
7. Shoulder width and type (material): Please provide information regarding the shoulder width and type along the County LRSP routes if it is available. Please note that we do not need exact measurements in numerous locations. We're looking for the typical average shoulder width for the majority of the particular LRSP segment, and rounded to the nearest $1 / 2-1$ foot. Information Unknown
8. Edge Line pavement markings: Please provide locations of edge line pavement markings along the County LRSP routes if these are available. Very few paved township roads have edge lines. All county maintained roads except the following have edge lines:

NE Silver from NE $74^{\text {th }}$ to NE $82^{\text {nd }}$ - narrow road
SE Shawnee Heights Rd from US-40 to SE $10^{\text {th }}$ St. - narrow road
9. Centerline pavement markings: Please provide locations of center line pavement markings along the County LRSP routes if these are available. Very few township roads have centerline markings. Portions of SE 53 ${ }^{\text {rd }}$ St are an exception that comes to mind. All county maintained roads have centerline markings.
10. Curve Warning Signs: Please indicate which curves along the County LRSP routes have horizontal alignment warning signs (e.g., Turn or Curve warning signs, curve chevrons, etc.). Note - the type of warning signs do not need to be identified; only a "yes" or "no" if the curve has any horizontal alignment warning signs. See attached map.
11. Curve Superelevation: Please identify curves along the County LRSP routes that have superelevation. Note - the degree of superelevation does not need to be identified; only a "yes" or "no" if the curve has any superelevation. Information unknown.
12. Speed Limits: Please provide posted speed limit information for the County LRSP routes. See attached map.

Some of these should be fairly simple, but others may take some time unless you already have the information in a digital format (e.g., a signing database). Please note that as the level of detail on these maps increases, the level of quality will also increase with regard to the team's systemic risk assessment and development of your safety improvement project recommendations.

Finally, another helpful item if available, would be any traffic count data for the County LRSP routes. The team already has access to KDOT Traffic Count maps, but you may have some more current information that would be useful in creating the database for the study.

If possible, please provide this information by Friday, May 13, 2022. Thank you and please feel free to contact me with any questions you may have regarding this data request.

Jim
James J. Stanek, PE, PTOE
Senior Traffic Engineer

## TranSystems



## TranSystems

2400 Pershing Rd, Ste 400 | Kansas City, MO 64108
o: 816-329-8632 | c: 816-589-3009 | f:816-329-8601
www.transystems.com

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## APPENDIX E Edge Condition and Roadside Assessment Ratings

## Use Restricted 23 U.S.C. § 407

## EDGE CONDITION RATINGS

| Good (3) | A rating of 3: <br> - No pavement edge drop offs. <br> - Foreslopes are relatively flat, roll over risk is very low OR several feet of shoulder are available before steeper foreslopes begin. |
| :---: | :---: |
| Average (2) | A rating of 2: <br> - Minor edge drop offs ( $1-3^{\prime \prime}$ ) along sections of the route. <br> - Foreslopes are gradual, some risk of roll over. |
| Poor (1) | A rating of 1: <br> - Significant edge drop offs (4"+) along sections of the route. <br> - Foreslopes are steep, potential for roll overs is high. |

$$
\begin{aligned}
& \text { Legend } \\
& \text { Edge Condition Rating } \\
& \hline 2.8-3.0 \\
& 2.4-2.7 \\
& 2.1-2.3 \\
& 1.7-2.0 \\
& 1.4-1.6 \\
& \hline 1.0-1.3
\end{aligned}
$$



## Use Restricted 23 U.S.C. § 407

## ROADSIDE ASSESSMENT RATINGS



A rating of 1:

- Heavy concentrations of fixed objects within the ROW. Solid hedgerows and treelines are the most common case for $R A=1$.


## APPENDIX F Countermeasures Technical Memorandum

## TECHNICAL MEMORANDUM - COUNTERMEASURES

# KDOT Local Road Safety Plans <br> (LRSPs) - Phase 4 <br> KDOT PROJECT NO: 106 C-4790-05 

BOURBON, CHEROKEE, DECATUR, DONIPHAN, FRANKLIN, GEARY, GRAHAM, KEARNY, JACKSON, JEWELL, JOHNSON, RAWLINS, RILEY, SEDGWICK, SEWARD, SHAWNEE, STANTON, SUMNER, WALLACE, AND WILSON COUNTIES

Prepared for:
KDOT Bureau of Local Projects
Eisenhower State Office Building 700 S.W. Harrison Street, 7th Floor
Topeka, Kansas 66603-3745
785-296-3861

Prepared by:

## TranSystems

EXPERIENCE | Transportation

## Kimley»Horn

TECHNICAL MEMORANDUM - COUNTERMEASURES
FOR

# KDOT Local Road Safety Plans (LRSPs) - <br> Phase 4 <br> KDOT PROJECT NO: 106 C-4790-05 

Prepared for:
KDOT Bureau of Local Projects
Eisenhower State Office Building
700 S.W. Harrison Street, 7th Floor
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091841011

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## List of Acronyms

| ADT | Average Daily Traffic |
| :--- | :--- |
| CMF | Crash Modification Factor |
| CRF | Crash Reduction Factor |
| FHWA | Federal Highway Administration |
| HFST | High Friction Surface Treatment |
| HSM | Highway Safety Manual |
| ICE | Intersection Control Evaluation |
| KDOT | Kansas Department of Transportation |
| LRSP | Local Road Safety Plan |
| MUTCD | Manual on Uniform Traffic Control Devices |
| RCUT | Restricted Crossing U-Turn Intersection |
| ROW | Right-of-Way |
| RSA | Road Safety Assessment/Audit |
| SHSP | Strategic Highway Safety Plan |

## 1. Introduction

The Kansas Department of Transportation (KDOT), as part of their strategic goal to reduce fatalities and serious injuries within Kansas is conducting Phase 4 of the Local Road Safety Plan (LRSP) project for twenty counties within the state. Sixty-three (63) counties were included in the previous phases of this process. The LRSP concept is built on the foundation established by the Strategic Highway Safety Plan (SHSP). Figure 1 shows the location of the Phase 4 LRSP counties and the previous phase counties.


Figure 1 - Location of LRSP Counties

### 1.1. Purpose

This technical memorandum has been prepared to provide a list of potential safety countermeasures. The countermeasures presented in this document were selected to address the risk factors previously approved. A similar memorandum was prepared for the previous LRSP Phases. This document has been updated based on a review of national resources and best practices.

### 1.2. Document Organization

This technical memorandum is organized into the following sections:

- Section 1 presents the project background and purpose of the technical memorandum.
- Section 2 provides a review of the approved risk factors from the previous LRSP phases and includes a list of the previously approved LRSP safety countermeasures.
- Section 3 includes additional countermeasures to be considered as part of Phase 4 of the LRSP project.
- Section 4 summarizes the next steps in the project.


## 2. Systemic Safety Countermeasures

While there are many safety countermeasures that could be used to systemically improve roadway safety, the following sections provide countermeasures approved in the previous LRSP phases and additional countermeasures for consideration by KDOT and the counties based on the risk factors approved by KDOT. In addition to the systemic safety countermeasures described in this section, with additional site-specific information, such as turning volumes, travel patterns, vertical alignment, and other known concerns, additional location specific safety countermeasures may be appropriate. This section also describes additional countermeasures that could be considered by the counties where segments, intersections, or curves are identified with high risk factor scores. At the request of the counties, the additional safety countermeasures can be added to the project sheets.

Along with the countermeasure list, the Crash Modification Factors (CMFs) associated with each countermeasure are provided. Section 2.1 contains a discussion of CMFs and how they are used in predictive crash analysis. The following sections and CMFs in this technical memorandum are provided for reference and to show the potential positive impact to safety, if applied. The LRSP project does not include predictive crash analysis based on calculating the number of crashes that will be reduced by applying a specific countermeasure; as such, the CMFs have been provided for reference to aid the counties in understanding potential reductions from crashes by different countermeasures.

### 2.1. Crash Modification Factors

When identifying potential systemic safety improvements, it is important to look at CMFs for the proposed improvements. The CMF Method is found in Part D of the Highway Safety Manual (HSM). CMFs are defined as the ratio of effectiveness of one condition in comparison to another condition and represent the relative change in crash frequency due to a change in one specific condition. In other words, a CMF is a multiplicative factor used to compute the expected number of crashes after implementing a given countermeasure at a specific site. Countermeasures with CMFs less than one are expected to reduce crashes if applied, while those countermeasures with CMFs greater than one are expected to increase crashes. Figure 2 illustrates the definition of CMFs.


Figure 2 - CMF Calculation
The CMF Method is used to calculate the expected number of crashes by taking the observed number of crashes and multiplying those crashes by the applicable CMF for the proposed countermeasure. It is recommended that CMFs be applied to a minimum of three (3) years of crash data for urban and suburban sites and five (5) years of crash data for rural sites. Figure 3 is a sample calculation of the CMF method with one (1) CMF being applied to a site for a single year.
10.1 crashes $/$ year $\times 0.91(C M F)=$

Figure 3 - CMF Method Sample Calculation
Crash Reduction Factors (CRFs) are related to CMFs but stated in different terms. A CRF is defined as a percentage of crash reduction that might be expected after the implementation of a given countermeasure at a specific site. Figure 4 shows how a CRF is calculated in relationship to a CMF .

## CRE = ( $1-\mathrm{CMF}) \times 100$

Figure 4 - CRF Calculation
Caution should be used in the selection of appropriate CMFs. The following guidance should be considered when selecting CMFs for predictive crash analysis:

- CMFs should be selected from the HSM Part D or from the Federal Highway Administration's (FHWA) CMF Clearinghouse website (http://www.cmfclearinghouse.org).
- Read the countermeasure abstract to determine if the CMF is applicable to the proposed improvement.
- Only CMFs with a four- (4) star rating or higher should be considered for use in analysis.
- Be sure the selected CMF is applicable to the set of crash data being used for analysis. Some CMFs may only be applicable to a subset of the crash data.
- The application of multiple CMFs can overestimate the expected crash reduction. Unless each CMF addresses independent crash types, multiple CMFs should not be used. It is suggested that no more than three (3) independent CMFs be applied to a particular site.

The countermeasures proposed in this document were chosen because of their effectiveness in reducing crashes, particularly those associated with the approved LRSP risk factors. Some safety countermeasures that are recommended do not yet have CMF ratings that meet the above guidance (indicated by "CMF not defined" within this document), due to the amount of data and peer review that is required; however, preliminary studies show safety benefits as a result of these countermeasures. The FHWA has also published a list of Proven Safety Countermeasures which, per their website is "a collection of countermeasures and strategies effective in reducing roadway fatalities and serious injuries.... Transportation agencies are strongly encouraged to consider widespread implementation of [Proven Safety Countermeasures] to accelerate the achievement of local, State, and National Safety goals." https://safety.fhwa.dot.gov/provencountermeasures/

Nationally, there are relatively low percentages of fatal and serious injury crashes that occur on unpaved roadways when compared to paved roadways. As such, safety research has focused on paved roadways. The lack of research on the unpaved system results in very few CMFs defined for safety countermeasures on unpaved roadways.

### 2.2. Segments

### 2.2.1. Segment Risk Factors

The following risk factors for roadway segments were approved by KDOT for use in the LRSP project.

- Average Daily Traffic (ADT) volumes
- Access density
- Edge condition
- Roadside assessment
- Roadway width
- Shoulder width
- Lane departure crash rate
- Presence of pavement markings
- Surface type (paved or unpaved)


### 2.2.2. Approved Segment Countermeasures

Table 1 lists segment countermeasures approved in the previous LRSP phases, CMFs, and planning-level estimated costs. It should be noted that the CMFs were reviewed (and updated if necessary) for each countermeasure based on the latest information available on the CMF Clearinghouse. The CMF Clearinghouse is regularly updated with new information from safety studies; and at each phase of the LRSPs, it is important to check the CMF Clearinghouse to determine if there are updates needed to the CMFs to reflect recent studies and updates.

The countermeasures were selected based on the approved risk factors for segments. The CMFs in the table are at times provided as a range, showing the variance each potential crash modification countermeasure can have based on differing research, specific crash types, or specific volume-level roadways (i.e., CMF can vary based on the amount of traffic on the road, vary based on reducing crash severity, or vary between rear-end and run-off-road crashes). The costs included in the table are planning-level estimates prepared as part of the previous LRSP Phases and have been based on costs from other Midwest states and national averages. These cost estimates can be adjusted per the counties or KDOT to be more specific to their area if desired.

It should be noted that some curve countermeasures are included with the segment countermeasures to address potential risk at curves within a certain segment. Also, some of the countermeasures will require additional information from the county, as the data collected as part of this project is for a more high-level/systemic review. For example, information on vehicle speeds or superelevation rates were not collected. At the request of the counties, based on their local knowledge of the roadway network, the additional safety countermeasures can be added to the project sheets.

Table 1 also has two (2) columns indicating the applicability of each countermeasure to paved or unpaved roadways.

Table 1 - Approved Segment Countermeasures

| Safety Countermeasure | Crash Modification Factor (CMF) ** | Estimated Cost | Paved | Unpaved |
| :---: | :---: | :---: | :---: | :---: |
| Countermeasures where Risk Factor Data for Recommendations has been Collected |  |  |  |  |
| Install/Upgrade Guardrail with Reflectors | $0.53-0.56$ <br> New Guardrail along Embankment | $\$ 35 /$ foot (if 500 feet or more) - \$80/foot (if less than 500 feet) | X | X |
| Delineate Roadside Hazards with Retroreflective Markers | CMF not defined | \$100/each | X | X |
| Remove/Relocate Fixed Objects in Clear Zone (e.g. rock/brick mailboxes, nonbreakaway poles) | $0.56-0.78$ FHWA Proven Safety Countermeasure | \$1,000/each | X | X |
| Review Pavement Condition/Type and Install Centerline Rumble Strips | 0.66-0.96 | \$2,000/mile | X |  |
| Install 4" Retroreflective Centerline | 0.76 when installed in combination with edgelines | \$3,000/mile | X |  |
| Install 6" Retroreflective Edgeline (both sides of the road) | $0.63-0.78$ <br> FHWA Proven Safety Countermeasure | \$6,000/mile | X |  |
| Review Pavement Condition/Type and Install Edgeline Rumble Strips (Both Sides of Road) | $0.61-0.86$ | \$5,000/mile | X |  |
| Install Post-Mounted Delineators | 0.55 when installed in combination with edgelines and centerlines | \$5,000/mile | X | X |
| Improve Edge Rut Conditions with Aggregate at Edge Dropoff Locations (Both Sides of Road) | CMF not defined | \$5,000/mile | X |  |
| Install 18-inch Aggregate <br> Shoulder Treatment <br> (With Transition to Earth) | CMF not defined | \$25,000/mile | X |  |
| Clear and Grub (15 feet Off Edge of Road) | 0.78 | \$30,000/mile | X | X |
| Flattening and Widening <br> Foreslopes <br> (Excludes Culvert Extensions) | $0.58-0.92$ <br> FHWA Proven Safety Countermeasure | \$85,000/mile | X | X |
| Pave 2' Shoulder with Safety Edge (Both Sides of Road Includes Earthwork) | $0.79-0.89$ <br> FHWA Proven Safety Countermeasure | \$150,000/mile | X |  |
| 091841011  <br> 2022-08-12 KDOT LRSP Tech Memo Countermeasures - Phase 4.docx  <br> Page 5 KDOT LRSPs - Phase 4 <br> July 2022  |  |  |  |  |
|  |  |  |  |  |


| Safety Countermeasure | Crash Modification <br> Factor (CMF) ** | Estimated Cost | Paved | Unpaved |
| :---: | :---: | :---: | :---: | :---: |
| Countermeasures for a Segment that also has Curves |  |  |  |  |
| Retroreflective Strips on Curve Signage | CMF not defined | \$500/curve | X | X |
| Review and Install/Upgrade Curve Signage (Warning signs, Speed Advisory plaques, Chevrons) to meet the Manual on Uniform Traffic Control Devices (MUTCD) and KDOT Standards | $0.59-0.61$ for warning signs/plaques; 0.75-0.84 for chevrons <br> FHWA Proven Safety Countermeasure | \$1,000/curve (upgrade) $\$ 3,500 /$ curve (install) | X | X |
| Install In-Lane Curve Warning Pavement Markings | $\begin{gathered} 0.65 \\ \text { FHWA Proven Safety } \\ \text { Countermeasure } \end{gathered}$ | \$2,000/curve | X |  |
| Install High-Friction Surface Treatment (HFST) on Curve | $0.27-0.58$ <br> FHWA Proven Safety Countermeasure | $\begin{gathered} \$ 20,000 \text { - } \\ \$ 50,000 / \text { curve } \end{gathered}$ | X |  |

Countermeasures for Specific Locations where Additional Data/Information is Needed

| Reshape/Repair Roadway Surface and Apply Dust Suppressants | 0.95 | \$1,000 - \$5,000/mile |  | X |
| :---: | :---: | :---: | :---: | :---: |
| On-Pavement Markings for Speed Control | CMF not defined | \$3,000/each | X |  |
| Transverse Rumble Strips Prior to Curve | 0.66 Install Transverse Rumble Strips as Traffic Calming Device | \$5,000/curve | X |  |
| Install Speed Activated Flashers on Chevron Signs | $0.40$ <br> FHWA Proven Safety Countermeasure | \$4,000/sign | X | X |
| Install a Dynamic Speed Feedback Sign on Curve Warning Sign | $0.93-0.95$ | \$4,000/sign | X | X |
| Upgrade Roadway Surface (e.g., millings, well-graded rock mix with adequate binder) | CMF not defined | \$8,000/mile |  | X |
| Improve/Increase Roadway Width (to meet standards) with Safety Edge | $0.67-0.71$ | \$20,000/mile unpaved - \$30,000/mile paved | X | X |
| Remove/Relocate/Combine Driveways | $0.75-0.95$ <br> FHWA Proven Safety Countermeasure | \$20,000/each (unpaved) $\$ 40,000 /$ each (paved) | X | X |


| Safety Countermeasure | Crash Modification <br> Factor (CMF) ** | Estimated Cost | Paved | Unpaved |
| :--- | :---: | :---: | :---: | :---: |
| Conduct Road Safety <br> Audit/Assessment (RSA) * | $0.40-0.90$ <br> FHWA Proven Safety <br> Countermeasure | $\$ 40,000 /$ each | X | X |
| Superelevation Correction on <br> Curves | CMF varies based on <br> rate of change | $\$ 20,000 /$ curve <br> (unpaved) - <br> $\$ 50,000 /$ /curve (paved) | X | X |
| Pave Roadway with Safety <br> Edge | CMF not defined | $\$ 850,000 /$ mile | X |  |

* Countermeasure recommended on segments with high crash rates
** The CMFs in this table are for information only, showing the range of potential crash modification the countermeasure can have based on differing research, specific crash types, or specific volume-level roadways (i.e., CMF can vary based on the amount of traffic on the road, vary based on reducing crash severity, or vary between crash type). The CMFs in this table should not be used for crash prediction without first assuring the CMF applies to the specific location and countermeasure implementation.


### 2.3. Intersections

### 2.3.1. Intersection Risk Factors

The following risk factors for intersections were approved by KDOT for use in the LRSP project.

- Average Daily Traffic (ADT) on all approaches
- Proximity of driveway or another intersection
- Sight distance
- Intersection control
- Fatal or debilitating injury crash history
- Distance from previous stop sign (along the LRSP routes)
- Location on a curve
- Skew


### 2.3.2. Approved Intersection Countermeasures

Table 2 lists intersection countermeasures approved in the previous LRSP phases, CMFs, and estimated costs. It should be noted that the CMFs were reviewed (and updated if necessary) for each countermeasure. The CMF Clearinghouse is regularly updated with new information from safety studies; and at each phase of the LRSPs, it is important to check the CMF Clearinghouse to determine if there are updates needed to the CMFs to reflect recent studies and updates.

The countermeasures were selected based on the approved risk factors for intersections. Some of the countermeasures will require additional information from the county. At the request of the counties, based on their local knowledge of the roadway network, the additional safety countermeasures can be added to the project sheets.

Table 2 also has two (2) columns indicating the applicability of each countermeasure to paved or unpaved roadways.

Table 2 - Approved Intersection Countermeasures

| Safety Countermeasure | Crash Modification Factor (CMF) ** | Estimated Cost | Paved | Unpaved |
| :---: | :---: | :---: | :---: | :---: |
| Countermeasures where Risk Factor Data for Recommendations has been Collected |  |  |  |  |
| Retroreflective Strips on Stop Sign Posts | CMF not defined | \$500/ <br> intersection | X | X |
| Review and Install/Upgrade Signs and Pavement Markings (Stop Ahead Pavement Markings, New Stop Sign, Intersection Warning Sign with Advance Street Name Plaque, Stop Line, Stop Ahead Sign) | FHWA Proven Safety Countermeasure <br> 0.34 - 0.69 "Stop Ahead Pavement Markings" $0.75-0.91$ "New Stop Sign" <br> CMF not defined "Intersection Warning Sign with Advance Street Name Sign Plaque" <br> CMF not defined "Stop Line" CMF not defined "Stop Ahead Sign" | ```$1,100/ unpaved leg - $2,200/ paved leg``` | X | $\begin{gathered} \text { X } \\ \text { (signs } \\ \text { only) } \end{gathered}$ |
| Install Second Stop Sign and Stop Ahead Signs | $0.73-0.90$ <br> FHWA Proven Safety Countermeasure | \$1,500/leg | X | X |
| Review Pavement Condition/Type and Install Transverse Rumble Strips on Paved, Stop-Controlled Approaches | 0.71-0.87 | \$2,500/leg | X |  |
| Install Beacon on Stop Signs or Stop Sign with LED Flashing Lights | $\begin{gathered} 0.84-0.87 \\ \text { "Beacon on Stop Sign" } \end{gathered}$ | \$2,500/sign | X | X |
| Install Solar-Powered Flashing Beacon on Intersection Warning Sign | CMF not defined | \$2,500/sign | X | X |
| Clear and Grub | 0.78 | \$5,000/leg | X | X |
| Intersection Lighting (One Luminaire) | $0.58-0.72$ <br> FHWA Proven Safety Countermeasure | \$5,500/each | X | X |


| Safety Countermeasure | Crash Modification Factor (CMF) ** | Estimated Cost | Paved | Unpaved |
| :---: | :---: | :---: | :---: | :---: |
| Realign Intersection Approaches to Reduce or Eliminate Skew | CMF varies based on original skew angle <br> 0.57 : from 45 degrees to 90 <br> 0.60: from 60 degrees to 90 <br> 0.67 : from 75 degrees to 90 | $\begin{gathered} \$ 100,000 / \\ \text { unpaved leg - } \\ \$ 300,000 / \\ \text { paved leg } \end{gathered}$ | X | X |
| Countermeasures for Specific Locations where Additional Data/lnformation is Needed * |  |  |  |  |
| Removal of Unwarranted Stop Signs on Major Approach | CMF not defined | \$500/leg | X | X |
| Install Raised Pavement Markers (150'-300' on Intersection Approach) | 0.87 | \$500/leg | X |  |
| Remove Sweeping Right Turns | CMF not defined | \$5,000/each unpaved \$15,000/each paved | X | X |
| Convert Two-Way Stop to AllWay Stop <br> (if MUTCD warrants are met) | 0.52-1.12 | \$1,200/leg | X | X |
| Reshape Intersection for Control Type | CMF not defined | \$2,500/each |  | X |
| Install a Dynamic Speed Feedback Sign on Intersection Warning Sign | 0.93-0.95 | \$4,000/sign | X | X |
| Convert Offset T-Intersection to Four-Legged Intersection | CMF not defined | \$50,000/each unpaved \$300,000/ each paved | X | X |
| Provide Bypass Lane on Shoulder at T-intersection | CMF not defined | \$75,000/each | X |  |
| Install Intersection Conflict Warning System | 0.45-0.95 | \$100,000/each | X | X |
| Provide Left-Turn Lanes at Intersection | $0.42-0.52$ <br> FHWA Proven Safety Countermeasure | \$150,000/leg | X |  |
| Provide Right-Turn Lanes at Intersection and Remove Sweeping Right Turns | $0.76-0.86$ FHWA Proven Safety Countermeasure | \$150,000/leg | X |  |
| Install Traffic Signal (Rural) (if MUTCD warrants are met) | 0.56-0.72 | $\begin{aligned} & \$ 250,000 / \\ & \text { each } \end{aligned}$ | X |  |

Department of Transportation

| Safety Countermeasure | Crash Modification Factor <br> (CMF) ** | Estimated <br> Cost | Paved | Unpaved |
| :--- | :---: | :---: | :---: | :---: |
| Install a Restricted Crossing U- <br> Turn (RCUT) / J-Turn <br> Intersection | 0.64 <br> FHWA Proven Safety <br> Countermeasure | $\$ 750,000 /$ each | X |  |
| Convert Stop-Control to <br> Roundabout | $0.18-0.42$ <br> FHWA Proven Safety <br> Countermeasure | $\$ 2,500,000 /$ <br> each | X |  |

* An Intersection Control Evaluation (ICE) is recommended for intersection control changes (estimated cost of \$7,500 - \$20,000/each)
** The CMFs in this table are for information only, showing the range of potential crash modification the countermeasure can have based on differing research, specific crash types, or specific volume-level roadways (i.e., CMF can vary based on the amount of traffic on the road, vary based on reducing crash severity, or vary between crash type). The CMFs in this table should not be used for crash prediction without first assuring the CMF applies to the specific location and countermeasure implementation.


### 2.4. Curves

### 2.4.1. Curve Risk Factors

The following risk factors for horizontal curves were approved by KDOT for use in the LRSP project.

- Average Daily Traffic (ADT) volumes
- Curve radius
- Access density
- Shoulder width
- Edge condition
- Roadside assessment
- Presence of warning signs
- Superelevation
- Fatal or debilitating injury crash history


### 2.4.2. Approved Curve Countermeasures

Table 3 lists curve countermeasures approved in the previous LRSP phases, CMFs, and estimated costs. It should be noted that the CMFs were reviewed (and updated if necessary) for each countermeasure. The CMF Clearinghouse is regularly updated with new information from safety studies; and at each phase of the LRSPs, it is important to check the CMF Clearinghouse to determine if there are updates needed to the CMFs to reflect recent studies and updates.

The countermeasures were selected based on approved risk factors for horizontal curves. Some of the countermeasures will require additional information from the county. At the request of the counties and based on their local knowledge of the roadway network, the additional safety countermeasures can be added to the project sheets.

Table 3 also has two (2) columns indicating the applicability of each countermeasure to paved or unpaved roadways, or both.

Table 3 - Approved Curve Countermeasures

| Safety Countermeasure | Crash Modification Factor (CMF) * | Estimated Cost | Paved | Unpaved |
| :---: | :---: | :---: | :---: | :---: |
| Countermeasures where Risk Factor Data for Recommendations has been Collected |  |  |  |  |
| Install/Upgrade Guardrail with Reflectors | $\begin{gathered} 0.53-0.56 \\ \text { New Guardrail along } \\ \text { Embankment } \end{gathered}$ | $\$ 35 /$ foot (if 500 feet or more) $\$ 80 /$ foot (if less than 500 feet) | X | X |
| Retroreflective Strips on Curve Signage | CMF not defined | \$500/curve | X | X |
| Install In-Lane Curve Warning Pavement Markings | 0.65 FHWA Proven Safety Countermeasure | \$2,000/curve | X |  |
| Review and Install/Upgrade Curve Signage (Warning signs, Speed Advisory plaques, Chevrons) to meet the Manual on Uniform Traffic Control Devices (MUTCD) and KDOT Standards | 0.59-0.61 <br> for warning signs/plaques; $0.75-0.84$ <br> for chevrons <br> FHWA Proven Safety Countermeasure | \$1,000/curve (upgrade) \$3,500/curve (install) | X | X |
| Review Pavement Condition/Type and Install Centerline Rumble Strips | 0.66-0.96 | \$2,000/mile | X |  |
| Install 4" Retroreflective Centerline | 0.76 when installed in combination with edgelines | \$3,000/mile | X |  |
| Clear and Grub (15 feet off edge of road) | 0.78 | \$5,000/curve | X | X |
| Install 6" Retroreflective <br> Edgeline (Both Sides of Road) | $0.63-0.78$ <br> FHWA Proven Safety Countermeasure | \$6,000/mile | X |  |
| Review Pavement Condition/Type and Install Edgeline Rumble Strips | $0.61-0.86$ | \$5,000/mile | X |  |
| Install Post-Mounted Delineators | 0.55 when installed in combination with edgelines and centerlines | \$5,000/mile | X | X |
| Improve Edge Rut Conditions with Aggregate at Edge Dropoff Locations | CMF not defined | \$5,000/mile | X |  |
| Install 18-inch Aggregate Shoulder Treatment (with transition to earth) | CMF not defined | \$25,000/mile | X |  |
| Install High-Friction Surface Treatment (HFST) | $0.27-0.58$ <br> FHWA Proven Safety Countermeasure | $\begin{gathered} \$ 20,000- \\ \$ 50,000 / \text { curve } \end{gathered}$ | X |  |


| Safety Countermeasure | Crash Modification Factor (CMF) * | Estimated Cost | Paved | Unpaved |
| :---: | :---: | :---: | :---: | :---: |
| Pave 2' Shoulder with Safety Edge (Both Sides of Road Includes Earthwork) | $0.79-0.89$ <br> FHWA Proven Safety Countermeasure | \$150,000/mile | X |  |
| Countermeasures for Specific Locations where Additional Data/Information is Needed |  |  |  |  |
| Install Raised Pavement Markers (150'-300' in advance of and along curve) | 0.87 | \$1,000/curve | X |  |
| Reshape/Repair Roadway Surface and Apply Dust Suppressants | 0.95 | $\begin{gathered} \$ 1,000- \\ \$ 5,000 / \text { mile } \end{gathered}$ |  | X |
| On-Pavement Markings for Speed Control | CMF not defined | \$3,000/each | X |  |
| Review Pavement Condition/Type and Install Transverse Rumble Strips Prior to Curve | 0.66 Install Transverse Rumble Strips as Traffic Calming Device | \$5,000/curve | X |  |
| Upgrade Roadway Surface (e.g., millings, well-graded rock mix with adequate binder) | CMF not defined | \$8,000/mile |  | X |
| Install Speed Activated Flashers on Chevron Signs | $\begin{gathered} 0.40 \\ \text { FHWA Proven Safety } \\ \text { Countermeasure } \end{gathered}$ | \$4,000/sign | X | X |
| Install a Dynamic Speed Feedback Sign on Curve Warning Sign | 0.93-0.95 | \$4,000/sign | X | X |
| Superelevation Correction on Curves | CMF varies based on rate of change | \$20,000/curve (unpaved) \$50,000/curve (paved) | X | X |

* The CMFs in this table are for information only, showing the range of potential crash modification the countermeasure can have based on differing research, specific crash types, or specific volume-level roadways (i.e., CMF can vary based on the amount of traffic on the road, vary based on reducing crash severity, or vary between crash type). The CMFs in this table should not be used for crash prediction without first assuring the CMF applies to the specific location and countermeasure implementation.


## 3. Additional Potential Countermeasures/Other Considerations

With continuing research in transportation safety, it is necessary to frequently review national best practices and recommended safety countermeasures. As part of the update to this Technical Memorandum national resources were reviewed, but no additional countermeasures are recommended for consideration at this time. It is recommended that with Phase 5 and future phases of the LRSP project, countermeasure research be reviewed again to recommend additional safety countermeasures, if applicable.

## 4. Additional Potential Unpaved Roadway Countermeasures

A thorough resource on unpaved roads is provided by the FHWA entitled: Gravel Roads Construction \& Maintenance Guide, which can be found at the following website: https://www.fhwa.dot.gov/construction/pubs/ots15002.pdf. The guide includes detailed sections on the following topics:

- Routine Maintenance and Rehabilitation
- Drainage
- Surface Gravel
- Dust Control/Stabilization
- Innovations

The summary of the guide states: "The first and most basic thing to understand in road maintenance and construction is proper shape of the cross section. The road surface must have enough crown to drain water to the shoulder, but not excessive crown which impacts roadway safety." "When proper shape is established and good surface gravel is placed, many gravel road maintenance problems simply go away, and road users are provided the best possible service from gravel roads" (Gravel Roads Construction \& Maintenance Guide, FHWA, 2015). Figure 5 shows examples of proper unpaved road shapes.


Figure 5 - Unpaved Roadway Proper Shape Guidance (Gravel Roads Construction \& Maintenance Guide, FHWA, 2015)

## 5. Next Steps

The next steps include data processing to support the analysis of risk factors. Workshops will be conducted with each of the twenty Phase 4 LRSP counties to discuss transportation safety strategies and countermeasures.

After the workshops are conducted, a systemic analysis will be conducted for the Phase 4 LRSP counties to calculate risk factor scores for each roadway segment, intersection, and curve along the LRSP study routes. The segments, intersections, and curves with the highest risk factor scores will be reviewed and 10 locations will be selected for safety improvement consideration. Project sheets will be created for the locations selected which include associated recommended safety countermeasures.

Finally, a LRSP report will be produced for the counties, providing a summary of the project, risk factor information, and the project sheets.

TRANSYSTEMS

## APPENDIX G <br> LRSP Safety Workshop Meeting Minutes (without exhibits)

| Attendees: | Curt Niehaus (Shawnee County) |
| :---: | :---: |
|  | Jim Stanek (TranSystems) |
|  | David Church (WSP) |
|  | Cameron Splichal (WSP) |
|  |  |
|  |  |
|  |  |
|  | See Attached Attendance Sheet for |
|  | additional attendees |



## MINUTES:

The Shawnee County Local Road Safety Plan (LRSP) Safety Workshop was held at the Shawnee County North Annex (I5I5 NW Saline Street, Topeka, KS) on July 27, 2022, from approximately I:00 to 4:10 p.m. TranSystems provided a PowerPoint presentation, presentation handout and maps of Shawnee County's LRSP routes. A copy of the presentation is included with these minutes.
The primary agenda items included the LRSP Background and Purpose, 5E's of Safety, an Overview of Crash Data, Systemic Risk Factors, and Potential Safety Countermeasures. Audience participation was encouraged throughout and group feedback times were provided to discuss locations of concern along the county's LRSP routes, along with the safety countermeasures that were presented. The feedback received and discussion regarding these topics is summarized below:

## 5E's of Safety

As part of the 5E's discussion, Jim noted the benefits of the S.A.F.E. (Seatbelts Are For Everyone) program as an outreach to younger drivers.
For the 202I-2022 school year, there were 133 schools involved in the S.A.F.E. program in Kansas. The program has a primary emphasis on seatbelt usage, but also addresses other aspects of driver behavior including distracted driving, impairment, and defensive driving techniques. The program provides safety resources for the students and encourages them to spread the message about safe driving amongst their peers and the community. Shawnee County had six schools involved in the S.A.F.E. program for the 202I-2022 school year. If anyone has an interest in participating with or joining the S.A.F.E program, please contact the Kansas Traffic Safety Resource Office (800-4162522) for more information.

## LRSP Routes

Participants were given time to review the supplied map of Shawnee County's LRSP routes and give feedback on specific locations of concern. Below are the specific locations mentioned or discussed:
I. NW Rochester Road and NW 62nd Street: This intersection serves a high volume of traffic and may need to have an intersection control change (currently controlled by a 2-way stop on Rochester).
2. NW 62nd Street between NW Rochester Road and NW Topeka Boulevard: Concerns were expressed about high-speed traffic on this segment, along with the rolling vertical terrain and the presence of several intersections and residential drives. Auxiliary turn lanes for left-turn movements may be needed.
3. NW 46th Street between NW Green Hills and NW Rochester Roads: Concerns were expressed about highvolume, high-speed traffic on this segment, along with the presence of several intersections that serve housing developments. There may be a need for additional auxiliary left-turn lanes on 46th Street.
4. SW Urish Road and SW 33rd Street: This intersection serves a high volume of traffic and may need to have an intersection control change (currently controlled by a 2-way stop on 33rd).
5. SW Wanamaker Road between SW 47th and SW 6Ist Streets: School bus safety was a concern identified for this high-speed traffic corridor. There are several residential drives along the route, resulting in frequent stops by school buses. Kansas law requires all motorists to stop when approaching or overtaking a stopped school bus displaying its flashing red lights and stop arm, but some drivers fail to comply.
6. SW Topeka Boulevard at SW 57th Street: The intersection is signalized, but it was noted that school buses generally experience longer delays due to the railroad grade crossing on the west leg which is in close proximity to Topeka Boulevard. School bus drivers traveling eastbound must first stop at the grade crossing, then typically have to wait again to be served by the traffic signal. It was mentioned that signal timing changes made before the end of the school year appear to have improved conditions. SW Topeka Boulevard and SW University Boulevard was another intersection identified as having similar concerns.
7. NW 46th Street between NW Hoch and NW Brickyard Roads: This entire segment was identified as having limited shoulders before encountering a ditch section. The surrounding agricultural activity results in a mix of vehicle types on this high-speed road. Law enforcement typically receives requests for speed control on this corridor. Some sections are also characterized by rolling vertical terrain which impacts sight lines at some of the intersections. The section between Forbes and Leedy was mentioned specifically, with sight line concerns identified at both of these intersections.
8. Curve on SW Burlingame Road near SW 6Ist Street: General safety concerns were expressed about this curve; particularly as higher speed traffic approaches it during wet weather conditions. There is aggregate shoulder in place along the road segment and curve, but erosion results in edge rutting and drop-off concerns in random locations.
9. SE 53rd Street and SE Croco Road: This intersection serves a high volume of traffic, including school buses and students, and geometric improvements may be needed. The intersection corners have small radii which impact turning movements.
10. SE 53rd Street between SE Croco and SE Shawnee Heights Roads: This high-speed road segment was described as having hilly terrain with limited shoulders. Concerns were expressed about traffic mix on this segment, which includes frequent school buses and student drivers.
II. SW Auburn Road intersections with SW 53rd Street and SW 6Ist Street: There are sight distance concerns at both of these intersections, and each has experienced some serious crashes. Auburn Road was described as having limited shoulders in this area and is uncontrolled at both locations (2-way stop control is in place on the opposing streets). At 6/st, it was noted that a business sign located in the southwest quadrant also contributes to the sight distance concerns. An attendee mentioned that Auburn Road and 61 st Street would be a good location for a roundabout.
I2. SW Auburn Road and SW 29th Street: The intersection was mentioned during the discussion, but it was also noted that a roundabout is planned in the future as part of the planning for a nearby school development.
13. SW Valencia Road intersections with SW 57th Street and SW 61st Street: These locations have a 90-degree curve with skewed intersection approaches. Both intersections/curves were identified, but movements for eastbound 57th Street traffic turning to the north on Valencia were of particular concern. It was also
mentioned that a planned closure of 61st Street for a new bridge may increase the traffic and safety concerns at this location.
14. Washington Street (SW Auburn Road) within the city of Auburn: There have been some near collisions with pedestrians at random locations along this road segment, and there may be a need for some pedestrian crossing markings and signage. Curt indicated that the county has maintenance responsibility on the road segment, but school or pedestrian crossing needs would likely be a combined task with the city.
15. SE 45th Street and SE Shawnee Heights Road: The intersection serves a high volume of traffic, including school traffic, and has geometric concerns (somewhat narrow lanes and sharp corner radii). Curt mentioned that a roundabout would be a good long-term improvement for the intersection.
16. SW 6Ist Street between SW Wanamaker and SW Fairlawn Roads: Concerns were expressed about limited shoulder along this road segment, as well as some crashes that have occurred at/near the entrance to Washburn Rural Middle School due to the vertical terrain on 6Ist Street. It was suggested that there may be a need for an auxiliary turn lane.
17. NW Rossville/NW Capper Road from Rossville to the Jackson County line: General safety concerns were expressed about this road segment that is characterized by limited shoulders and rolling vertical terrain.
18. NW Topeka Boulevard and NW 62nd Street: This 4-leg intersection has a curve in the southwest quadrant that is intended to facilitate turning movements. This feature results in sharp skew angles for some intersection movements and is generally more confusing to drivers than beneficial. An attendee mentioned that this could be a good location for a roundabout.
19. Some other locations on the county's LRSP routes were identified on maps provided to attendees, but were not mentioned during the discussion. These additional locations of concern are identified below:

- NW Carlson Road between the I-70 Frontage Road and the city of Willard: The road has rolling/hilly vertical terrain.
- NW 42nd Street at NW Rossville and NW Carlson Roads: There is a tight radius curve on 42nd Street at each of these locations. The curves are spaced relatively close (roughly I,000 feet apart).
- SW I3th Street at SW Glick and SW Valencia Roads: There is a tight radius curve on I3th Street at each of these locations. At Glick Road, the west leg has a wide paved throat which complicates the intersection geometrics and could result in driver confusion.
- SW Topeka Boulevard \& SW 93rd Street: The intersection is currently controlled by a 2-way stop on 93rd Street.
- SE Shawnee Heights Road \& SE 29th Street: SE 29th Street tees into Shawnee Heights Road on a skew.
- SE Shawnee Heights Road between SE 37th Street and SE Comanche Drive: There is rolling/hilly vertical terrain on this road segment, along with several intersections and residential drives.
- SE Stubbs Road \& SE 45th Street: The intersection is currently controlled by a 2-way stop on Stubbs Road.

20. Some locations on KDOT's system were identified as part of the discussion:

- US-24 \& NW 54th Street: NW 54th Street intersects US-24 on a sharp skew angle which impacts sight lines for traffic entering the highway.
- US-24 \& NW Huxman Road: Specific concerns for this intersection were not mentioned during the discussion, but it was identified on a map provided to attendees.
- US-40 \& SE Shawnee Heights Road: This T-intersection was identified as having issues with northbound drivers failing to stop and running off the road. Sight distance concerns when looking along US-40 were also mentioned.
- K-4 \& SW 21 st Street: This is a 4-leg intersection with a large radius curve in the southeast quadrant to facilitate northbound right-turn movements. The intersection was not mentioned during the discussion, but it was identified on a map provided to attendees.
All of these locations were noted as a concern even though all are on KDOT's system and not part of the LRSP project.

21. Some general concerns were made about the traffic and road conditions in Shawnee County:

- Curt noted that in general, many of the rural roads in Shawnee County have limited right of way, no shoulder, and moderate-deep ditches. The county performs regular maintenance with rock edge wedges, but long-term shoulder improvements are difficult to implement without additional right of way.
- A general concern was expressed about an increase in bicycle activity on the county's roads and whether this would be a consideration as part of the LRSP. Jim mentioned that this is not one of the systemic risk factors for the LRSP, but the team can reference the Topeka Metro Area Bikeways Master Plan when considering potential segment improvement projects for the county. Curt noted that some of the county's LRSP routes are included in the plan. It was also suggested that an additional source for identifying popular bike routes could be from readily available biking apps, such as Strava.


## Crash Data

Some items noted in the discussion of the crash data:
I. Findings for Shawnee County are excluded to crashes along the LRSP routes rather than all county roads.
2. The Crash Location and Crash Heat Map (Exhibit 3D) is included to show the location and intensity of crashes along the LRSP routes during the 5 -year analysis period ( 2016 - 2020). It was noted that while some crash characteristics will be considered as part of the risk factors on the project, the focus of the project is a systemic review of the LRSP routes rather than just targeting existing "hot spots." Some comments during the crash data and Exhibit 3D discussion included:
a. Jim noted that $24 \%$ of the total crashes on Shawnee County's LRSP routes ( 487 out of 2,067 ) involved an animal, whether caused by striking the animal or swerving to avoid it.
b. Jim also shared some additional information about the 69 fatal and serious injury crashes (K \& A crashes) on Shawnee County's LRSP routes. Forty (40) of these occurred on an LRSP segment, and fixed object collisions were the most predominant crash type ( $35 \%$, or 14 out of the 40 crashes). Six (6) K \& A crashes occurred on an LRSP curve, and five (5) were fixed object collisions. There were $23 \mathrm{~K} \& \mathrm{~A}$ crashes at an LRSP intersection, and angle collisions were the most predominant crash type (about $78 \%$, or 18 out of the 23 crashes). Nine (9) of the county's 69 K \& A crashes (I3\%) were flagged as a DUI.
c. After the meeting, Sandy Mitchell (Auburn Township) asked about the percentage of LRSP route crashes that occurred during adverse weather conditions. In follow-up, adverse weather conditions were reported in only $\mathbf{1 2 \%}$ of the total crashes on Shawnee County's LRSP routes ( 255 out of 2,067). Findings for the county's K \& A crashes were similar (about I2\%, or 8 out of the 69 crashes). Rain-related conditions were the most frequent adverse weather condition reported for both total and K \& A crashes on Shawnee County's LRSP routes (55\% and 62\%, respectively).
3. A list of high crash locations will be developed as part of the project and provided to Curt Niehaus for the county's use.

## Potential Safety Countermeasures

Potential safety countermeasures for the LRSP segments, intersections and curves were identified. Jim noted that Crash Modification Factors (CMF) identified for the various improvements discussed during the presentation are available through the CMF Clearinghouse (http://www.cmfclearinghouse.org/index.cfm). There is an abundance of information on this website, including links to the various research studies that were conducted to determine the

CMF. Participants were asked to give feedback on specific countermeasures that are either of interest or concern. The feedback received and subsequent discussion is summarized below:
I. The county has centerline and edge line pavement markings on their paved roads, and considers these beneficial countermeasures. Their current practice is to use 4 -inch edge lines. Curt noted that some of the LRSP routes are township maintained which are not typically striped.
2. The use of centerline rumble strips was generally considered a potentially effective countermeasure. The benefits of edgeline rumbles strips were acknowledged, but concerns were expressed about the use of these on narrow roads, as they may "push" drivers traveling closer to the center of the road. The edgeline rumbles were also considered a potential concern for bicyclists, so these would not be appropriate for use on established bike routes. Michelle Anschutz (KDOT) noted that to improve pavement longevity where rumble strips are used, KDOT is now sealing the pavement surface that has been milled for the rumbles prior to installing pavement markings.
3. The county marks culverts and other roadside hazards with flexible delineators or other retroreflective signage.
4. The county would consider using post-mounted delineators for spot locations to indicate the roadway alignment, such as along curves, but they would not be in favor of them on long sections of road due to maintenance concerns.
5. Removal of fixed objects in the right of way is an important and beneficial countermeasure. Curt confirmed that attempting to remove larger monument-type mailboxes can be unpopular.
6. Clearing and grubbing within the county's right of way was considered effective and they regularly perform this type of maintenance. Curt noted that this can be difficult at times with property owners who have privacy concerns.
7. Countermeasures targeted to shoulder and ditch improvements (e.g., constructing paved or aggregate shoulders, improving edge rut conditions with aggregate at edge drop-off locations, flattening and widening foreslopes) were considered effective, particularly where there is available right of way. Curt noted that purchasing right of way for shoulder improvements can be cost prohibitive as well as unpopular with property owners.
8. Use of the Safety Edge on new pavement construction was considered positive, although Curt noted that they have not done much of this since the county typically overlays roads rather than doing more significant full-depth reconstruction. Carla Anderson (KDOT) mentioned that KDOT has received complaints from contractors about difficulties with constructing the Safety Edge.
9. Dynamic speed feedback signs were considered a potentially effective countermeasure to reinforce speed limits in spot locations, such as entering cities or near schools.
10. Signing improvements were considered an important countermeasure. Jim noted that signing improvements are eligible for $100 \%$ federal funding through KDOT's High Risk Rural Roads (HRRR) program. The HRRR program generally provides $100 \%$ federal funding on systemic safety improvement projects, such as upgrading and installing new signage, pavement markings, guardrail, and other systemic countermeasures (e.g., rumble strips).
II. Retroreflective strips were considered a potentially effective, low-cost countermeasure to improve sign visibility. In addition to the use of red strips for stop sign applications, yellow strips can be used on chevrons and warning signs to capture a driver's attention. Retroreflective strips can also be added to a HRRR signing project. The county also has used flags on some signs as an attention-getting device. Jim noted that flags are generally only intended for interim use for new or changed signing conditions.
12. The county has some intersections with flashing beacons on Stop signs, and considers these to be effective devices. The county would also consider using signs with LED flashing lights incorporated into the sign border, whether on Stop signs or warning signs, given their relatively low cost and expected safety benefit. Curt noted that the county has had trouble with sign theft and vandalism.
13. Transverse rumble strips were considered a potentially effective countermeasure in advance of Stop signs or curves, as long as milled-in rumbles are used. The county would not use raised rumble strips due to the potential for damage during snow removal.
14. The county has installed lighting at selected intersections, typically where there has been a history of nighttime crashes. They have a policy in place to review requests for the installation of lighting.
15. Auxiliary right-turn or left-turn lanes at intersections were considered potentially beneficial geometric improvements, depending on the type and magnitude of turning movement activity, along with the availability of right of way. These were considered more favorable than constructing a typical KDOT Bypass Section which provides no lane use definition for the additional lanes.
16. Realigning intersection approaches to reduce or eliminate skew angles was considered a favorable long term countermeasure to improve intersection sight lines. Curt mentioned that this could be an improvement option for NW 54th Street at US-24.
17. Signal installation was discussed briefly, and it was noted that the county has some signalized intersections. David LaRoche (FHWA) suggested that another potential countermeasure for new or existing signals would be integrating the use of retroreflective backplates on the signal indications.
18. Roundabouts were considered a favorable intersection countermeasure, and the county already has several intersections with roundabout control. Although not mentioned in the meeting, converting an intersection to a roundabout is eligible for $100 \%$ federal funding through the HRRR program via monies distributed by the Highway Safety Improvement Program (HSIP).
19. On-pavement markings for speed control, such as optical speed bars, were mentioned by Carla as a potential countermeasure that could be used in advance of intersections or curves where there are concerns about high-speed approach traffic.
20. In-lane curve warning pavement markings, larger warning signs, speed-activated flashers on Chevrons, high friction surface treatments and superelevation correction were all considered potentially favorable curve countermeasures. For best results with high-friction surface treatment, David LaRoche noted that FHWA only recommends the use of bauxite aggregate.

## Conclusion

As part of the Next Steps discussion, Jim explained how Shawnee County can benefit from their LRSP by using information in the report to apply for safety improvement funds (HRRR funding) through KDOT for safety improvements at their top safety project locations. Earlier in the presentation, he noted that by conducting a LRSP, a county will receive favorable consideration on their HRRR application over non-participating counties. The KDOT Bureau of Local Projects (BLP) has noted that having a LRSP in place (or in progress) is required for a county to receive HRRR funding. The LRSP process uses a data driven approach for selecting safety improvement project locations which is required to receive this federal funding. Previous KDOT guidance has indicated that the funds need to be used for a systemic improvement rather than a maintenance project.
Reports from some of the other counties with completed LRSPs were available for the participants to review. It was noted that several other counties involved in the LRSP program have received HRRR funding for improvement projects by using the information provided within their report.
The participants were encouraged to contact Jim Stanek (TranSystems) or Shawnee County (Curt Niehaus) if they have any additional comments about the information that was presented.

The meeting concluded at approximately $4: 10$ p.m.


Agenda
Introductions and Safety Briefing
LRSP Background and Purpose

Overview of Crash Data
Routes $\begin{aligned} & \text { Systemic Risk Factors } \\ & \text { - Segments, Intersections and Horizontal Curves } \\ & \text { Potential Safety Countermeasures } \\ & \text { - Segments, Intersections and Horizontal Curves } \\ & \text { Next Steps }\end{aligned}$


- Kansas' Strategic Highway Safe

$$
\begin{aligned}
& \text { Goal is to reduce fatalities and } \\
& \text { serious injuries by half on all } \\
& \text { public roads in the state over a } \\
& 20 \text {-year period ending in } 2029 \\
& \text { For } 2009-2013,48 \% \text { of } \\
& \text { fatalities and } 55 \% \text { of disabling } \\
& \text { injuries occurred on roads } \\
& \text { owned by local public } \\
& \text { authorities }
\end{aligned}
$$

Five Year Average Fatalities by System (2009-2013)


240
230
220
210
200
190
180
170
160
150

(1)

6
$\bigcirc$
5
$\stackrel{5}{3}$

| "The systemic approach to safety |
| :--- |
| involves widely implemented |
| improvements based on high-risk |
| roadway features correlated with |
| specific severe crash types. The approach |
| provides a more comprehensive |
| method for safety planning and |
| implementation that supplements and |
| complements traditional site |
| analysis. It helps agencies broaden their |
| traffic safety efforts and consider risk as |
| well as crash history when identifying |
| where to make low cost safety |
| improvements." |
| FHWA - Office of Traffic Safety |

Identify locations where
systemic safety
improvements can be
implemented
Proactive approach with a
broader view of risk
Less reliant on "hot spot",
analysis
Advantageous for securing
High Risk Rural Roads
(HRRR) safety funding


Development LRSP

> Crash Analysis and Risk Factors


We are still enforcing the speed limit on 1-435. This driver told the officer, "when I looked down at the speedometer, I was doing 128 mph ". Well, the officer locked her vehicle speed at 149 mph . SLOW DOWN!

$$
\begin{aligned}
& \text { "Driver" } \\
& \text { factors } \\
& \text { cited in an } \\
& \text { estimated } \\
& 94 \% \text { of } \\
& \text { crashes }
\end{aligned}
$$


Strategies to prevent Crashes
Bang!
Golden Hour
Seatbelt Usage
"Hot Spot" Analysis



USE RESTRICTED 23 U.S.C. § 409

5E's of Safety


## USE RESTRICTED 23 U.S.C. § 409

## 8 0 0 0




Pilot Phase





## Cmbina



$$
\begin{aligned}
& \text { Crash Data: LRSP Pilot Phase } \\
& \text { Crashes on straight roadway segments (paved or } \\
& \text { unpaved) are most common: } \\
& -78 \% \text { of all crashes, with } 67 \% \text { of the K+A crashes }
\end{aligned}
$$


C

37-County Region inclusive of KDOT District 3 and District 6




## Cmin oreass minel



$60 \%$
$50 \%$
$40 \%$
$30 \%$
$20 \%$
$10 \%$
$0 \%$





| Risk Factor | Issue |
| :---: | :---: |
| Average Daily Traffic (ADT) volumes | Exposure |
| Surface type (paved or unpaved) | Surface type |
| Roadway width | Staying on the roadway |
| Shoulder width | Staying on the roadway, recovery from crash |
| Access density | Conflicting movements along the segment |
| Presence of pavement markings | Staying on the roadway |
| Lane departure crash rate | History of issues staying on roadway |
| Edge condition | Ability of vehicle to recover from a roadway departure |
| Roadside assessment | Roadside collision hazard |



| Risk Factor | Issue |
| :---: | :---: |
| Average Daily Traffic (ADT) on all |  |
| approaches |  |$\quad$ Exposure | Distance from previous stop sign |
| :---: | :---: |
| (along the LRSP routes) |$\quad$ Running the intersection


| Risk Factor | Issue |
| :---: | :---: |
| Average Daily Traffic (ADT) volumes | Exposure |
| Curve radius | Staying on roadway |
| Shoulder width | Conflicting movements near horizontal curve, sight <br> visibility |
| Access density | History of potential safety issues |
| Fatal or serious injury crash history | Staying on roadway |
| Presence of warning signs | Staying on roadway |
| Superelevation | Ability of vehicle to recover from a roadway departure |
| Edge condition | Roadside collision hazard |
| Roadside assessment |  |




| Safety Countermeasure | Crash Modification Factor <br> (CMF) | Estimated Cost | Paved | Unpaved |
| :--- | :---: | :---: | :---: | :---: |
| Install 6" Retroreflective Edgeline <br> (both sides of the road) | $0.64-0.88$ | $\$ 6,000 / \mathrm{mile}$ | X |  |
| Install 4" Retroreflective Centerline | 0.76 when installed in <br> combination with edgelines | $\$ 3,000 / \mathrm{mile}$ | X |  |
| Centerline Rumble Strips | $0.66-0.96$ | $\$ 2,000 / \mathrm{mile}$ | X |  |
| Edgeline Rumble Strips (both sides of road) | $0.61-0.86$ | $\$ 5,000 / \mathrm{mile}$ | X |  |
| Install a Dynamic Speed Feedback Sign | $0.93-0.95$ | $\$ 4,000 /$ sign | X | X |

Ranges indicate potential crash modification
results based on:

- differing research
- crash types
- volume levels

USE RESTRICTED 23 U.S.C. § 409

Potential Segment Countermeasures


Centerline
Rumbles
CMF: $0.66-0.96$

$$
\begin{aligned}
& \text { Dynamic Speed } \\
& \text { Feedback Sign } \\
& \text { CMF: } 0.93-0.95
\end{aligned}
$$



## Fixed Object Removal: <br> FHWA Proven Countermeasure



Delineate Roadside Hazards with Retroreflective Markers:

CMF not defined

Potential Segment Countermeasures


Post-Mounted Delineators (with pavement markings) CMF: 0.55
ountermeasures
Potential Se

Flattening and Widening Foreslopes
CMF: $0.58-0.90$




USE RESTRICTED 23 U.S.C. § 409
ountermeasures


Clearing and Grubbing

## CMF: 0.78




USE RESTRICTED 23 U.S.C. § 409
ountermeasures

## Improve/Increase Roadway Width <br> Improve/Increase Roadway Width

$$
\begin{aligned}
& \text { with Safety Edge } \\
& \text { CMF: } 0.67-0.7 \text { I }
\end{aligned}
$$





## New Pavement Surface <br> old Pavement



Pave 2' Shoulder with Safety Edge
CMF: $0.65-0.96$


New Stop Sign
CMF: $0.75-0.91$
Retroreflective Strips
on Sign Posts:
CMF not defined


## Potential Intersection Countermeasures




## Potential Intersection Countermeasures





USE RESTRICTED 23 U.S.C. § 409

Countermeasures
Potential Curve


Transverse Rumbles


USE RESTRICTED 23 U.S.C. § 409

Potential Curve Countermeasures

Potential Safety Countermeasures
Workshop Feedback Opportunity:
What countermeasures interest you? Why?
What countermeasures concern you? Why?
Next Steps

$$
\begin{aligned}
& \text { Refine and Prioritize Strategies } \\
& \text { Rank Locations based on Risk Factor Scores } \\
& \text { Identify Safety Projects } \\
& \text { Develop LRSP Report with materials that can be } \\
& \text { used to apply for HRRR Funds }
\end{aligned}
$$

## APPENDIX H

## Safety Resources

# Safety Resources 

KDOT's Traffic Safety Section Page<br>https://www.ksdot.org/bureaus/burTrafficSaf/default.asp

KDOT's Law Enforcement Liaison Program Page https://www.ksdot.org/bureaus/burTrafficSaf/lel/lawEnL.asp

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Kansas Traffic Safety Resource Office https://www.ktsro.org/

Vision Zero Webpage
http://visionzeronetwork.org/
Focus on Reducing Rural Roadway Departures https://safety.fhwa.dot.gov/FoRRRwd/

National Highway Traffic Safety Administration https://www.nhtsa.gov/

KDOT Crash Record Request
https://kdotapp.ksdot.org/CrashRecords/AcceptTerms.aspx

ITE Vision Zero Page
http://www.ite.org/visionzerol
National Transportation Safety Board https://www.ntsb.gov/Pages/default.aspx

MADD State Statistics
https://www.madd.org/state-statistics

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# APPENDIX I <br> Risk Factor Ranking and Countermeasure Selection Technical Memorandum 

## TECHNICAL MEMORANDUM - RISK FACTOR RANKING AND COUNTERMEASURE SELECTION

KDOT Local Road Safety Plans<br>(LRSPs) - Phase 4<br>KDOT PROJECT NO: 106 C-4790-05

BOURBON, CHEROKEE, DECATUR, DONIPHAN, FRANKLIN, GEARY, GRAHAM, JACKSON, JEWELL, JOHNSON, KEARNY, RAWLINS, RILEY, SEDGWICK, SEWARD, SHAWNEE, STANTON, SUMNER, WALLACE, AND WILSON COUNTIES

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## Kimley»Horn

## TECHNICAL MEMORANDUM - RISK FACTOR RANKING AND COUNTERMEASURE SELECTION

FOR

# KDOT Local Road Safety Plans (LRSPs) - <br> Phase 4 

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## List of Acronyms

| ADT | Average Daily Traffic |
| :--- | :--- |
| AASHTO | American Association of State Highway and Transportation Officials |
| CMF | Crash Modification Factor |
| FHWA | Federal Highway Administration |
| HFST | High-Friction Surface Treatment |
| KDOT | Kansas Department of Transportation |
| LRSP | Local Road Safety Plan |
| MUTCD | Manual on Uniform Traffic Control Devices |
| SHSP | Strategic Highway Safety Plan |

## 1. Introduction

The Kansas Department of Transportation (KDOT), as part of their strategic goal to reduce fatalities and serious injuries within Kansas is conducting Phase 4 of the Local Road Safety Plan (LRSP) project for twenty counties within the state. Sixty-three (63) counties were included in the previous phases of this process. The LRSP concept is built on the foundation established by the Strategic Highway Safety Plan (SHSP). Figure 1 shows the location of the Phase 4 LRSP counties and the counties included in previous phases.


## Legend

Previous Phase Counties
Phase 4 Counties

Figure 1 - Location of LRSP Counties

### 1.1. Purpose

This technical memorandum has been prepared to provide risk factor scoring criteria based on the approved risk factors as well as project selection threshold tables to be used in determining applicable countermeasures for identified safety project locations. The risk factors and countermeasures presented in this document were identified in the Phase 4 Countermeasures Technical Memorandum. It should be noted that the purpose of this risk factor scoring analysis is to help prioritize which segments, intersections, and curves share similar attributes that could contribute to crash risk and to identify countermeasures that could reduce the potential for a fatal or serious injury crash.

## 2. Risk Factor Scoring Criteria

Risk factor scoring criteria was determined during the previous LRSP phases and reviewed as part of the Phase 4 project. Table 1 includes the risk factor scoring criteria for segments, Table 2 for intersections, and Table 3 for curves. Some items of note:

- The proposed risk factor scoring reflects a maximum possible score of 24 points for any segment, intersection, or curve. This allows for the potential for score comparison across the three categories, even though separate rankings will be prepared for segments, intersections, and curves.
- Volume is considered a significant risk factor since the probability of a crash is higher as volume (exposure) increases. The scoring has been weighted accordingly and criteria will be established separately for each county based on the collected data (i.e., only volumes within a particular county will be compared as opposed to comparing volumes to other counties.)
- Thresholds identified for scoring of pavement and shoulder width are consistent for all counties.
- Scoring thresholds for several risk factors (e.g., edge condition and roadside assessment) will be established separately for each county based on the collected data.
- Crash experience is included in the scoring for all segments, intersections, and curves. However, this does not carry an overly significant weight since the intent is a systemic process rather than overvaluing "hot spot" locations.
- Access density scores were eliminated for intersections with ADT less than or equal to 400 vehicles per day (based on the American Association of State Highway and Transportation Officials' (AASHTO) guidelines for a very low-volume local road) and for segments and curves where the posted speed limit is less than or equal to 30 miles per hour.
- Given the characteristics of unpaved roads, some of the segment and curve risk factor scores are zero (0) since these are either not applicable (e.g., the presence of pavement markings) or poorly defined (e.g., shoulder width).


### 2.1. LRSP Phase 4 Scoring Modifications

Upon review of the Phase 3 risk factor ranking criteria, no major modifications were recommended. The risk factor scores and criteria remain generally consistent from Phase 3 to Phase 4 of the LRSP project with the following exception:

- For the shoulder width risk factor (for both segments and curves) a score of zero (0) was given for locations with curb and gutter.

Table 1 - Segment Risk Factor Scoring Criteria

| Risk Factor | Measurement | Points | Max Points Available |
| :---: | :---: | :---: | :---: |
| Average Daily Traffic (ADT) volume | Average roadway segment volume per county | 0: ADT within $0 \%-14.3 \%$ percentile range | 6 |
|  |  | 1: ADT within 14.3\%-28.6\% percentile range |  |
|  |  | 2: ADT within $28.6 \%-42.9 \%$ percentile range |  |
|  |  | 3: ADT within 42.9\%-57.1\% percentile range |  |
|  |  | 4: ADT within $57.1 \%-71.4 \%$ percentile range |  |
|  |  | 5: ADT within $71.4 \%-85.7 \%$ percentile range |  |
|  |  | 6: ADT within $85.7 \%-100 \%$ percentile range |  |
| Access density | Density of intersections and driveways per mile | 0: Bottom third of the access density Crash Modification Factor (CMF) ${ }^{*}$ or $\leq 30 \mathrm{mph}$ | 2 |
|  |  | 1: Middle third of the access density CMF* |  |
|  |  | 2: Top third of the access density CMF* |  |
| Edge condition | Observed condition rating | 0 : Rating of 2.75-3 | 3 |
|  |  | 1: Top third of remaining ratings |  |
|  |  | 2: Middle third of remaining ratings |  |
|  |  | 3: Bottom third of remaining ratings |  |
| Roadside assessment | Observed condition rating | 0 : Rating of 2.75-3 | 3 |
|  |  | 1: Top third of remaining ratings |  |
|  |  | 2: Middle third of remaining ratings |  |
|  |  | 3: Bottom third of remaining ratings |  |
| Roadway width | Width in feet | 0 : Roadway width greater than or equal to 22 feet | 2 |
|  |  | 2: Roadway width less than 22 feet |  |
| Shoulder width | Width in feet of recoverable area prior to a ditch or fill slope | 0: 4-foot shoulder and greater, curb and gutter, or unpaved road | 2 |
|  |  | 1: 2-foot shoulder to 4-foot shoulder |  |
|  |  | 2: less than 2-foot shoulder |  |
| Lane departure crash rate | Lane departure crashes per MVMT | 0 : Bottom fourth of roadway departure crash rates along the roadway segments | 3 |
|  |  | 1: Second lowest fourth of roadway departure crash rates along the roadway segments |  |
|  |  | 2: Second highest fourth of roadway departure crash rates along the roadway segments |  |
|  |  | 3: Top fourth of roadway departure crash rates along the roadway segments |  |
| Presence of pavement markings | Observed presence of markings | 0 : Both centerline and edgeline present, or unpaved road | 2 |
|  |  | 1: Centerline or edgeline present |  |
|  |  | 2: Neither centerline nor edgeline present |  |
| Surface type | Paved or unpaved | 0: Paved | 1 |
|  |  | 1: Unpaved |  |

* Access Density CMF Equation as presented in the Highway Safety Manual (Equation 13-7).

Table 2 - Intersection Risk Factor Scoring Criteria

| Risk Factor | Measurement | Points | Max Points Available |
| :---: | :---: | :---: | :---: |
| Average Daily <br> Traffic (ADT) | ADT on all approaches per intersection with a paved approach per county | 0: ADT within 0\%-14.3\% percentile range | 6 |
|  |  | 1: ADT within $14.3 \%-28.6 \%$ percentile range |  |
|  |  | 2: ADT within $28.6 \%-42.9 \%$ percentile range |  |
|  |  | 3: ADT within 42.9\%-57.1\% percentile range |  |
|  |  | 4: ADT within $57.1 \%-71.4 \%$ percentile range |  |
|  |  | 5: ADT within $71.4 \%-85.7 \%$ percentile range |  |
|  |  | 6: ADT within $85.7 \%-100 \%$ percentile range |  |
| Proximity of driveway or another intersection | Number of driveways or intersections within 500 feet of the intersection | 0 : None (or ADT less than 400 or within census corporate limits) | 2 |
|  |  | 1: 1 or 2 access points |  |
|  |  | 2: More than 2 access points |  |
| Sight distance | Based on field observations | 0 : Adequate | 3 |
|  |  | 3: Limited |  |
| Location on a curve | Intersection on a curve | 0: No | 3 |
|  |  | 3: Yes |  |
| Crash history | Fatal or debilitating injury crashes | 0: None | 3 |
|  |  | 3: 1 or more |  |
| Distance from previous stop sign (along the LRSP routes) | Miles - based on field data collection | 0: 1.5 miles or less | 3 |
|  |  | 2: 1.5 miles to less than 5 miles |  |
|  |  | 3: 5 miles or more |  |
| Skew | Degrees | 0: 75-degree to 90 -degree intersection approaches | 3 |
|  |  | 3: 75 degree or less intersection approach |  |
| Intersection control | Observed control type | 0: Yield/none | 1 |
|  |  | 1: Stop |  |

Table 3 - Curve Risk Factor Scoring Criteria

| Risk Factor | Measurement | Points | Max Points Available |
| :---: | :---: | :---: | :---: |
| Average Daily Traffic (ADT) volume | Average curve volume per county | 0 : ADT within $0 \%-14.3 \%$ percentile range | 6 |
|  |  | 1: ADT within $14.3 \%-28.6 \%$ percentile range |  |
|  |  | 2: ADT within $28.6 \%-42.9 \%$ percentile range |  |
|  |  | 3: ADT within $42.9 \%-57.1 \%$ percentile range |  |
|  |  | 4: ADT within $57.1 \%-71.4 \%$ percentile range |  |
|  |  | 5: ADT within $71.4 \%-85.7 \%$ percentile range |  |
|  |  | 6: ADT within $85.7 \%-100 \%$ percentile range |  |
| Curve radius | Radius of curve in feet per county | 0 : Top fourth of curve radii | 3 |
|  |  | 1: Second highest fourth of curve radii |  |
|  |  | 2: Second lowest fourth of curve radii |  |
|  |  | 3: Bottom fourth of curve radii |  |
| Access density | Intersections or driveways within 500 feet of the curve | 0 : None or speed limit $\leq 30 \mathrm{mph}$ | 2 |
|  |  | 1:1 or 2 access points |  |
|  |  | 2: More than 2 access points |  |
| Shoulder width | Width in feet of recoverable area prior to a ditch or fill slope | 0: 4-foot shoulder and greater, curb and gutter, or unpaved road | 2 |
|  |  | 1: 2-foot shoulder to 4-foot shoulder |  |
|  |  | 2: less than 2-foot shoulder |  |
| Edge condition | Observed condition rating | 0 : Rating of 3 | 2 |
|  |  | 1: Rating of 2 |  |
|  |  | 2: Rating of 1 |  |
| Roadside assessment | Observed condition rating | 0 : Rating of 3 | 2 |
|  |  | 1: Rating of 2 |  |
|  |  | 2: Rating of 1 |  |
| Superelevation | Presence of superelevation | 0: Yes | 2 |
|  |  | 2: No |  |
| Crash history | Fatal or debilitating injury crashes | 0: None | 3 |
|  |  | 3: 1 or more |  |
| Presence of warning signs | Observed presence | 0: Present | 2 |
|  |  | 2: Not present |  |

## 3. Project Selection Threshold Tables

Countermeasure project selection threshold tables were developed during the previous LRSP phases and reviewed as part of the Phase 4 project. Table 4, Table 5, and Table 6 include the threshold tables for segments, intersections, and curves respectively. Some items of note in the development of the thresholds are summarized below:

- Clearing and grubbing is recommended for all projects. For specific roadway segment project locations, the associated cost will be based on a review of the site videos.
- One of the initial proposed countermeasures included use of a 45-degree aggregate edge wedge along segments. The description of this countermeasure was revised since this is intended to be more of a short-term or spot treatment of edge ruts/drop-offs, rather than something applied to a long length of road.
- A general threshold of an ADT greater than 400 vehicles per day was applied for several project types based on AASHTO's guidelines for a very low-volume local road.
- Edgeline or centerline rumble strip installation is recommended to include a feasibility review, primarily in consideration of the existing pavement types and/or width.
- New pavement treatments for segments or curves are recommended to include an appropriate amount of full depth reconstruction to accommodate the treatment, whether this is just partial reconstruction (e.g., shoulder paving to accommodate use of a safety edge) or full depth reconstruction to completely repave a roadway.
- Flattening and widening foreslopes is a long-term countermeasure that typically includes the extension of existing drainage pipes/culverts. The general intent of this is to complete as much shoulder and foreslope improvements as possible within the available right-ofway. Where applicable, the extension of existing drainage pipes/culverts will be added as a site-specific countermeasure for segments where there may be a delay in funding for the ultimate long-term improvements.
- The use of retroreflective strips on stop signs and curve signage (chevrons) are low-cost effective treatments included for all projects.
- Installation of an additional "Stop" sign and "Stop Ahead" sign for an intersection approach includes these additional signs on the left side of the approach. The threshold identified for this countermeasure (minor road ADT greater than 400) was set to include this treatment on higher volume minor approaches and avoid overuse.
- Vertical grade modifications for intersections with a sight distance concern are not included as part of the project selection thresholds but can be added as a site-specific countermeasure for selected intersections based on county input.
- Curve countermeasure thresholds are consistent whether evaluated as part of a curve or a segment project.
- Deviations of the thresholds may occur based on engineering judgement.


### 3.1. LRSP Phase 4 Threshold Modifications

Based on the findings of the previous LRSP phases and a review of appropriate countermeasures as documented in previous technical memoranda, some modifications were made to the thresholds and countermeasures included within the tables as detailed in the following sections.

### 3.1.1. General Modifications

The threshold tables from Phase 3 of the LRSP project were updated to match the language, updated crash modification factors (CMFs), and costs approved in the Phase 4 Countermeasures Technical Memorandum, which included various minor modifications.

### 3.1.2. New Countermeasure and Threshold

The countermeasure "Reshape/Repair Roadway Surface and Apply Dust Suppressants" has been added as a short-term improvement to the segment and curve thresholds tables. This provides counties with a lower cost improvement option for unpaved segments and curves. Dust suppressant application as part of this countermeasure for segments would be intended for their use at spot locations rather than along the entire segment length.
The threshold for the segment countermeasure "Review and upgrade roadway surface" is recommended to be applied on all unpaved roads, rather than just the unpaved curves on the segment. This change from previous phases is recommended based on past recommendations and coordination with counties in previous phases so that this longer-term improvement will apply to the entirety of an unpaved road segment.

|  | All paved roads |
| :---: | :---: |
|  | All paved roads |
|  | All (maximum of either 10 markers per mile or actual access points per mile) |
|  | All |
|  | On paved road, edge condition $\leq 2$ and unpaved shoulder |
|  | On paved road, ADT > 400 and $11^{\prime}$ lanes and edgeline rumble strips do not currently exist |
|  | On paved road, ADT > 400 and 11' lanes and centerline rumble strips do not currently exist |
|  | Roadside Assessment $\leq 2$ |
|  | On all curves within the segment that currently have signage |
|  | On all curves within the segment that do not have signage |
|  | All paved curves (2 per curve) |
|  | On all curve signage within the segment |
|  | All unpaved roads |
| X | All (based upon video review, minimum of 4 estimated for each project) |
| X | On paved road, ADT < 400, no paved shoulder, no existing aggregate shoulder and edge condition $\leq 2$ |
| X | On paved road, ADT > 400 or if existing paved shoulder < 2' |
| X | On paved road, ADT > 400 and 11' lanes |
| X | On paved road, ADT > 400 and 11' lanes |
| X | All (based upon video review) \$80/foot if less than 500 feet |
| X | All |
| X | On paved road, all curves with ADT $>400$, radius $\leq 750$ and no superelevation |
| X | All unpaved roads |


$\times \times \times$
$\times$
$\times$
Long-Term
Cost
$\$ 6,000 /$ mile
$\$ 6,000 / \mathrm{mile}$
$\$ 3,000 /$ mile
$\$ 100 /$ each
$\$ 30,000 /$ mile
$\$ 5,000 /$ mile
\$5,000/mile
$\$ 2,000 /$ mile
$\$ 5,000 /$ mile
\$1,000/curve

$\$ 2,000 /$ curve
\$500/curve
$\$ 5,000 /$ mile
\$1,000/each
$\$ 25,000 /$ mile
\$150,000/mile
\$5,000/mile
\$2,000/mile
$\$ 35-\$ 80 / f o o t$
\$85,000/mile
$\$ 20,000$ - $\$ 50,000 /$ curve
$\$ 8,000 /$ mile

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## CMF

 FHWA Proven Safety Countermeasure0.76 when installed in combination with edgelines pəuyәр ıou 0.78 not defined $0.61-0.86$ $0.66-0.96$
and centerines
$0.59-0.84$
FHWA Proven Safety Countermeasure $0.59-0.84$
FHWA Proven Safety Cou
FHWA Proven Safety C
not defined
not defined
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$0.56-0.78$
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FHWA Proven Safety Countermeasure
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$0.79-0.89$
FHWA Proven Safety Coun
$0.61-0.86$
$0.53-0.56$ New Guardrail alon
$0.58-0.92$
FHWA Proven Safety Countermeasure
$0.27-0.58$
FHWA Proven Safety Coun
not defined
FHWA Proven Safety Countermeasure
FHWA Proven Safety Countermeasure
Review Pavement Condition/Type and Install Edgeline Rumble Strips
(If Feasible on Both Sides of Road)
Review Pavement Condition/Type and Install Centerline Rumble
Strips (If Feasible)
Install Post-Mounted Delineators
Review and Upgrade Curve Signage (Warning signs, Speed Advisory
plaques, Chevrons) to meet Manual on Uniform Traffic Control
Devices (MUTCD) and KDOT Standards
Install Curve Signage (Warning signs, Speed Advisory plaques,
Chevrons) to meet MUTCD and KDOT Standards

| Chevrons) to meet MUTCD and KDOT Standards |
| :--- |
| Install In-Lane Curve Warning Pavement Markings |

Install Retroreflective Strips on Curve Signage
Reshape/Repair Roadway Surface and Apply Dust Suppressants
Remove/Relocate Fixed Objects in Clear Zone (e.g., rock/brick
mailboxes, non-breakaway poles)
Install 18-inch Aggregate Shoulder Treatment (With Transition to
Pave 2' Shoulder with Safety Edge (Both Sides of Road - Includes
Install Edgeline Rumble Strips (Both Sides of Road)
Install Centerline Rumble Strips
Install/Upgrade Guardrail with Reflectors

Install High Friction Surface Treatment (HFST) on Curve
Review and Upgrade Roadway Surface (e.g., millings, well-graded
rock mix with adequate binder)
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KDOT LRSP Risk Factor Ranking and Countermeasure Selection - Phase 4.docx

## Install 6" Retroreflective Edgeline (Both Sides of Road)

Delineate Roadside Hazards with Retroreflective Markers
Clear and Grub (15 feet Off Edge of Road)
Improve Edge Rut Conditions with Aggregate at Edge Drop-off
Locations (Both Sides of Road)
Review Pavement Condition/Type and Install Centerline Rumble
Strips (If Feasible)
Earthwork)
Flattening and Widening Foreslopes (Excludes Culvert Extensions) $\qquad$

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Table 5 - Intersection Countermeasure Project Selection Thresholds

| Safety Countermeasure | CMF | Cost | Short-Term | Long-Term | Threshold |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Retroreflective Strips on Stop Sign Posts | not defined | \$500/intersection | X |  | All |
| Clear and Grub | 0.78 | \$5,000/leg | x |  | All |
| Review Pavement Condition/Type and Install Transverse Rumble Strips on Paved, Stop-Controlled Approaches | 0.71-0.87 | \$2,500/leg | X |  | All paved, stop-controlled approaches |
| Upgrade Signs and Pavement Markings (Stop Ahead Pavement Markings, New Stop Sign, Intersection Warning Sign with Advance Street Name Plaque, Stop Line, Stop Ahead Sign) | $0.34-0.91$ FHWA Proven Safety Countermeasure | \$1,100 (unpaved) \$2,200 (paved)/leg | X |  | All (signs only for unpaved approaches) |
| Install Second Stop Sign and Stop Ahead Signs | $0.73-0.90$ <br> FHWA Proven Safety Countermeasure | \$1,500/leg | X |  | Minor ADT > 400 |
| Install Beacon on Stop Signs or Stop Sign with LED Flashing Lights | $0.84-0.87$ <br> "Beacon on Stop Sign" | \$2,500/sign | X |  | Major ADT> 800 and Minor ADT > 400 |
| Install Solar-Powered Flashing Beacon on Intersection Warning Sign | not defined | \$2,500/sign | X |  | Limited sight distance and Minor ADT > 400 |
| Intersection Lighting (One Luminaire) | $0.58-0.72$ <br> FHWA Proven Safety Countermeasure | \$5,500/each |  | X | Major ADT >800 and Minor ADT > 400 |
| Realign Intersection Approaches to Reduce or Eliminate Skew | 0.57-0.67 | \$100,000 (unpaved) 300,000 (paved)/leg |  | X | Skew < 75 degrees |

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## Table 6 - Curve Countermeasure Project Selection Thresholds

| Safety Countermeasure | CMF | Cost | Short-Term |
| :---: | :---: | :---: | :---: |
| Review and Upgrade Curve Signage (Warning signs, Speed Advisory plaques, Chevrons) to meet Manual on Uniform Traffic Control Devices (MUTCD) and KDOT Standards | 0.59-0.84 <br> FHWA Proven Safety Countermeasure | \$1,000/curve | X |
| Install Curve Signage (Warning signs, Speed Advisory plaques, Chevrons) to meet MUTCD and KDOT Standards | $0.59-0.84$ FHWA Proven Safety Countermeasure | \$3,500/curve | X |
| Install In-Lane Curve Warning Pavement Markings | 0.65 FHWA Proven Safety Countermeasure | \$2,000/curve | X |
| Install Retroreflective Strips on Curve Signage | not defined | \$500/curve | X |
| Install 6" Retroreflective Edgeline (Both Sides of Road) | $0.63-0.78$ FHWA Proven Safety Countermeasure | \$6,000/mile | X |
| Install 4" Retroreflective Centerline | $0.76$ <br> when installed in combination with edgelines | \$3,000/mile | X |
| Clear and Grub (15 feet Off Edge of Road) | 0.78 | \$5,000/curve | X |
| Improve Edge Rut Conditions with Aggregate at Edge Drop-off Locations | not defined | \$5,000/mile | X |
| Review Pavement Condition/Type and Install Edgeline Rumble Strips (If Feasible on Both Sides of Road) | 0.61-0.86 | \$5,000/mile | X |
| Review Pavement Condition/Type and Install Centerline Rumble Strips (If Feasible) | 0.66-0.96 | \$2,000/mile | X |
| Install Post-Mounted Delineators | $0.55$ <br> when installed in combination with edgelines and centerlines | \$5,000/mile | X |
| Reshape/Repair Roadway Surface and Apply Dust Suppressants | 0.95 | \$5,000/mile | X |
| Install 18-inch Aggregate Shoulder Treatment (With Transition to Earth) | not defined | \$25,000/mile |  |
| Pave 2' Shoulder with Safety Edge (Both Sides of Road - Includes Earthwork) | $0.79-0.89$ FHWA Proven Safety Countermeasure | \$150,000/mile |  |
| Install Edgeline Rumble Strips (Both Sides of Road) | 0.61-0.86 | \$5,000/mile |  |
| Install Centerline Rumble Strips | 0.66-0.96 | \$2,000/mile |  |
| Install/Upgrade Guardrail with Reflectors | 0.53-0.56 New Guardrail along Embankment | \$35-\$80/foot |  |
| Install High Friction Surface Treatment (HFST) | $0.27-0.58$ <br> FHWA Proven Safety Countermeasure | \$20,000 \$50,000/curve |  |
| Review and Upgrade Roadway Surface (e.g., millings, well-graded rock mix with adequate binder) | not defined | \$8,000/mile |  |

[^2]
## 4. Next Steps

Upon approval from KDOT of the risk factor scoring criteria and countermeasure project selection threshold tables, the next steps include a systemic analysis that will be conducted for the Phase 4 LRSP counties to calculate risk factor scores for each roadway segment, intersection, and curve along the LRSP study routes. The segments, intersections, and curves with the highest risk factor scores will be reviewed and 10 locations will be selected for safety improvement consideration. Project sheets will be created for the locations selected which will include associated recommended safety countermeasures.

Finally, a LRSP report will be produced for the counties, providing a summary of the project, risk factor scoring information, and the project sheets.

TRANSYSTEMS

## APPENDIX J LRSP Segment Risk Factor Scores



| TSID | Segment Name | From | To | Length (mi) | Total Score | ADT Score | Access <br> Density <br> Score | $\qquad$ | Roadside Assessment Score | Roadway <br> Width <br> Score | Shoulder Width Score | Lane <br> Departure <br> Crash Rate <br> Score | Pavement Markings Score | Surface <br> Type <br> Score |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 137 | SE 2nd St | SE Croco Rd | SE Rice Rd | 0.50 | 19 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 2 | 0 |
| 17 | NE 62nd St | NE Meriden Rd | NW Topeka Blvd | 2.00 | 17 | 5 | 2 | 3 | 3 | 2 | 2 | 0 | 0 | 0 |
| 30 | NE Meriden Rd/NE 70th St | NE Silver Rd | NE 62nd St | 1.48 | 17 | 4 | 2 | 2 | 3 | 2 | 2 | 2 | 0 | 0 |
| 40 | NE Silver Rd | NE 82nd St | NE 70th St | 1.49 | 17 | 4 | 1 | 2 | 3 | 2 | 2 | 2 | 1 | 0 |
| 61 | NW 50th St | NW Rochester Rd | NW Green Hills Rd | 1.00 | 17 | 4 | 2 | 3 | 2 | 0 | 2 | 2 | 2 | 0 |
| 109 | NW Menninger Rd | NE Topeka Blvd | NW Rochester Rd | 0.46 | 17 | 4 | 0 | 3 | 3 | 2 | 2 | 3 | 0 | 0 |
| 49 | NW 39th St | N Kansas Ave | NW Topeka Blvd | 0.26 | 17 | 2 | 2 | 3 | 3 | 0 | 2 | 3 | 2 | 0 |
| 36 | NE Seward Ave | NE Croco Rd | NE Rice Rd | 0.51 | 16 | 6 | 2 | 3 | 3 | 0 | 2 | 0 | 0 | 0 |
| 44 | NW 35th St | NW Topeka Blvd | NW Rochester Rd | 0.46 | 16 | 4 | 2 | 3 | 3 | 0 | 2 | 0 | 2 | 0 |
| 214 | SE Tecumseh Rd | US 40 HWY | SE 21st St | 1.17 | 16 | 4 | 2 | 3 | 2 | 0 | 2 | 1 | 2 | 0 |
| 234 | SW 37th St | SW Auburn Rd | SW Hodges Rd | 0.87 | 16 | 0 | 1 | 3 | 3 | 2 | 2 | 3 | 2 | 0 |
| 50 | NW 39th St | NW Topeka Blvd | NW Rochester Rd | 0.46 | 16 | 2 | 2 | 3 | 3 | 2 | 2 | 0 | 2 | 0 |
| 90 | NW Button Rd | NW 62nd St | NW 46th St | 2.01 | 16 | 4 | 1 | 3 | 2 | 0 | 2 | 2 | 2 | 0 |
| 241 | SW 53rd St | SW Wanamaker Rd | SW Urish Rd | 1.00 | 16 | 5 | 2 | 2 | 3 | 0 | 1 | 1 | 2 | 0 |
| 242 | SW 53rd St | SW Urish Rd | SW Auburn Rd | 1.96 | 16 | 5 | 1 | 3 | 3 | 0 | 2 | 0 | 2 | 0 |
| 43 | NW 35th St | NW Rochester Rd | NW Green Hill Rd | 0.77 | 15 | 4 | 2 | 2 | 3 | 0 | 1 | 1 | 2 | 0 |
| 4 | N Kansas Ave | NE 35th St | NW Menninger Rd | 0.40 | 15 | 5 | 2 | 1 | 3 | 0 | 1 | 1 | 2 | 0 |
| 35 | NE Rice Rd | NE Seward Ave | SE 2nd St | 0.50 | 15 | 3 | 1 | 3 | 2 | 2 | 1 | 3 | 0 | 0 |
| 91 | NW Button Rd | NW 46th St | NW 35th St | 1.39 | 15 | 2 | 2 | 3 | 3 | 0 | 1 | 2 | 2 | 0 |
| 132 | SE 10th St | SE Shawnee Heights Rd | SE Dupont Rd | 0.49 | 15 | 0 | 2 | 2 | 3 | 2 | 1 | 3 | 2 | 0 |
| 184 | SE Croco Rd | SE 61st St | SE 69th St | 1.00 | 15 | 2 | 2 | 3 | 1 | 0 | 2 | 3 | 2 | 0 |
| 187 | SE Dupont Rd | SE 2nd St | SE 10th St | 1.00 | 15 | 0 | 2 | 3 | 2 | 2 | 1 | 3 | 2 | 0 |
| 226 | SW 21st St | K 4 HWY | SW Hodges Rd | 1.00 | 15 | 0 | 2 | 3 | 3 | 0 | 2 | 3 | 2 | 0 |
| 238 | SW 45th St / SW 47th St | SW Gage Blvd | SW Wanamaker Rd | 1.90 | 15 | 4 | 1 | 3 | 3 | 0 | 1 | 1 | 2 | 0 |
| 247 | SW 61st St | SW Burlingame Rd | SW Wanamaker Rd | 2.01 | 15 | 6 | 0 | 3 | 3 | 2 | 0 | 1 | 0 | 0 |
| 260 | SW Auburn Rd | SW 93rd St | 0.35 mi North of SW 103rd St | 0.99 | 15 | 5 | 0 | 3 | 3 | 0 | 2 | 2 | 0 | 0 |
| 271 | SW Fairlawn Rd | SW 45th St | SW 53rd St | 0.93 | 15 | 2 | 2 | 2 | 3 | 0 | 2 | 2 | 2 | 0 |
| 279 | SW Indian Hills Rd | SW 33rd St | SW 37th St | 0.52 | 15 | 5 | 1 | 1 | 3 | 0 | 1 | 2 | 2 | 0 |
| 115 | NW Rochester Rd | NW 43rd St | NW Menninger Rd | 1.50 | 15 | 6 | 2 | 2 | 3 | 0 | 1 | 1 | 0 | 0 |
| 142 | SE 37th St | SE Shawnee Heights Rd | SE Tecumseh Rd | 1.59 | 15 | 4 | 1 | 3 | 2 | 0 | 1 | 2 | 2 | 0 |
| 219 | SW 10th St | SW Urish Rd | SW Indian Hills Rd | 1.10 | 15 | 4 | 1 | 3 | 3 | 0 | 2 | 2 | 0 | 0 |
| 47 | NW 35th St | NW Green Hills Rd | US 75 HWY | 1.72 | 14 | 5 | 1 | 1 | 3 | 0 | 1 | 1 | 2 | 0 |
| 48 | NW 39th St | NW Rochester Rd | NW Button Rd | 1.78 | 14 | 2 | 2 | 1 | 3 | 0 | 1 | 3 | 2 | 0 |
| 3 | Main St | NW 54th St | US 24 HWY | 0.57 | 14 | 5 | 0 | 2 | 2 | 0 | 1 | 2 | 2 | 0 |
| 6 | NE 35th St | NE Meriden Rd | N Kansas Ave | 1.03 | 14 | 3 | 2 | 3 | 2 | 0 | 1 | 3 | 0 | 0 |
| 7 | NE 39th St | K 4 HWY | NE Meriden Rd | 2.39 | 14 | 3 | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 0 |
| 15 | NE 62nd St | NE Kincaid Rd | NE Meriden Rd | 1.50 | 14 | 2 | 2 | 3 | 2 | 0 | 1 | 2 | 2 | 0 |
| 29 | NW Menninger Rd | N Kansas Ave | NW Topeka Bllvd | 0.25 | 14 | 2 | 2 | 3 | 3 | 2 | 2 | 0 | 0 | 0 |
| 32 | NE Meriden Rd/NE 74th St | NE 78th St | NE Silver Rd | 0.99 | 14 | 0 | 1 | 3 | 2 | 2 | 1 | 3 | 2 | 0 |
| 100 | NW Green Hills Rd | NW 62nd St | NW 46th St | 1.98 | 14 | 2 | 2 | 3 | 2 | 0 | 1 | 2 | 2 | 0 |
| 114 | NW Rochester Rd | NW 62nd St | NW 50th St | 1.51 | 14 | 4 | 2 | 3 | 2 | 0 | 1 | 1 | 1 | 0 |
| 134 | SE 29th St | SE Shawnee Heights Rd | SE Tecumseh Rd | 1.66 | 14 | 5 | 0 | 3 | 3 | 0 | 1 | 2 | 0 | 0 |
| 167 | SE 69th St | SE Ratner Rd | SE Berryton Rd | 3.01 | 14 | 0 | 1 | 3 | 3 | 0 | 2 | 3 | 2 | 0 |
| 189 | SE Dupont Rd | SE 45th St | SE 49th St | 0.50 | 14 | 2 | 2 | 3 | 3 | 0 | 2 | 0 | 2 | 0 |
| 201 | SE Shawnee Heights Rd | SE 61st St | SE 69th St | 1.03 | 14 | 0 | 2 | 3 | 3 | 0 | 1 | 3 | 2 | 0 |
| 204 | SE Stanley Rd | SE 61st St | SE 77th St | 2.03 | 14 | 0 | 0 | 3 | 3 | 2 | 1 | 3 | 2 | 0 |
| 211 | SE Tecumseh Rd | SE 45th St | SE 53rd St | 1.00 | 14 | 1 | 2 | 3 | 2 | 0 | 1 | 3 | 2 | 0 |
| 237 | SW 41st St | SW Urish Rd | Topeka CL | 0.50 | 14 | 6 | 0 | 2 | 3 | 0 | 1 | 0 | 2 | 0 |


| TSID | Segment Name | From | To | Length (mi) | Total Score | ADT Score | Access <br> Density <br> Score | Edge Condition Score | Roadside Assessment Score | Roadway <br> Width <br> Score | Shoulder Width Score | Lane <br> Departure <br> Crash Rate <br> Score | Pavement <br> Markings Score | Surface <br> Type <br> Score |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 243 | SW 53rd St | SW Auburn St | SW Hodges Rd | 1.00 | 14 | 4 | 1 | 3 | 2 | 0 | 1 | 1 | 2 | 0 |
| 145 | SE 37th St | SE Tecumseh Rd | SE Paulen Rd | 0.50 | 14 | 3 | 1 | 2 | 3 | 2 | 1 | 0 | 2 | 0 |
| 174 | SE 93rd St | SE Berryton Rd | SW Topeka Blvd | 2.98 | 14 | 4 | 1 | 3 | 2 | 0 | 2 | 2 | 0 | 0 |
| 239 | SW 53rd St | SW Burlingame Rd | SW Fairlawn Rd | 1.51 | 13 | 5 | 1 | 2 | 3 | 0 | 1 | 1 | 0 | 0 |
| 240 | SW 53rd St | SW Fairlawn Rd | SW Wanamaker Rd | 1.00 | 13 | 5 | 1 | 3 | 2 | 0 | 1 | 1 | 0 | 0 |
| 58 | NW 46th St | NW Huxman Rd | NW Hoch Rd (E) | 2.84 | 13 | 4 | 0 | 2 | 3 | 2 | 1 | 1 | 0 | 0 |
| 70 | NW 62nd St | NW Topeka Blvd | NW Green Hills Rd | 1.49 | 13 | 5 | 2 | 3 | 1 | 0 | 1 | 1 | 0 | 0 |
| 126 | NW Topeka Blvd | NE 82nd St | NE 62nd St | 2.50 | 13 | 5 | 1 | 2 | 1 | 0 | 2 | 2 | 0 | 0 |
| 144 | SE 37th St | SE Paulen Rd | SE Croco Rd | 1.01 | 13 | 3 | 2 | 2 | 1 | 0 | 1 | 2 | 2 | 0 |
| 9 | NE 43rd St | NE Kimbal Rd | NW Topeka Blvd | 0.72 | 13 | 2 | 1 | 1 | 2 | 2 | 2 | 3 | 0 | 0 |
| 14 | NE 56th St | NE Kincaid Rd | NE Shaffer Rd | 0.50 | 13 | 0 | 2 | 2 | 3 | 2 | 2 | 0 | 2 | 0 |
| 33 | NE Meriden Rd | NE 39th St | NE Collier Rd | 1.57 | 13 | 3 | 2 | 3 | 3 | 0 | 1 | 1 | 0 | 0 |
| 39 | NE Shaffer Rd | NE 62nd St | NE 46th St | 2.00 | 13 | 0 | 2 | 1 | 2 | 2 | 1 | 3 | 2 | 0 |
| 45 | NW 35th St | NW Brickyard Rd | NW Menoken Rd | 1.29 | 13 | 2 | 2 | 2 | 2 | 0 | 1 | 2 | 2 | 0 |
| 62 | NW 50th St | NW Topeka Blvd | NW Rochester Rd | 0.50 | 13 | 4 | 2 | 2 | 0 | 0 | 1 | 3 | 1 | 0 |
| 63 | NW 54th St | 0.4 mi east of NW Carlson Rd | NW Rossville Rd | 0.88 | 13 | 1 | 1 | 3 | 3 | 2 | 1 | 0 | 2 | 0 |
| 81 | NW 86th St | NW Topeka Blvd | NW Rochester Rd | 0.50 | 13 | 0 | 2 | 3 | 3 | 2 | 1 | 0 | 2 | 0 |
| 93 | NW Carlson Rd | W 1st St | SW I-70 Frontage Rd | 2.42 | 13 | 5 | 0 | 3 | 3 | 0 | 2 | 0 | 0 | 0 |
| 96 | NW Church Ln | 0.7 mi north of NW 62nd St | NW 62nd St | 0.67 | 13 | 0 | 2 | 3 | 3 | 2 | 1 | 0 | 2 | 0 |
| 99 | NW Green Hills Rd | NW 39th St | NW 35th St | 0.50 | 13 | 2 | 2 | 1 | 2 | 0 | 1 | 3 | 2 | 0 |
| 111 | NW Menoken Rd | NW 46th St | US 24 HWY | 2.83 | 13 | 3 | 2 | 3 | 2 | 0 | 2 | 1 | 0 | 0 |
| 140 | SE Green Rd | SE 2nd St | US 40 HWY | 0.51 | 13 | 0 | 2 | 3 | 3 | 2 | 1 | 0 | 2 | 0 |
| 141 | SE 2nd St | SE Green Rd | NE Goodell Rd | 2.28 | 13 | 2 | 1 | 2 | 2 | 0 | 1 | 3 | 2 | 0 |
| 220 | SW 10th St | SW Indian Hills Rd | K 4 HWY | 1.03 | 13 | 4 | 2 | 3 | 3 | 0 | 1 | 0 | 0 | 0 |
| 162 | SE 53rd St | SE Berryton Rd | SE California Rd | 1.00 | 13 | 5 | 2 | 1 | 2 | 0 | 1 | 1 | 1 | 0 |
| 163 | SE 53rd St | SE Croco Rd | SE Berryton Rd | 1.00 | 13 | 3 | 0 | 3 | 2 | 0 | 1 | 3 | 1 | 0 |
| 165 | SE 61st St | SE Stubbs Rd | SE Stanley Rd | 1.02 | 13 | 2 | 1 | 3 | 3 | 2 | 2 | 0 | 0 | 0 |
| 185 | SE Croco Rd | NE Seward Ave | SE 6th Ave | 1.01 | 13 | 5 | 2 | 3 | 1 | 0 | 1 | 1 | 0 | 0 |
| 191 | SE Indian Hills Rd | SW 53rd St | SW 61st St | 1.00 | 13 | 2 | 1 | 2 | 3 | 0 | 1 | 2 | 2 | 0 |
| 202 | SE Shawnee Heights Rd | US 40 HWY | SE Ward Rd | 1.50 | 13 | 4 | 1 | 3 | 2 | 0 | 1 | 2 | 0 | 0 |
| 212 | SE Tecumseh Rd | SE 21st St | SE 29th St | 1.01 | 13 | 4 | 2 | 1 | 3 | 0 | 1 | 0 | 2 | 0 |
| 215 | SE Tecumseh Rd | SE 29th St | SE 45th St | 2.00 | 13 | 5 | 2 | 1 | 2 | 0 | 1 | 0 | 2 | 0 |
| 225 | SW 21st St | SW Hodges Rd | 0.3 mi west of SW Hodges Rd | 0.34 | 13 | 0 | 0 | 3 | 3 | 0 | 2 | 3 | 2 | 0 |
| 235 | SW 37th St | SW Indian Hills Rd | SW Auburn Rd | 1.00 | 13 | 2 | 2 | 3 | 3 | 2 | 1 | 0 | 0 | 0 |
| 244 | SW 57th St | SW Valencia Rd | K 4 HWY | 3.52 | 13 | 3 | 1 | 3 | 3 | 0 | 1 | 2 | 0 | 0 |
| 252 | SW 77th St | US 75 HWY | SW Burlingame Rd | 1.40 | 13 | 4 | 0 | 2 | 1 | 2 | 2 | 2 | 0 | 0 |
| 262 | SW Auburn Rd | 0.35 mi North of SW 103rd St | SW 109th St | 1.06 | 13 | 6 | 0 | 3 | 3 | 0 | 1 | 0 | 0 | 0 |
| 272 | SW Gage Blvd | SW 45th St | SW 53rd | 0.93 | 13 | 5 | 1 | 1 | 2 | 0 | 1 | 3 | 0 | 0 |
| 291 | SW Urish Rd | SW 41st St | SW 53rd St | 1.52 | 13 | 2 | 1 | 3 | 3 | 0 | 2 | 0 | 2 | 0 |
| 293 | SW Valencia Rd | SW 57th St | SW 61st St | 0.49 | 13 | 3 | 0 | 3 | 2 | 2 | 0 | 3 | 0 | 0 |
| 259 | SW Auburn Rd | SW 61st St | SW 85th St | 3.01 | 13 | 6 | 1 | 3 | 2 | 0 | 1 | 0 | 0 | 0 |
| 113 | NW Rochester Rd | NW 46th St | NW 43rd St | 0.36 | 12 | 6 | 2 | 2 | 1 | 0 | 1 | 0 | 0 | 0 |
| 2 | Main St | US 24 HWY | Rossville CL | 0.31 | 12 | 5 | 0 | 3 | 3 | 0 | 1 | 0 | 0 | 0 |
| 26 | NE Indian Creek Rd | NE 82nd St | NE 62nd St | 2.50 | 12 | 0 | 2 | 1 | 1 | 2 | 1 | 3 | 2 | 0 |
| 27 | NE Kincaid Rd | NE 62nd St | NE 46th St | 2.00 | 12 | 0 | 2 | 2 | 2 | 0 | 1 | 3 | 2 | 0 |
| 38 | NE Seward Ave / NE Goodell Rd | SE 2nd St | K 4 HWY | 1.26 | 12 | 3 | 1 | 3 | 3 | 0 | 1 | 1 | 0 | 0 |
| 41 | NW 25th St | NW Menoken Rd | US 24 HWY | 1.81 | 12 | 3 | 0 | 3 | 1 | 2 | 1 | 0 | 2 | 0 |
| 46 | NW 35th St | NW Menoken Rd / NW Pipkin Rd | NW Leedy Rd | 0.55 | 12 | 0 | 2 | 2 | 3 | 2 | 1 | 0 | 2 | 0 |


| TSID | Segment Name | From | To | Length (mi) | Total Score | ADT Score | Access <br> Density <br> Score | $\qquad$ | Roadside Assessment Score | Roadway <br> Width <br> Score | Shoulder Width Score | Lane Departure Crash Rate Score | Pavement <br> Markings Score | Surface <br> Type <br> Score |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 56 | NW 46th St | NW Brickyard Rd | NW Menoken Rd | 1.55 | 12 | 6 | 1 | 1 | 2 | 0 | 1 | 0 | 1 | 0 |
| 67 | NW 62nd St | NW Maple Hill Rd | Shawnee/Pottawatomie County Line | 0.50 | 12 | 4 | 2 | 1 | 2 | 2 | 1 | 0 | 0 | 0 |
| 77 | NW 78th St | NW Wilson Rd | US 75 HWY | 1.03 | 12 | 0 | 1 | 3 | 2 | 0 | 1 | 3 | 2 | 0 |
| 88 | NW Brickyard Rd | NW 46th St | NW 35th St | 1.40 | 12 | 5 | 2 | 1 | 1 | 0 | 2 | 1 | 0 | 0 |
| 98 | NW Green Hills Rd | NW 46th St | NW 39th St | 0.88 | 12 | 2 | 2 | 3 | 2 | 0 | 1 | 0 | 2 | 0 |
| 119 | NW Rossville Rd/NW 42nd St/NW Carlson Rd | W 1st St | Rossville CL | 2.78 | 12 | 5 | 0 | 3 | 2 | 0 | 1 | 1 | 0 | 0 |
| 122 | NW Topeka Blvd | NW 86th St | NW 82nd St | 0.50 | 12 | 4 | 2 | 2 | 3 | 0 | 1 | 0 | 0 | 0 |
| 125 | NW Topeka Blvd | NW 62nd St | NW 46th St | 1.97 | 12 | 5 | 2 | 1 | 1 | 0 | 1 | 2 | 0 | 0 |
| 128 | NW Wilson Rd / NW Elmont Rd | NW 94th St | NW 65th St | 3.77 | 12 | 0 | 1 | 3 | 2 | 0 | 1 | 3 | 2 | 0 |
| 135 | SE 29th St | SE Stubbs Rd | SE Stanley Rd | 1.05 | 12 | 0 | 2 | 1 | 3 | 0 | 1 | 3 | 2 | 0 |
| 138 | SE 2nd St | K4 HWY | SE Croco Rd | 0.51 | 12 | 2 | 2 | 2 | 3 | 0 | 1 | 0 | 2 | 0 |
| 148 | SE Berryton Rd | SE 45th St | SE 61st St | 2.01 | 12 | 5 | 2 | 1 | 3 | 0 | 1 | 0 | 0 | 0 |
| 159 | SE 53rd St | SE Shawnee Heights Rd | SE Paulen Rd | 2.11 | 12 | 2 | 1 | 2 | 2 | 2 | 1 | 2 | 0 | 0 |
| 164 | SE 61st St | SE Stanley Rd | SE Berryton Rd | 5.11 | 12 | 3 | 2 | 2 | 2 | 0 | 1 | 2 | 0 | 0 |
| 169 | SE 85th St | SE Paulen Rd | SE Berryton Rd | 2.00 | 12 | 0 | 1 | 3 | 3 | 0 | 2 | 3 | 0 | 0 |
| 172 | SE 89th St | SE Clinton Wildlife Rd | SE Shadden Rd | 1.55 | 12 | 2 | 0 | 3 | 2 | 2 | 1 | 2 | 0 | 0 |
| 188 | SE Dupont Rd | SE 49th St | SE 53rd St | 0.50 | 12 | 2 | 1 | 3 | 3 | 0 | 1 | 0 | 2 | 0 |
| 196 | SE Ratner Rd | SE 61st St | SE 89th st | 3.52 | 12 | 2 | 1 | 2 | 3 | 2 | 1 | 1 | 0 | 0 |
| 197 | SE Ratner Rd | SE 49th St | SE 53rd St | 0.50 | 12 | 2 | 2 | 1 | 2 | 2 | 1 | 0 | 2 | 0 |
| 203 | SE Stanley Rd | SE 29th St | SE 45th St | 2.06 | 12 | 0 | 0 | 3 | 3 | 0 | 1 | 3 | 2 | 0 |
| 216 | SE Ward Rd | SE Stanley Rd | SE Shawnee Heights Rd | 1.31 | 12 | 0 | 1 | 3 | 2 | 0 | 1 | 3 | 2 | 0 |
| 222 | SW 13th St | SW Valencia Rd | SW Glick Rd | 0.44 | 12 | 1 | 1 | 3 | 3 | 2 | 2 | 0 | 0 | 0 |
| 223 | SW 21st St | SW Indian Hills Rd | K 4 HWY | 1.00 | 12 | 6 | 0 | 0 | 3 | 2 | 1 | 0 | 0 | 0 |
| 231 | SW 33rd St | SW Urish Rd | SW Indian Hills Rd (W) | 1.05 | 12 | 4 | 0 | 1 | 3 | 2 | 2 | 0 | 0 | 0 |
| 233 | SW 33rd St | SW Indian Hills Rd (W) | SW Auburn Rd | 0.88 | 12 | 3 | 2 | 3 | 1 | 0 | 1 | 2 | 0 | 0 |
| 253 | SW 85th St | SW Wanamaker Rd | N Hanover St | 2.73 | 12 | 0 | 1 | 1 | 2 | 2 | 2 | 3 | 1 | 0 |
| 261 | SW Auburn Rd | K 4 HWY | SW 61st St | 4.51 | 12 | 6 | 1 | 2 | 2 | 0 | 1 | 0 | 0 | 0 |
| 269 | SW Crawford Rd | SW 57th St | SW 89th St | 4.28 | 12 | 1 | 1 | 3 | 3 | 0 | 1 | 3 | 0 | 0 |
| 276 | SW Hodges Rd | SW 21st St | K 4 HWY | 0.50 | 12 | 0 | 2 | 3 | 3 | 2 | 1 | 0 | 1 | 0 |
| 278 | SW Indian Hills Rd | SW 10th St | SW Huntoon St | 0.52 | 12 | 4 | 1 | 1 | 3 | 0 | 1 | 0 | 2 | 0 |
| 280 | SW Indian Hills Rd | SW 37th St | SW 53rd St | 2.00 | 12 | 2 | 0 | 2 | 3 | 0 | 1 | 2 | 2 | 0 |
| 281 | SW Indian Hills Rd | SW 29th St | SW 33rd St | 0.49 | 12 | 5 | 1 | 2 | 3 | 0 | 1 | 0 | 0 | 0 |
| 288 | SW Urish Rd | SW 53rd St | SW 61st St | 1.02 | 12 | 2 | 2 | 1 | 3 | 2 | 2 | 0 | 0 | 0 |
| 20 | NE 82nd St | NE Silver Rd | NW Topeka Blvd | 2.50 | 11 | 4 | 0 | 3 | 2 | 0 | 1 | 1 | 0 | 0 |
| 25 | NE Indian Creek Rd | NW 94th St | NE 82nd St | 1.56 | 11 | 0 | 1 | 3 | 2 | 2 | 1 | 0 | 2 | 0 |
| 34 | NE Meriden Rd | NE 46th St | NE 39th St | 0.85 | 11 | 2 | 2 | 0 | 1 | 2 | 1 | 3 | 0 | 0 |
| 68 | NW 62nd St | NW Hoch Rd | NW Rossville Rd | 5.53 | 11 | 4 | 0 | 2 | 2 | 2 | 1 | 0 | 0 | 0 |
| 71 | NW 62nd St / NW 66th St | NW Landon Rd | NW Hoch Rd | 4.49 | 11 | 3 | 0 | 3 | 1 | 2 | 1 | 1 | 0 | 0 |
| 72 | NW 66th St | NE Indian Creek Rd | NW Topeka Blvd | 1.01 | 11 | 0 | 1 | 0 | 2 | 2 | 1 | 3 | 2 | 0 |
| 73 | NW 66th St | NW Railroad St | US 75 HWY | 0.76 | 11 | 0 | 2 | 3 | 3 | 0 | 1 | 0 | 2 | 0 |
| 79 | NW 82nd St | 0.5 mi west of NW Rochester Rd | NW Rochester Rd | 0.52 | 11 | 0 | 2 | 2 | 2 | 2 | 1 | 0 | 2 | 0 |
| 89 | NW Brickyard Rd | NW 62nd St | NW 46th St | 2.03 | 11 | 5 | 2 | 2 | 1 | 0 | 1 | 0 | 0 | 0 |
| 108 | NW Maple Hill Rd | NW 62nd St | Kansas River Crossing | 2.54 | 11 | 4 | 0 | 3 | 1 | 0 | 2 | 1 | 0 | 0 |
| 112 | NW Rochester Rd | NW 78th St | NW 62nd St | 2.00 | 11 | 0 | 2 | 2 | 2 | 0 | 2 | 3 | 0 | 0 |
| 116 | NW Rochester Rd | NW 50th St | NW 46th St | 0.48 | 11 | 6 | 2 | 0 | 1 | 0 | 1 | 1 | 0 | 0 |
| 118 | NW Rossville Rd/NW Capper Rd | NW 94th St | NW 54th St | 5.41 | 11 | 5 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0 |
| 127 | NW Valencia Rd | NW 17th St | 1-70 | 1.68 | 11 | 1 | 1 | 3 | 3 | 0 | 1 | 2 | 0 | 0 |
| 129 | SW Morrill Rd | SW 65th St | SW Gary Ormsby Rd | 1.39 | 11 | 5 | 0 | 1 | 1 | 0 | 1 | 2 | 1 | 0 |


| TSID | Segment Name | From | To | Length (mi) | Total Score | ADT Score | Access Density Score | Edge Condition Score | Roadside Assessment Score | Roadway <br> Width <br> Score | Shoulder <br> Width <br> Score | Lane <br> Departure <br> Crash Rate <br> Score | Pavement <br> Markings <br> Score | Surface <br> Type <br> Score |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 139 | SE 2nd St | SE Green Rd | Shawnee/Douglas County Line | 2.45 | 11 | 0 | 0 | 3 | 3 | 0 | 1 | 2 | 2 | 0 |
| 146 | SE 41st St | Topeka CL | SE Howey Rd | 0.71 | 11 | 2 | 1 | 1 | 3 | 0 | 2 | 0 | 2 | 0 |
| 155 | SE 49th St | SE Dupont Rd | SE Tecumseh Rd | 1.10 | 11 | 2 | 2 | 1 | 2 | 0 | 2 | 0 | 2 | 0 |
| 156 | SE 53rd St | SE Paulen Rd | SE Croco Rd | 1.00 | 11 | 3 | 2 | 3 | 2 | 0 | 1 | 0 | 0 | 0 |
| 166 | SE 69th Rd | SE Stanley Rd | SE Ratner Rd | 2.09 | 11 | 0 | 2 | 3 | 3 | 0 | 1 | 0 | 2 | 0 |
| 175 | SE 94th St | NW Topeka Blvd | NW Wilson Rd | 1.94 | 11 | 4 | 1 | 2 | 3 | 0 | 1 | 0 | 0 | 0 |
| 178 | SE Berryton Rd | SE 61st St | SE 93rd St | 4.01 | 11 | 4 | 2 | 1 | 2 | 0 | 2 | 0 | 0 | 0 |
| 181 | SE Croco Rd | SE 69th St | SE 85th St | 2.01 | 11 | 2 | 1 | 1 | 2 | 0 | 1 | 2 | 2 | 0 |
| 208 | SE Stubbs Rd | US 40 HWY | SE 29th St | 1.00 | 11 | 0 | 1 | 3 | 3 | 0 | 2 | 0 | 2 | 0 |
| 210 | SE Stubbs Rd | SE 45th St | SE 69th St | 3.05 | 11 | 2 | 1 | 3 | 2 | 0 | 2 | 1 | 0 | 0 |
| 248 | SW 61st St | SW Auburn St | SW Valencia Rd | 2.95 | 11 | 3 | 1 | 3 | 2 | 0 | 1 | 1 | 0 | 0 |
| 249 | SW 61st St | SW Wanamaker Rd | SW Auburn Rd | 2.97 | 11 | 5 | 1 | 1 | 1 | 0 | 1 | 2 | 0 | 0 |
| 250 | SW Lewelling Rd/SW 65th St | SW Morrill Rd | SW Burlingame Rd | 1.15 | 11 | 2 | 0 | 2 | 3 | 0 | 1 | 2 | 1 | 0 |
| 251 | SW 77th St | SW Burlingame Rd | SW Wanamker Rd | 1.46 | 11 | 3 | 0 | 1 | 2 | 2 | 1 | 2 | 0 | 0 |
| 254 | SW 89th St | Auburn CL | Shawnee/Wabaunsee County Line | 6.76 | 11 | 5 | 0 | 3 | 2 | 0 | 1 | 0 | 0 | 0 |
| 257 | SW 93rd St | SW Topeka Blvd | SW Jordan Rd | 0.50 | 11 | 3 | 2 | 2 | 3 | 0 | 1 | 0 | 0 | 0 |
| 270 | SW Fairlawn Rd | SW 53rd St | SW 61st St | 1.01 | 11 | 4 | 1 | 3 | 1 | 0 | 1 | 0 | 1 | 0 |
| 275 | SW Hodges Rd | 0.75 mi North of SW 21st St | SW 21st St | 0.78 | 11 | 0 | 1 | 3 | 3 | 0 | 2 | 0 | 2 | 0 |
| 277 | SW Indian Hills Rd | SW Huntoon St | SW 21st St | 1.00 | 11 | 4 | 1 | 1 | 1 | 2 | 1 | 0 | 1 | 0 |
| 300 | W 8th St | N Washington St | Auburn CL | 0.29 | 11 | 5 | 0 | 1 | 2 | 0 | 1 | 2 | 0 | 0 |
| 5 | N Washington St | W 14th St | E 1st St | 1.00 | 10 | 5 | 0 | 1 | 3 | 0 | 0 | 1 | 0 | 0 |
| 10 | NE 43rd St | NE Wenonah Rd | NE Kimbal Rd | 0.38 | 10 | 2 | 2 | 2 | 3 | 0 | 1 | 0 | 0 | 0 |
| 42 | NW 25th St | NW Brickyard Rd | NW Menoken Rd | 1.27 | 10 | 4 | 1 | 1 | 1 | 0 | 1 | 0 | 2 | 0 |
| 51 | NW 43rd St | NW Topeka Blvd | NW Rochester Rd | 0.49 | 10 | 2 | 2 | 1 | 3 | 2 | 0 | 0 | 0 | 0 |
| 54 | NW 46th St | NW Menoken Rd | NW Landon Rd | 1.20 | 10 | 3 | 1 | 1 | 1 | 2 | 2 | 0 | 0 | 0 |
| 84 | NW 86th St | NW Rochester Rd | NW Wilson Rd | 1.49 | 10 | 0 | 1 | 3 | 2 | 0 | 2 | 0 | 2 | 0 |
| 102 | NW Hoch Rd | NW 62nd St | E Railroad Ave | 3.75 | 10 | 4 | 1 | 3 | 1 | 0 | 1 | 0 | 0 | 0 |
| 104 | NW Huxman Rd | NW 46th St | US 24 HWY | 2.44 | 10 | 4 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0 |
| 110 | NW Menoken Rd | US 24 HWY | NW 17th St | 0.69 | 10 | 2 | 1 | 1 | 1 | 2 | 1 | 2 | 0 | 0 |
| 121 | NW Topeka Blvd | NW 94th St | NW 86th St | 0.97 | 10 | 4 | 1 | 2 | 2 | 0 | 1 | 0 | 0 | 0 |
| 123 | NW Topeka Blvd | NE 43rd St | NW Menninger Rd | 1.51 | 10 | 6 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 |
| 133 | SE 29th St | SE Stubbs Rd | SE Woodring Rd | 1.00 | 10 | 0 | 0 | 3 | 3 | 0 | 2 | 0 | 2 | 0 |
| 136 | SE 29th St | SE Tecumseh Rd | SE Croco Rd | 1.52 | 10 | 6 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 |
| 143 | SE 37th St | SE Stubbs Rd | SE Stanley Rd | 1.00 | 10 | 0 | 1 | 3 | 3 | 0 | 1 | 0 | 2 | 0 |
| 161 | SE 53rd St | SE California Ave | SW Topeka Blvd | 1.95 | 10 | 5 | 0 | 1 | 1 | 0 | 1 | 0 | 2 | 0 |
| 170 | SE 85th St | SW Topeka Blvd | 0.7 mi east of SW Topeka Blvd | 0.65 | 10 | 2 | 1 | 1 | 2 | 0 | 2 | 0 | 2 | 0 |
| 171 | SE 89th St | SE Shadden Rd | SE Ratner Rd | 2.57 | 10 | 2 | 0 | 3 | 2 | 2 | 0 | 1 | 0 | 0 |
| 173 | SE 89th St / SE 93rd St | SE Ratner Rd | SE Berryton Rd | 3.36 | 10 | 4 | 0 | 3 | 1 | 0 | 2 | 0 | 0 | 0 |
| 177 | SE Berryton Rd | SE 93rd St | SE 101st St | 1.01 | 10 | 0 | 0 | 3 | 1 | 0 | 2 | 3 | 1 | 0 |
| 190 | SE Howey Rd | SE 37th St | SE 41st St | 0.50 | 10 | 2 | 1 | 1 | 3 | 0 | 2 | 0 | 1 | 0 |
| 192 | SE Paulen Rd | SE 61st St | SE 69th St | 1.01 | 10 | 0 | 2 | 1 | 3 | 0 | 2 | 0 | 2 | 0 |
| 200 | SE Shawnee Heights Rd | SE Ward Rd | SE 45th St | 2.51 | 10 | 5 | 2 | 2 | 0 | 0 | 1 | 0 | 0 | 0 |
| 209 | SE Stubbs Rd | SE 69th St | SE 89th St | 2.51 | 10 | 2 | 0 | 3 | 3 | 0 | 2 | 0 | 0 | 0 |
| 213 | SE Tecumseh Rd | SE 2nd St | US 40 HWY | 0.49 | 10 | 2 | 2 | 1 | 2 | 0 | 1 | 0 | 2 | 0 |
| 217 | SW Westview Rd/SW University Blvd | SW Topeka Blvd | SW 69th Ter | 1.28 | 10 | 2 | 0 | 2 | 1 | 0 | 1 | 3 | 1 | 0 |
| 218 | SW 97th St/SW 103rd St | SW Topeka Rd | SW Stewart Rd | 2.11 | 10 | 0 | 1 | 1 | 1 | 2 | 2 | 3 | 0 | 0 |
| 236 | SW 41st St | SW Urish Rd | SW Indian Hills Rd | 0.94 | 10 | 6 | 0 | 0 | 1 | 2 | 1 | 0 | 0 | 0 |
| 256 | SW 93rd St | SW Bulingame Rd | SW Wanamaker Rd | 1.50 | 10 | 4 | 0 | 2 | 1 | 2 | 1 | 0 | 0 | 0 |


| TSID | Segment Name | From | To | Length (mi) | Total Score | ADT Score | Access <br> Density <br> Score | Edge Condition Score | Roadside Assessment Score | Roadway <br> Width <br> Score | Shoulder Width Score | Lane <br> Departure <br> Crash Rate <br> Score | Pavement <br> Markings Score | Surface <br> Type <br> Score |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 258 | SW 93rd St | SW Wanamaker Rd | N Washington St | 2.94 | 10 | 4 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0 |
| 263 | SW Burlingame Rd | SW 45th St | SW 57th St | 1.58 | 10 | 6 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 |
| 282 | SE Paulen Rd | SE 45th St | SE 61st St | 2.00 | 10 | 2 | 2 | 2 | 1 | 0 | 1 | 2 | 0 | 0 |
| 290 | SW Urish Rd | SW 33rd St | SW 37th St | 0.81 | 10 | 6 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 |
| 301 | SW Urish Rd | SW 29th St | SW 33rd St | 0.50 | 10 | 6 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 18 | NE 74th St | NE Silver Rd | NE Sherman Rd | 1.50 | 9 | 0 | 1 | 3 | 2 | 0 | 1 | 0 | 2 | 0 |
| 19 | NE 78th St | NE Silver Rd | NE Indian Creek Rd | 1.49 | 9 | 0 | 0 | 1 | 2 | 2 | 2 | 0 | 2 | 0 |
| 23 | NE 86th St | NE Indian Creek Rd | NE Marple Rd | 0.50 | 9 | 0 | 1 | 2 | 1 | 2 | 1 | 0 | 2 | 0 |
| 28 | NE Marple Rd | 1.0 mi North of 86th St | NE 82nd St | 1.00 | 9 | 0 | 1 | 3 | 1 | 0 | 2 | 0 | 2 | 0 |
| 31 | NE Meriden Rd | NE 62nd St | NE 46th St | 2.00 | 9 | 4 | 2 | 1 | 1 | 0 | 1 | 0 | 0 | 0 |
| 55 | NW 46th St | US 75 HWY | NW Brickyard Rd | 0.21 | 9 | 6 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 65 | NW 62nd St | US 75 HWY | NW Landon Rd | 2.98 | 9 | 4 | 0 | 2 | 1 | 0 | 1 | 1 | 0 | 0 |
| 69 | NW 62nd St | NW Green Hills Rd | US 75 HWY | 1.48 | 9 | 5 | 2 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| 75 | NW 74th St | NW Topeka Blvd | NW Rochester Rd | 0.50 | 9 | 0 | 1 | 2 | 3 | 0 | 1 | 0 | 2 | 0 |
| 78 | NW 78th St | NW Rochester Rd | NW Wilson Rd | 1.48 | 9 | 0 | 2 | 2 | 2 | 0 | 1 | 0 | 2 | 0 |
| 80 | NW 82nd St | NW Topeka Blvd | NW Rochester Rd | 0.50 | 9 | 0 | 1 | 2 | 3 | 0 | 1 | 0 | 2 | 0 |
| 85 | NW 86th St | NW Wilson Rd | US 75 HWY | 0.99 | 9 | 0 | 0 | 3 | 2 | 0 | 2 | 0 | 2 | 0 |
| 87 | NW Brickyard Rd | NW 35th St | NW 25th St | 0.99 | 9 | 2 | 2 | 2 | 2 | 0 | 1 | 0 | 0 | 0 |
| 120 | NW Tibbs Rd | NW 70th St | NW Hoch Rd | 0.87 | 9 | 0 | 0 | 2 | 2 | 2 | 1 | 0 | 2 | 0 |
| 130 | SE 101st St | SE Shadden Rd | SE Paulen Rd | 2.99 | 9 | 0 | 0 | 3 | 2 | 0 | 1 | 2 | 1 | 0 |
| 149 | SE 45th St | SE Shawnee Heights Rd | SE Croco Rd | 3.12 | 9 | 6 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 151 | SE 45th St | SE Berryton Rd | SE California Ave | 1.00 | 9 | 6 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 |
| 153 | SE 45th St | Topeka CL | SW Burlingame Rd | 0.40 | 9 | 5 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 0 |
| 154 | SE 45th St | Shawnee/Douglas County Line | SE Shawnee Heights Rd | 3.00 | 9 | 6 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 |
| 158 | SE Ratner Rd | SE 53rd St | SE 61st St | 1.01 | 9 | 2 | 1 | 1 | 2 | 0 | 1 | 0 | 2 | 0 |
| 183 | SE Croco Rd | SE 45th St | SE 61st St | 1.99 | 9 | 0 | 2 | 0 | 2 | 0 | 1 | 3 | 1 | 0 |
| 198 | SE Shadden Rd | SE 89th St | Shawnee/Osage County Line | 3.42 | 9 | 1 | 0 | 3 | 2 | 0 | 1 | 2 | 0 | 0 |
| 205 | SE Stanley Rd | SE 53rd St | SE 61st St | 1.00 | 9 | 0 | 1 | 1 | 2 | 2 | 1 | 0 | 2 | 0 |
| 206 | SE Stanley Rd | SE 45th St | SE 53rd St | 1.01 | 9 | 0 | 1 | 3 | 2 | 0 | 1 | 0 | 2 | 0 |
| 207 | SE Stubbs Rd | SE 29th St | SE 45th St | 2.00 | 9 | 0 | 1 | 3 | 2 | 0 | 1 | 0 | 2 | 0 |
| 229 | SW 29th St/SW Hodges Rd | K 4 HWY | SW Hodges Rd | 1.49 | 9 | 0 | 2 | 1 | 0 | 0 | 2 | 3 | 1 | 0 |
| 230 | SW 29th St | SE Indian Hills Rd | SW Auburn Rd | 0.99 | 9 | 6 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 246 | SE 61st St | SE Berryton Rd | SE California Ave | 1.00 | 9 | 2 | 0 | 3 | 2 | 0 | 1 | 0 | 1 | 0 |
| 274 | SW Glick Rd | SW 13th St | SW 29th St | 2.00 | 9 | 1 | 1 | 3 | 2 | 0 | 2 | 0 | 0 | 0 |
| 286 | SW Topeka Blvd | SW 49th St | SW 57th St | 1.00 | 9 | 6 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 |
| 1 | E Railroad Ave | NW Hoch Rd | US 24 HWY | 0.27 | 8 | 2 | 0 | 1 | 2 | 2 | 1 | 0 | 0 | 0 |
| 8 | NE 43rd St | NE Meriden Rd | NE Wenonah Rd | 0.62 | 8 | 2 | 2 | 1 | 2 | 0 | 1 | 0 | 0 | 0 |
| 21 | NE 82nd St | NE Brown Rd | NE Sherman Rd | 0.89 | 8 | 4 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 |
| 24 | NE Brown Rd | Shawnee/Jackson County Line | NE 82nd St | 1.72 | 8 | 0 | 0 | 2 | 1 | 2 | 1 | 0 | 2 | 0 |
| 37 | NE Seward Ave | K 4 HWY | NE Croco Rd | 0.34 | 8 | 5 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 |
| 64 | NW 54th St | US 24 HWY | NW Maple Hill Rd | 3.18 | 8 | 0 | 0 | 1 | 2 | 2 | 1 | 2 | 0 | 0 |
| 66 | NW 62nd St/NW Oldham Rd | US 24 HWY | NW Maple Hill Rd | 1.47 | 8 | 0 | 0 | 3 | 1 | 0 | 1 | 3 | 0 | 0 |
| 101 | NW Green Hills Rd | NW 94th St | 0.5 mi south NW 94th St | 0.51 | 8 | 0 | 2 | 2 | 1 | 0 | 1 | 0 | 2 | 0 |
| 105 | NW Huxman Rd/NW 17th St | Topeka CL | US 24 HWY | 3.43 | 8 | 3 | 0 | 1 | 1 | 0 | 1 | 2 | 0 | 0 |
| 117 | NW Rochester Rd | NW 94th St | NW 78th St | 2.01 | 8 | 0 | 2 | 1 | 1 | 0 | 1 | 3 | 0 | 0 |
| 150 | SE 45th St | SE Croco Rd | SE Berryton Rd | 0.99 | 8 | 6 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| 157 | SE 53rd St | SE Stubbs Rd | SE Shawnee Heights Rd | 2.00 | 8 | 0 | 1 | 2 | 2 | 2 | 1 | 0 | 0 | 0 |
| 195 | SE Paulen Rd | SE 101st St | SE 105th St | 0.51 | 8 | 2 | 0 | 1 | 3 | 0 | 2 | 0 | 0 | 0 |


| TSID | Segment Name | From | To | Length (mi) | Total Score | $\begin{aligned} & \text { ADT } \\ & \text { Score } \end{aligned}$ | Access Density Score | Edge Condition Score | Roadside Assessment Score | Roadway Width Score | Shoulder Width Score | Lane <br> Departure <br> Crash Rate <br> Score | Pavement <br> Markings <br> Score | Surface <br> Type <br> Score |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 221 | SW 10th St / SW Patton Rd | K 4 HWY | 1-70 | 2.30 | 8 | 0 | 1 | 3 | 3 | 0 | 1 | 0 | 0 | 0 |
| 264 | SW Burlingame Rd | SW 57th St | SW 61st St | 0.72 | 8 | 6 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| 266 | SW Burlingame Rd | SW 61st St | SW 77th St | 2.15 | 8 | 2 | 0 | 2 | 1 | 0 | 1 | 2 | 0 | 0 |
| 268 | SW Carlson Rd | 1-70 | SW 33rd St | 3.41 | 8 | 4 | 0 | 2 | 1 | 0 | 1 | 0 | 0 | 0 |
| 285 | SW Topeka Blvd | SW 57th St | SW Gary Ormsby Dr | 2.01 | 8 | 6 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| 287 | SW Topeka Blvd | US 75 HWY | Shawnee/Osage County Line | 2.37 | 8 | 6 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 295 | SW Wanamaker Rd | SW 77th St | SW 93rd St | 2.01 | 8 | 4 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 |
| 298 | SW Wanamaker Rd | SW 61st St | SW 77th St | 2.00 | 8 | 5 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 |
| 302 | NE 82nd St | NE Silver Rd | NE Brown Road | 0.61 | 8 | 4 | 1 | 0 | 1 | 0 | 0 | 2 | 0 | 0 |
| 297 | SW Wanamaker Rd | SW 53rd St | SW 61st St | 1.00 | 8 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 | NE 46th St | K 4 HWY | NE Meriden Rd | 1.91 | 7 | 5 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 16 | NE 62nd St | Shawnee/Jefferson County Line | NE Kincaid | 0.50 | 7 | 2 | 0 | 0 | 2 | 0 | 1 | 0 | 2 | 0 |
| 22 | NE 86th St | NE Marple Rd | NW Topeka Blvd | 0.50 | 7 | 0 | 1 | 2 | 1 | 0 | 1 | 0 | 2 | 0 |
| 57 | NW 46th St | NW Landon Rd | NW Huxman Rd | 1.20 | 7 | 3 | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 0 |
| 186 | SE Croco Rd | SE 29th St | SE 45th St | 1.99 | 7 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 76 | NW Nickell Rd | NW 78th St | NW 62nd St | 2.01 | 7 | 0 | 1 | 2 | 1 | 0 | 1 | 0 | 2 | 0 |
| 83 | NW 86th St | NW Hoch Rd | NW Capper Rd | 5.99 | 7 | 0 | 0 | 2 | 2 | 0 | 1 | 2 | 0 | 0 |
| 86 | NW 94th St | NE Marple Rd | NW Topeka Blvd | 0.59 | 7 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 2 | 0 |
| 92 | NW Button Rd | NW 35th St | NW Frontage Rd | 1.25 | 7 | 2 | 1 | 1 | 0 | 0 | 1 | 0 | 2 | 0 |
| 97 | NW Elmont / NW Railroad St | NW 66th St | NW 62nd St | 0.53 | 7 | 0 | 0 | 1 | 3 | 0 | 1 | 0 | 2 | 0 |
| 103 | NW Hoch Rd | NW 94th St | NW 60th St | 4.15 | 7 | 1 | 0 | 1 | 2 | 0 | 1 | 2 | 0 | 0 |
| 106 | NW Landon Rd | NW 62nd Rd | NW 46th St | 2.01 | 7 | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 1 | 0 |
| 107 | NW Landon Rd/NW 94th St | 04 Rd | NW 62nd St | 4.49 | 7 | 2 | 0 | 1 | 1 | 2 | 1 | 0 | 0 | 0 |
| 124 | NW Topeka Blvd | NW 46th St | NW 43rd St | 0.37 | 7 | 6 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 131 | SW 109th St | SW Burlingame Rd | SW Stewart Rd | 1.00 | 7 | 0 | 1 | 1 | 2 | 2 | 1 | 0 | 0 | 0 |
| 176 | SE Adams St | SE 45th St | SE 53rd St | 1.00 | 7 | 2 | 1 | 1 | 0 | 0 | 1 | 0 | 2 | 0 |
| 179 | SE California Ave | SE 45th St | SE 53rd St | 1.00 | 7 | 2 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 |
| 180 | SE California Ave | SE 53rd St | SE 61st St | 1.00 | 7 | 2 | 0 | 0 | 1 | 0 | 2 | 0 | 2 | 0 |
| 193 | SE Paulen Rd | SE 29th St | SE 45th St | 2.00 | 7 | 2 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 |
| 199 | SE Shawnee Heights Rd | SE 45th St | SE 61st St | 2.01 | 7 | 2 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 |
| 245 | SW 57th St | US 75 HWY | SW Burlingame Rd | 0.49 | 7 | 6 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 273 | SW Gary Ormsby Dr | SW Topeka Blvd | US 75 HWY | 1.23 | 7 | 6 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 283 | SW Stewart Rd | SW 103rd St | SW 109th St | 0.74 | 7 | 0 | 1 | 1 | 0 | 0 | 1 | 3 | 1 | 0 |
| 284 | SW Topeka Blvd | SW Gary Ormsby Dr | US 75 HWY | 1.87 | 7 | 6 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 294 | SW Valencia Rd | 1-70 | SW 13th St | 0.96 | 7 | 1 | 0 | 3 | 1 | 0 | 2 | 0 | 0 | 0 |
| 59 | NW 46th St | NW Topeka Blvd | NW Rochester Rd | 0.48 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 147 | SE 45th St | SE California Ave | SE Adams St | 1.01 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 152 | SE 45th St | Topeka CL | SE Adams St | 0.25 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 182 | SE Croco Rd | SE 6th St | SE 29th St | 2.01 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 224 | SW 21st St | SW Urish Rd | SW Indian Hills Rd | 0.91 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 227 | SW 29th St | SW Urish Rd | SW Indian Hills Rd | 0.90 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 228 | SW 29th St | SW Urish Rd | Topeka CL | 0.49 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 289 | SW Urish Rd | SW 10th St | SW 21st St | 1.48 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 296 | SW Wanamaker Rd | SW 47th St | SW 53rd St | 0.74 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13 | NE 54th St | NE Shaffer Rd | NE Meriden Rd | 1.00 | 6 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 2 | 0 |
| 52 | NW 46th St | NW Green Hill Rd | US 75 HWY | 1.46 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 53 | NW 46th St | NW Rochester Rd | NW Green Hills Rd (W) | 0.98 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 74 | NW 70th St/NW Docking Rd | NW Hoch Rd | NW 62nd St | 3.07 | 6 | 0 | 0 | 2 | 1 | 0 | 1 | 0 | 2 | 0 |



## APPENDIX K LRSP Intersection Risk Factor Scores

Shawnee County
Local Road Safety Plan
Intersection Risk Factor Points

| TSID | Intersection Name | Total <br> Score | $\begin{aligned} & \text { ADT } \\ & \text { Score } \end{aligned}$ | Access <br> Density <br> Score | Sight <br> Distance <br> Score | Horizontal Curvature Score | Crash Experience Score | Distance from Previous Stop Score | Skewed Approach Score | Intersection Control Score |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 19 | N Washington St \& E / W 14th St | 19 | 5 | 2 | 3 | 3 | 0 | 2 | 3 | 1 |
| 479 | SW Burlingame Rd \& SW 57th St | 19 | 6 | 1 | 3 | 3 | 0 | 2 | 3 | 1 |
| 93 | NW Brickyard Rd \& NW 62nd St | 18 | 4 | 2 | 3 | 3 | 0 | 2 | 3 | 1 |
| 211 | NW Menoken Rd \& NW 46th St | 18 | 5 | 1 | 3 | 3 | 0 | 2 | 3 | 1 |
| 263 | NW Topeka Blvd \& NW 43rd St | 17 | 6 | 2 | 0 | 3 | 0 | 2 | 3 | 1 |
| 631 | SW Urish Rd \& SW Fountaindale Rd | 17 | 5 | 2 | 3 | 3 | 0 | 0 | 3 | 1 |
| 257 | NW Topeka Blvd \& NW 62nd St | 17 | 5 | 2 | 3 | 0 | 0 | 3 | 3 | 1 |
| 478 | SW Burlingame Rd \& SW 53rd St | 16 | 5 | 2 | 3 | 3 | 0 | 2 | 0 | 1 |
| 212 | NW Menoken Rd (N) / NW Pipkin Rd \& NW 35th St | 16 | 2 | 2 | 3 | 3 | 0 | 2 | 3 | 1 |
| 551 | SW Indian Hills Rd / PI \& SW Blue Inn PI | 16 | 4 | 2 | 3 | 3 | 0 | 0 | 3 | 1 |
| 427 | SE Stubbs Rd \& SE 61st St | 16 | 1 | 2 | 3 | 3 | 0 | 3 | 3 | 1 |
| 476 | SW Burlingame Rd \& SW 45th St | 16 | 5 | 1 | 3 | 0 | 3 | 0 | 3 | 1 |
| 462 | SW Auburn Rd \& SW 61st St | 15 | 6 | 2 | 0 | 0 | 3 | 3 | 0 | 1 |
| 163 | NW Hoch Rd (N) \& NW 46th St | 15 | 3 | 2 | 0 | 3 | 0 | 3 | 3 | 1 |
| 456 | SW Auburn Rd \& SW 29th St | 14 | 6 | 2 | 0 | 0 | 3 | 2 | 0 | 1 |
| 616 | SW Topeka Blvd \& SW 93rd St | 14 | 5 | 2 | 0 | 0 | 3 | 3 | 0 | 1 |
| 468 | SW Auburn Rd \& SW 53rd St | 14 | 6 | 2 | 0 | 0 | 3 | 2 | 0 | 1 |
| 578 | SW Nottingham Rd \& SW 37th St | 14 | 5 | 2 | 3 | 3 | 0 | 0 | 0 | 1 |
| 103 | NW Button Rd \& NW 39th St | 14 | 2 | 1 | 3 | 3 | 0 | 2 | 3 | 0 |
| 65 | NE Meriden Rd (S) \& NE 35th St | 14 | 2 | 2 | 3 | 3 | 0 | 0 | 3 | 1 |
| 640 | SW Valencia Rd \& SW 57th St | 14 | 2 | 2 | 3 | 3 | 0 | 0 | 3 | 1 |
| 372 | SE Paulen Rd \& SE 93rd St | 14 | 3 | 2 | 3 | 3 | 0 | 2 | 0 | 1 |
| 486 | SW Burlingame Rd \& SW Lewelling Rd | 14 | 2 | 0 | 3 | 3 | 0 | 2 | 3 | 1 |
| 29 | NE Brian Rd / NE Meriden Rd (S) \& NE 46th St | 13 | 4 | 2 | 0 | 0 | 3 | 0 | 3 | 1 |
| 213 | NW Menoken Rd (S) \& NW 35th St | 13 | 2 | 2 | 3 | 3 | 0 | 0 | 3 | 0 |
| 63 | NE Meriden Rd (N) \& NE 35th St | 13 | 1 | 2 | 3 | 3 | 0 | 0 | 3 | 1 |
| 482 | SW Burlingame Rd \& SW 77th St | 13 | 3 | 1 | 3 | 3 | 0 | 2 | 0 | 1 |
| 288 | SE Arapaho Rd \& SE 2nd St | 13 | 1 | 2 | 3 | 3 | 0 | 0 | 3 | 1 |
| 90 | NW Brickyard Rd \& NW 46th St | 12 | 6 | 2 | 0 | 0 | 0 | 3 | 0 | 1 |
| 251 | NW Topeka Blvd \& NW 35th St | 12 | 6 | 2 | 0 | 0 | 3 | 0 | 0 | 1 |
| 650 | SW Wanamaker Rd \& SW 47th St (E) | 12 | 6 | 2 | 0 | 0 | 3 | 0 | 0 | 1 |
| 310 | SE Croco Rd \& SE 23rd Ter | 12 | 6 | 2 | 0 | 0 | 3 | 0 | 0 | 1 |
| 570 | SW Montara Pkwy \& Gary Ormsby Dr | 12 | 5 | 0 | 3 | 3 | 0 | 0 | 0 | 1 |
| 397 | SE Shawnee Heights Rd \& SE 29th St | 12 | 4 | 2 | 0 | 0 | 0 | 2 | 3 | 1 |
| 169 | NW Humphey Rd \& NW 66th St | 12 | 1 | 1 | 3 | 3 | 0 | 0 | 3 | 1 |
| 12 | N Kansas Ave \& NE 35th St | 12 | 3 | 2 | 0 | 3 | 0 | 0 | 3 | 1 |
| 641 | SW Valencia Rd \& SW 61st St | 12 | 2 | 0 | 3 | 3 | 0 | 0 | 3 | 1 |
| 26 | SW Auburn Rd \& SW 93rd St | 12 | 4 | 1 | 0 | 0 | 0 | 3 | 3 | 1 |
| 449 | SE Ward Rd / SE Stanley Rd \& SE 29th St | 12 | 0 | 0 | 3 | 3 | 0 | 2 | 3 | 1 |
| 606 | SW Topeka Blvd \& SE / SW 97th St | 12 | 5 | 1 | 3 | 0 | 0 | 2 | 0 | 1 |
| 615 | SW Topeka Blvd \& SE University Blvd | 12 | 6 | 0 | 3 | 0 | 3 | 0 | 0 | 0 |
| 283 | SE Adams St \& SE 45th St | 11 | 6 | 2 | 0 | 0 | 3 | 0 | 0 | 0 |
| 655 | SW Wanamaker Rd \& SW 61st St | 11 | 6 | 2 | 0 | 0 | 0 | 3 | 0 | 0 |
| 226 | NW Rochester Rd \& NW 35th St | 11 | 6 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 401 | SE Shawnee Heights Rd \& SE 45th St | 11 | 5 | 2 | 0 | 0 | 0 | 3 | 0 | 1 |
| 605 | SW Topeka Blvd \& SE / SW 53rd St | 11 | 6 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 458 | SW Auburn Rd \& SW 37th St | 11 | 6 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 319 | SE Croco Rd \& SE 35th St | 11 | 5 | 2 | 0 | 0 | 3 | 0 | 0 | 1 |
| 632 | SW Urish Rd \& SW Hamptonshire Ln | 11 | 5 | 2 | 0 | 0 | 3 | 0 | 0 | 1 |
| 307 | SE Croco Rd \& SE Sycamore Dr | 11 | 6 | 1 | 0 | 0 | 3 | 0 | 0 | 1 |
| 66 | NE Rice Rd \& NE Seward Ave | 11 | 5 | 2 | 0 | 0 | 3 | 0 | 0 | 1 |
| 113 | NW Capper Rd \& NW 78th St | 11 | 3 | 1 | 3 | 3 | 0 | 0 | 0 | 1 |
| 249 | NW Tibbs Rd \& NW 62nd St | 11 | 2 | 2 | 3 | 3 | 0 | 0 | 0 | 1 |
| 196 | NW Landon Rd \& NW 94th St | 11 | 1 | 0 | 3 | 3 | 0 | 0 | 3 | 1 |
| 135 | NW Elmont Rd \& NW 62nd St | 11 | 4 | 1 | 0 | 0 | 0 | 2 | 3 | 1 |
| 264 | NW Topeka Blvd \& NW 94th St | 11 | 3 | 1 | 3 | 3 | 0 | 0 | 0 | 1 |
| 74 | NE Silver Rd \& NE 70th St | 11 | 2 | 2 | 3 | 3 | 0 | 0 | 0 | 1 |
| 46 | NE Kimbal Rd \& NE 35th St | 11 | 2 | 2 | 3 | 3 | 0 | 0 | 0 | 1 |
| 507 | SW Eagle Ridge Ln \& SW 10th St | 11 | 3 | 1 | 3 | 3 | 0 | 0 | 0 | 1 |


| TSID | Intersection Name | Total <br> Score | $\begin{aligned} & \text { ADT } \\ & \text { Score } \end{aligned}$ | Access <br> Density <br> Score | Sight <br> Distance Score | Horizontal Curvature Score | Crash Experience Score | Distance from Previous Stop Score | Skewed <br> Approach Score | Intersection Control Score |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 467 | SW Auburn Rd \& SW 33rd St | 11 | 6 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 425 | SE Stubbs Rd \& SE 45th St | 11 | 5 | 2 | 0 | 0 | 0 | 3 | 0 | 1 |
| 363 | SE Paulen Rd \& SE 101st St | 11 | 1 | 1 | 3 | 3 | 0 | 2 | 0 | 1 |
| 315 | SE Croco Rd \& SE 29th St | 10 | 6 | 2 | 0 | 0 | 0 | 2 | 0 | 0 |
| 611 | SW Topeka Blvd \& SE Airport Dr | 10 | 6 | 0 | 0 | 0 | 3 | 0 | 0 | 1 |
| 230 | NW Rochester Rd \& NW 46th St | 10 | 6 | 2 | 0 | 0 | 0 | 2 | 0 | 0 |
| 111 | NW Button Rd (N) \& NW 46th St | 10 | 6 | 1 | 0 | 0 | 0 | 2 | 0 | 1 |
| 450 | SE West Edge Rd / SE Berryton Rd \& SE 45th St | 10 | 6 | 2 | 0 | 0 | 0 | 2 | 0 | 0 |
| 231 | NW Rochester Rd \& NW 50th St | 10 | 5 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 538 | SW Indian Hills Rd \& SW 21st St | 10 | 6 | 2 | 0 | 0 | 0 | 2 | 0 | 0 |
| 152 | NW Green Hills Rd (N) \& NW 46th St | 10 | 6 | 1 | 0 | 0 | 0 | 2 | 0 | 1 |
| 652 | SW Wanamaker Rd \& SW 53rd St | 10 | 6 | 2 | 0 | 0 | 0 | 2 | 0 | 0 |
| 327 | SE Croco Rd \& SE 6th St | 10 | 6 | 2 | 0 | 0 | 0 | 2 | 0 | 0 |
| 228 | NW Rochester Rd \& NW 39th St | 10 | 5 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 624 | SW Urish Rd \& SW 33rd St | 10 | 5 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 607 | SW Topeka Blvd \& SE 58th St | 10 | 6 | 0 | 0 | 0 | 3 | 0 | 0 | 1 |
| 441 | SE Tecumseh Rd \& SE 45th St | 10 | 5 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 33 | NE Croco Rd \& NE Seward Ave | 10 | 5 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 619 | SW Urish Rd \& SW 10th Ave / St | 10 | 6 | 1 | 0 | 0 | 0 | 2 | 0 | 1 |
| 292 | SE Berryton Rd \& SE 53rd St | 10 | 4 | 2 | 0 | 0 | 3 | 0 | 0 | 1 |
| 325 | SE Croco Rd \& SE 61st St | 10 | 2 | 2 | 0 | 0 | 3 | 2 | 0 | 1 |
| 436 | SE Tecumseh Rd \& SE 29th St | 10 | 5 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 21 | N Washington St \& E / W 8th St | 10 | 4 | 2 | 0 | 0 | 0 | 3 | 0 | 1 |
| 367 | SE Paulen Rd \& SE 45th St | 10 | 5 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 316 | SE Croco Rd \& SE 2nd St | 10 | 4 | 2 | 0 | 0 | 0 | 3 | 0 | 1 |
| 365 | SE Paulen Rd \& SE 29th St | 10 | 5 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 2 | Main St \& Anderson St | 10 | 4 | 2 | 0 | 0 | 0 | 0 | 3 | 1 |
| 80 | NW 60th St \& NW 62nd St | 10 | 2 | 1 | 3 | 3 | 0 | 0 | 0 | 1 |
| 168 | NW Humphey Rd \& NW 62nd St | 10 | 1 | 2 | 3 | 3 | 0 | 0 | 0 | 1 |
| 522 | SW Glick Rd \& SW 13th St | 10 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 |
| 72 | NE Sherman Rd \& NE 46th St | 10 | 4 | 2 | 0 | 3 | 0 | 0 | 0 | 1 |
| 64 | NE Meriden Rd ( N ) \& NE 46th St | 10 | 4 | 2 | 0 | 0 | 0 | 3 | 0 | 1 |
| 35 | NE Indian Creek Rd \& NE 43rd St | 10 | 1 | 2 | 3 | 3 | 0 | 0 | 0 | 1 |
| 79 | NE Wenonah Rd \& NE 43rd St | 10 | 1 | 2 | 3 | 3 | 0 | 0 | 0 | 1 |
| 580 | SW Patton Rd \& SW 10th St | 10 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 |
| 513 | SW Fairlawn Rd \& SW 53rd St | 10 | 5 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 496 | SW Crawford Rd \& SW 77th St | 10 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 |
| 17 | N School St \& W 8th St | 10 | 4 | 2 | 3 | 0 | 0 | 0 | 0 | 1 |
| 517 | SW Gage Blvd \& SW 49th St | 10 | 4 | 2 | 0 | 0 | 0 | 0 | 3 | 1 |
| 477 | SW Burlingame Rd \& SW 49th St | 10 | 5 | 1 | 0 | 0 | 0 | 0 | 3 | 1 |
| 552 | SW Innovation Pkwy \& SW Gary Ormsby Dr | 10 | 5 | 1 | 3 | 0 | 0 | 0 | 0 | 1 |
| 432 | SE Tecumseh Rd \& SE 10th St | 10 | 2 | 2 | 3 | 0 | 0 | 0 | 3 | 0 |
| 409 | SE Shawnee Heights Rd \& SE Pueblo PI | 10 | 4 | 2 | 0 | 0 | 0 | 0 | 3 | 1 |
| 596 | SW Stewart Rd \& SW 103rd St | 10 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 |
| 553 | SW Jordan Rd \& SE 103rd St | 10 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 |
| 555 | SW Jordan Rd \& SW 97th St | 10 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 |
| 352 | SE Green Rd \& SE Shadden Rd | 10 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 1 |
| 262 | NW Topeka Blvd \& NW Menninger Rd | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 558 | SW Kingsrow Rd (N) \& SW 29th St | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 438 | SE Tecumseh Rd \& SE 37th St | 9 | 4 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 252 | NW Topeka Blvd \& NW 39th St | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 323 | SE Croco Rd \& SE 45th St | 9 | 6 | 1 | 0 | 0 | 0 | 2 | 0 | 0 |
| 234 | NW Rochester Rd \& NW 62nd St | 9 | 4 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 37 | NE Indian Creek Rd \& NE 62nd St | 9 | 4 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 566 | SW Maxfield Rd \& SW 29th St | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 459 | SW Auburn Rd \& SW 45th St | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 336 | SE Croco Rd \& SE Howard Dr | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 260 | NW Topeka Blvd \& NW 82nd St | 9 | 3 | 2 | 0 | 0 | 0 | 3 | 0 | 1 |
| 240 | NW Rochester Rd \& NW Menninger Rd | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |

Shawnee County
Local Road Safety Plan
Intersection Risk Factor Points

| TSID | Intersection Name | Total <br> Score | ADT <br> Score | Access <br> Density <br> Score | Sight <br> Distance <br> Score | Horizontal Curvature Score | Crash Experience Score | Distance from Previous Stop Score | Skewed Approach Score | Intersection Control Score |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 651 | SW Wanamaker Rd \& SW 47th St (W) | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 301 | SE California Ave \& SE 53rd St | 9 | 4 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 398 | SE Shawnee Heights Rd \& SE 37th St | 9 | 4 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 242 | NW Rossville Rd \& NW 62nd St | 9 | 4 | 1 | 0 | 0 | 0 | 3 | 0 | 1 |
| 245 | NW Rossville Rd/ Main St \& NW 54th St | 9 | 4 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 108 | NW Button Rd \& NW 62nd St | 9 | 4 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 258 | NW Topeka Blvd \& NW 66th St | 9 | 3 | 2 | 0 | 0 | 3 | 0 | 0 | 1 |
| 185 | NW Kendall Dr \& NW 46th St | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 247 | NW Stinson Rd \& NW 35th St | 9 | 3 | 2 | 0 | 0 | 3 | 0 | 0 | 1 |
| 621 | SW Urish Rd \& SW 18th St | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 587 | SW Romar Rd \& SW 29th St | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 455 | SW Asbury Dr \& SW 29th St | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 541 | SW Indian Hills Rd \& SW 53rd St | 9 | 4 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 627 | SW Urish Rd \& SW 53rd St | 9 | 4 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 415 | SE Stanley Rd \& SE 45th St | 9 | 5 | 1 | 0 | 0 | 0 | 2 | 0 | 1 |
| 452 | SE Wisconsin Ave \& SE 45th St | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 362 | SE Oakview Ln \& SE 45th St | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 313 | SE Croco Rd \& SE 27th St | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 312 | SE Croco Rd \& SE 25th St | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 164 | NW Hoch Rd (S) \& NW 46th St | 9 | 3 | 2 | 0 | 3 | 0 | 0 | 0 | 1 |
| 272 | NW Valley Rd \& NW 46th St | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 215 | NW Netherland Dr \& NW 46th St | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 214 | NW Mission Rd \& NW 46th St | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 221 | NW Pottawatomie Rd / NW Hiawatha PI \& NW 46th St | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 95 | NW Brickyard Rd \& NW Beecher Rd | 9 | 3 | 2 | 3 | 0 | 0 | 0 | 0 | 1 |
| 174 | NW Huxman Rd \& NW 17th St | 9 | 1 | 1 | 0 | 3 | 0 | 0 | 3 | 1 |
| 265 | NW Valencia Rd \& NW 13th St | 9 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 0 |
| 137 | NW Elmont Rd \& NW Railroad St | 9 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 0 |
| 148 | NW Green Hills Rd \& NW 62nd St | 9 | 4 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 216 | NW Nickell Rd \& NW 62nd St | 9 | 4 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 60 | NE Meriden Rd \& NE 62nd St | 9 | 4 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 42 | NE Indian Creek Rd \& NE 94th St | 9 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 0 |
| 49 | NE Kincaid Rd \& NE 46th St | 9 | 4 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 153 | NW Green Hills Rd (S) \& NW 46th St | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 599 | SW Stutley Rd \& SW 21st St | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 588 | SW Rother Rd \& SW 29th St | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 600 | SW Stutley Rd \& SW 29th St | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 595 | SW Staffordshire Rd \& SW 29th St | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 519 | SW Gainsboro Rd \& SW 29th St | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 618 | SW Tutbury Town Rd \& SW 29th St | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 548 | SW Indian Hills Rd \& SW Oxfordshire Rd | 9 | 3 | 2 | 3 | 0 | 0 | 0 | 0 | 1 |
| 546 | SW Indian Hills Rd \& SW Falcon St / SW 37th St | 9 | 3 | 2 | 0 | 0 | 0 | 0 | 3 | 1 |
| 534 | SW Indian Hills PI \& SW 37th St | 9 | 3 | 2 | 0 | 0 | 0 | 0 | 3 | 1 |
| 460 | SW Auburn Rd \& SW 46th St | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 461 | SW Auburn Rd \& SW 51st St | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 480 | SW Burlingame Rd \& SW 61st St | 9 | 5 | 1 | 0 | 0 | 0 | 2 | 0 | 1 |
| 371 | SE Paulen Rd \& SE 89th St | 9 | 2 | 0 | 3 | 3 | 0 | 0 | 0 | 1 |
| 473 | SW Burch Rd \& SW 45th St | 9 | 3 | 2 | 0 | 0 | 0 | 0 | 3 | 1 |
| 617 | SW Topeka Blvd \& SW Sanneman Dr | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 293 | SE Berryton Rd \& SE 61st St | 9 | 3 | 2 | 0 | 0 | 0 | 3 | 0 | 1 |
| 360 | SE Minnesota Ave \& SE 45th St | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 359 | SE Michigan Ave \& SE 45th St | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 314 | SE Croco Rd \& SE 28th St | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 311 | SE Croco Rd \& SE 24th Ter | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 309 | SE Croco Rd \& SE 22nd Ter | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 330 | SE Croco Rd \& SE 8th St | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 457 | SW Auburn Rd \& SW 30th St | 9 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 613 | SW Topeka Blvd \& SE Gary Ormbsy Dr | 8 | 6 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| 253 | NW Topeka Blvd \& NW 46th St | 8 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |

Shawnee County
Local Road Safety Plan
Intersection Risk Factor Points

| TSID | Intersection Name | Total <br> Score | ADT <br> Score | Access <br> Density <br> Score | Sight <br> Distance Score | Horizontal Curvature Score | Crash Experience Score | Distance from Previous Stop Score | Skewed <br> Approach Score | Intersection Control Score |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 614 | SW Topeka Blvd \& SW 49th St | 8 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 623 | SW Urish Rd \& SW 29th St | 8 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 420 | SE Starlite Dr \& SE 29th St | 8 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 518 | SW Gage Blvd \& SW 53rd St | 8 | 4 | 1 | 0 | 0 | 0 | 2 | 0 | 1 |
| 511 | SW Fairlawn Rd \& SW 61st St | 8 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 484 | SW Burlingame Rd \& SW 93rd St | 8 | 2 | 0 | 0 | 0 | 3 | 2 | 0 | 1 |
| 347 | SE Gemstone Ln \& SE 45th St | 8 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 321 | SE Croco Rd \& SE 37th St | 8 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 317 | SE Croco Rd \& SE 30th Ter | 8 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 205 | NW Maple Hill Rd \& NW 62nd St | 8 | 2 | 2 | 0 | 0 | 0 | 3 | 0 | 1 |
| 68 | NE Shaffer Rd \& NE 46th St | 8 | 4 | 1 | 0 | 0 | 0 | 2 | 0 | 1 |
| 138 | NW Fielding Rd \& NW 46th St | 8 | 6 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| 229 | NW Rochester Rd \& NW 43rd St | 8 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 620 | SW Urish Rd \& SW 17th St | 8 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 471 | SW Berkshire Dr \& SW 29th St | 8 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 539 | SW Indian Hills Rd \& SW 29th St | 8 | 6 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 472 | SW Bingham Rd \& SW 29th St | 8 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 454 | SW Ancaster Rd \& SW 29th St | 8 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 487 | SW Cannock Chase Rd \& SW 29th St | 8 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 654 | SW Wanamaker Rd \& SW 58th St | 8 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 516 | SW Gage Blvd \& SW 45th St | 8 | 4 | 1 | 0 | 0 | 0 | 2 | 0 | 1 |
| 357 | SE McMahan Ct \& SE 45th St | 8 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 361 | SE Oak Bend Dr \& SE 45th St | 8 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 421 | SE Stone Creek Rd \& SE 45th St | 8 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 318 | SE Croco Rd \& SE 31st St | 8 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 308 | SE Croco Rd \& SE 21st St | 8 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 114 | NW Capper Rd \& NW 86th St | 8 | 3 | 1 | 0 | 0 | 0 | 3 | 0 | 1 |
| 491 | SW Carlson Rd \& SW 33rd St | 8 | 3 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 158 | NW Hoch Rd \& NW 62nd St | 8 | 3 | 1 | 0 | 0 | 0 | 3 | 0 | 1 |
| 206 | NW Meadowcrest Rd \& NW 46th St | 8 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 181 | NW Jennings Rd \& NW 46th St | 8 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 140 | NW Geronimo Trl \& NW 46th St | 8 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 98 | NW Brickyard Rd \& NW Sioux Ln | 8 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 86 | NW Brickyard Rd \& NW 35th St | 8 | 3 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 189 | NW Landon Rd \& NW 25th St | 8 | 1 | 1 | 0 | 3 | 0 | 0 | 3 | 0 |
| 55 | NE Marple Rd \& NE/NW 82nd St | 8 | 3 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 202 | NW Levering Dr \& NW 46th St | 8 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 112 | NW Button Rd (S) \& NW 46th St | 8 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 634 | SW Urish Rd \& SW Red Oaks Pl | 8 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 560 | SW Lagito Dr \& SW 29th St | 8 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 525 | SW Herefordshire Rd \& SW 29th St | 8 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 505 | SW Dukeries Rd \& SW 29th St | 8 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 602 | SW Tallgrass Dr \& SW 29th St | 8 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 636 | SW Urish Rd \& SW Wentley Ln | 8 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 635 | SW Urish Rd \& SW Scathelock Rd | 8 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 630 | SW Urish Rd \& SW Finsbury Ave | 8 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 637 | SW Urish Rd \& Swonthold Rd | 8 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 592 | SW Sherwood Cr \& SW Nottingham Rd | 8 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 298 | SE Berryton Rd \& SE 93rd St | 8 | 3 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 430 | SE Stubbs Rd \& SE 89th St | 8 | 2 | 2 | 0 | 0 | 0 | 3 | 0 | 1 |
| 658 | SW Wanamaker Rd \& SW 85th St | 8 | 3 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 653 | SW Wanamaker Rd \& SW 57th St | 8 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 381 | SE Ratner Rd \& SE 53rd St | 8 | 2 | 2 | 0 | 0 | 0 | 3 | 0 | 1 |
| 382 | SE Ratner Rd \& SE 61st St | 8 | 3 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 297 | SE Berryton Rd \& SE 85th St | 8 | 3 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 287 | SE Anno Dr \& SE 45th St | 8 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 343 | SE Dupont Rd \& SE 45th St | 8 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 356 | SE Maryland Ave \& SE 45th St | 8 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 377 | SE Pennsylvania Ave \& SE 45th St | 8 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |

Shawnee County
Local Road Safety Plan
Intersection Risk Factor Points

| TSID | Intersection Name | Total <br> Score | ADT Score | Access <br> Density <br> Score | Sight Distance Score | Horizontal Curvature Score | Crash Experience Score | Distance from Previous Stop Score | Skewed Approach Score | Intersection Control Score |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 322 | SE Croco Rd \& SE 39th St | 8 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 320 | SE Croco Rd \& SE 36th St | 8 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 339 | SE Downing Rd \& SE 29th St | 8 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 393 | SE Shawnee Dr \& SE 29th St | 8 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 290 | SE Bennett Dr \& SE 29th St | 8 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 338 | SE Cuvier St \& SE 29th St | 8 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 346 | SE Faxon Dr \& SE 29th St | 8 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 286 | SE Allen Dr \& SE 29th St | 8 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 411 | SE Shawnee Heights Rd \& SE Ward Rd | 8 | 3 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 644 | SW Vawter Dr \& SW 107th St | 8 | 1 | 0 | 3 | 3 | 0 | 0 | 0 | 1 |
| 227 | NW Rochester Rd \& NW 37th St | 8 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 648 | SW Wanamaker Rd \& N Washburn Rural MS Entrance | 8 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 282 | Washburn Rural MS Entrance \& SW 61st St | 8 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 173 | NW Hunters Ridge Dr / NW Oakley Ave \& NW 46th St | 7 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 333 | SE Croco Rd \& SE Cyprus Dr | 7 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 256 | NW Topeka Blvd \& NW 58th St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 376 | SE Peck Rd \& SE 29th St | 7 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 224 | NW Redwood Dr \& NW 46th St | 7 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 102 | NW Button Rd \& NW 35th St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 142 | NW Green Hills Rd \& NW 35th St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 255 | NW Topeka Blvd \& NW 50th St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 628 | SW Urish Rd \& SW 61st St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 334 | SE Croco Rd \& SE East Edge Rd | 7 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 659 | SW Wanamaker Rd \& SW 93rd St | 7 | 3 | 1 | 0 | 0 | 0 | 2 | 0 | 1 |
| 608 | SW Topeka Blvd \& SE 61st St | 7 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 345 | SE East Edge Rd \& SE 45th St | 7 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 120 | NW Church Ln \& NW 62nd St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 77 | NE Silver Rd \& NE 82nd St | 7 | 3 | 0 | 0 | 0 | 0 | 3 | 0 | 1 |
| 184 | NW Kendall Ave \& NW 35th St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 535 | SW Indian Hills Rd \& SW 10th St | 7 | 3 | 1 | 0 | 0 | 0 | 2 | 0 | 1 |
| 567 | SW Millers Glen Dr \& SW 21st St | 7 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 591 | SW Santa Fe Cir \& SW 29th St | 7 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 542 | SW Indian Hills Rd \& SW 61st St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 497 | SW Crawford Rd (E) \& SW 89th St | 7 | 3 | 1 | 0 | 0 | 0 | 2 | 0 | 1 |
| 464 | SW Auburn Rd \& SW 77th St | 7 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 296 | SE Berryton Rd \& SE 77th St | 7 | 3 | 1 | 0 | 0 | 0 | 2 | 0 | 1 |
| 332 | SE Croco Rd \& SE Beach Ter | 7 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 448 | SE Walnut Dr \& SE 29th St | 7 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 625 | SW Urish Rd \& SW 41st St | 7 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 520 | SW Gamwell Rd \& SW 41st St | 7 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 4 | Main St \& Edna St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 5 | Main St \& Hesse Rd | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | Main St \& Marion St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 9 | Main St \& Pottawatomie St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 8 | Main St \& Perry St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 1 | Main St \& Adrian St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 7 | Main St \& Parkway St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 3 | Main St \& Ash St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 132 | NW Docking Rd \& NW 62nd St | 7 | 3 | 1 | 0 | 0 | 0 | 2 | 0 | 1 |
| 271 | NW Valencia Rd (S) \& NW 70th St | 7 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 1 |
| 270 | NW Valencia Rd (N) \& NW 70th St | 7 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 1 |
| 99 | NW Brickyard Rd \& NW Timber Edge Dr | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 92 | NW Brickyard Rd \& NW 53rd Ter | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 91 | NW Brickyard Rd \& NW 52nd St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 94 | NW Brickyard Rd \& NW Apache Trl | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 97 | NW Brickyard Rd \& NW Pocahontas Rd / NW 47th St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 208 | NW Menoken Rd \& NW 25th St | 7 | 3 | 1 | 0 | 0 | 0 | 2 | 0 | 1 |
| 40 | NE Indian Creek Rd \& NE 82nd St | 7 | 3 | 1 | 0 | 0 | 0 | 2 | 0 | 1 |
| 30 | NE Brown Rd \& NE 82nd St | 7 | 3 | 1 | 0 | 0 | 0 | 2 | 0 | 1 |

Shawnee County
Local Road Safety Plan
Intersection Risk Factor Points

| TSID | Intersection Name | Total <br> Score | ADT <br> Score | Access <br> Density <br> Score | Sight <br> Distance <br> Score | Horizontal Curvature Score | Crash Experience Score | Distance from Previous Stop Score | Skewed <br> Approach Score | Intersection Control Score |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 76 | NE Silver Rd \& NE 78th St | 7 | 2 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 75 | NE Silver Rd \& NE 74th St | 7 | 2 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 54 | NE Liggett Ln \& NE 46th St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 83 | NW Bent Tree Ln \& NW 35th St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 187 | NW King Ct / NW Fredith Rd \& NW 35th St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 130 | NW Dawdy Dr \& NW 35th St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 58 | NE Meriden Rd \& NE 43rd St | 7 | 2 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 15 | N Kansas Ave \& NW Menninger Rd | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 662 | SW Westside Dr \& SW 10th St | 7 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 1 |
| 660 | SW West Trail Rd \& SW 21st St | 7 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 569 | SW Mission Hills Rd \& SW 21st St | 7 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 593 | SW Sherwood Park Dr \& SW 29th St | 7 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 646 | SW Vorse Rd \& SW 53rd St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 562 | SW Lincolnshire Cir \& SW 53rd St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 661 | SW Westport Dr \& SW 53rd St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 603 | SW Timber Ridge Ln \& SW 53rd St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 557 | SW Kent PI \& SW 53rd St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 586 | SW Randolph Ave \& SW 57th St | 7 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 582 | Shawnee Hills East Driveway \& SW 61st St | 7 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 647 | SW Vorse Rd \& SW 61st St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 16 | N Milton St \& W 8th St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 22 | N Washington St \& E / W 9th St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 18 | N Washington St \& E / W 11th St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 20 | N Washington St \& E/ W 6th St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 465 | SW Auburn St \& SW 103rd St | 7 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 550 | SW Indian Hills Rd (N) \& SW 93rd St | 7 | 2 | 1 | 3 | 0 | 0 | 0 | 0 | 1 |
| 391 | SE Shadden Rd \& SE 89th St | 7 | 1 | 2 | 0 | 0 | 0 | 3 | 0 | 1 |
| 575 | SW Morrill Rd \& SW Gary Ormsby Dr / SW 77th St | 7 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 368 | SE Paulen Rd \& SE 53rd St | 7 | 2 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 402 | SE Shawnee Heights Rd \& SE 53rd St | 7 | 2 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 369 | SE Paulen Rd \& SE 61st St | 7 | 2 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 294 | SE Berryton Rd \& SE 69th St (E) | 7 | 2 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 375 | SE Pawnee Dr \& SE 45th St | 7 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 358 | SE Meadowview Dr \& SE 29th St | 7 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 299 | SE Burton St \& SE 29th St | 7 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 405 | SE Shawnee Heights Rd \& SE Commanche Dr | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 410 | SE Shawnee Heights Rd \& SE Tomahawk Dr | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 407 | SE Shawnee Heights Rd \& SE North Driveway | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 399 | SE Shawnee Heights Rd \& SE 43rd St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 406 | SE Shawnee Heights Rd \& SE Middle Driveway | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 408 | SE Shawnee Heights Rd \& SE South Driveway | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 400 | SE Shawnee Heights Rd \& SE 44th St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 597 | SW Stewart Rd \& SW 109th St | 7 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 1 |
| 494 | SW Coker Rd \& SW Jordan Rd | 7 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 1 |
| 394 | SE Shawnee Heighs Rd \& SE 105th St | 7 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 1 |
| 389 | SE Shadden Rd \& SE 101st St | 7 | 1 | 0 | 3 | 0 | 0 | 2 | 0 | 1 |
| 392 | SE Shadden Rd \& SE Camp Creek Rd | 7 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 1 |
| 239 | NW Rochester Rd \& NW 94th St | 7 | 2 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 32 | NE Croco Rd \& NE 46th St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 273 | NW Westbrooke Dr \& NW 62nd St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 220 | NW North Hills Dr \& NW 62nd St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 141 | NW Glenwood Dr \& NW 62nd St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 540 | SW Indian Hills Rd \& SW 41st St | 7 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 590 | SW Royal Ln \& SW 41st St | 7 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 564 | SW Marlboro Rd \& SW 41st St | 7 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 612 | SW Topeka Blvd \& SW 57th St | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 366 | SE Paulen Rd \& SE 37th St | 6 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 508 | SW El Cerrito Dr / SW Indian Hills Rd \& SW 33rd St | 6 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 284 | SE Adams St \& SE 53rd St | 6 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |

Shawnee County
Local Road Safety Plan
Intersection Risk Factor Points

| TSID | Intersection Name | Total <br> Score | ADT Score | Access <br> Density <br> Score | Sight <br> Distance <br> Score | Horizontal Curvature Score | Crash Experience Score | Distance from Previous Stop Score | Skewed Approach Score | Intersection Control Score |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 633 | SW Urish Rd \& SW Huntoon St | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 254 | NW Topeka Blvd \& NW 48th Ter | 6 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 10 | N Commercial St \& W 8th St | 6 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 24 | N Washington St \& Park Dr | 6 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 657 | SW Wanamaker Rd \& SW 77th St | 6 | 3 | 0 | 0 | 0 | 0 | 2 | 0 | 1 |
| 573 | SW Morrill Rd \& SW 69th St | 6 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 426 | SE Stubbs Rd \& SE 53rd St | 6 | 1 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 601 | SW Stutley Rd \& SW 41st St | 6 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 115 | NW Carlson Rd \& NW 33rd St (E) | 6 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 157 | NW Hoch Rd \& NW 54th St | 6 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 165 | NW Hoch Rd / S Rice Rd \& E Railroad Ave | 6 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 178 | NW Huxman Rd \& NW 46th St | 6 | 3 | 0 | 0 | 0 | 0 | 2 | 0 | 1 |
| 89 | NW Brickyard Rd \& NW 44th Ter | 6 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 96 | NW Brickyard Rd \& NW Morley St | 6 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 88 | NW Brickyard Rd \& NW 43rd St | 6 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 87 | NW Brickyard Rd \& NW 39th St | 6 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 207 | NW Menoken Rd \& NW 17th St | 6 | 2 | 1 | 0 | 0 | 0 | 2 | 0 | 1 |
| 71 | NE Shaffer Rd \& NE 62nd St | 6 | 1 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 261 | NW Topeka Blvd \& NW 86th St | 6 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 59 | NE Meriden Rd \& NE 54th St | 6 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 43 | NE Kendal Wood Dr \& NE 46th St | 6 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 106 | NW Button Rd \& NW 49th Ter | 6 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 100 | NW Button Rd \& NE Beaumont St | 6 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 155 | NW Hickory Ridge Ln \& NW 35th St | 6 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 225 | NW Ridgewood Dr \& NW 35th St | 6 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 122 | NW Country Ln \& NW 35th St | 6 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 131 | NW Dawdy Dr \& NW 50th St | 6 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 186 | NW Kendall Dr \& NW 50th St | 6 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 154 | NW Haven Rd \& NW 50th St | 6 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 233 | NW Rochester Rd \& NW 58th St | 6 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 549 | SW Indian Hills Rd (N) \& SW 33rd St | 6 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 568 | SW Mission Ave \& SW 53rd St | 6 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 583 | Shawnee Hills West Driveway \& SW 61st St | 6 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 470 | SW Bayshore Dr \& SW 61st St | 6 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 532 | SW Hodges Rd \& Sw 89th St | 6 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 23 | N Washington St \& E 10th St | 6 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 463 | SW Auburn Rd \& SW 69th St | 6 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 25 | N Washington St \& W 4th St | 6 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 466 | SW Auburn St \& SW 109th St | 6 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 305 | SE California Ave \& SE 93rd St | 6 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 509 | SW Elevation Ln \& SW 47th St | 6 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 572 | SW Morrill Rd \& SW 66th St | 6 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 665 | SW Westview Rd \& SW Greenview Dr | 6 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 1 |
| 403 | SE Shawnee Heights Rd \& SE 61st St | 6 | 2 | 1 | 0 | 0 | 0 | 2 | 0 | 1 |
| 383 | SE Ratner Rd \& SE 69th St | 6 | 1 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 337 | SE Croco Rd \& SE Jane Way | 6 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 444 | SE Tecumseh Rd \& SE 4th Ter | 6 | 1 | 2 | 0 | 0 | 0 | 0 | 3 | 0 |
| 435 | SE Tecumseh Rd \& SE 26th Ter | 6 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 412 | SE Skylark Dr \& SE 29th St | 6 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 604 | SW Topeka Blvd \& SE / SW 101st St | 6 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 232 | NW Rochester Rd \& NW 51st Ter | 6 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 241 | NW Rochester Rd \& NW Silverstone Rd | 6 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 563 | SW Marion Ln \& SW 41st St | 6 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 469 | SW Aylesbury Rd \& SW 41st St | 6 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 610 | SW Topeka Blvd \& SE 85th St | 6 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 609 | SW Topeka Blvd \& SE 77th St | 6 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 200 | NW Leedy Rd (N) \& NW 46th St | 6 | 1 | 1 | 3 | 0 | 0 | 0 | 0 | 1 |
| 31 | NE Croco Rd \& NE 39th St | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 453 | SW Albright Dr \& SW 33rd St | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |


| TSID | Intersection Name | Total <br> Score | ADT <br> Score | Access <br> Density <br> Score | Sight <br> Distance <br> Score | Horizontal Curvature Score | Crash Experience Score | Distance from Previous Stop Score | Skewed <br> Approach Score | Intersection Control Score |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 182 | NW Jennings Rd \& NW 62nd St | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 36 | NE Indian Creek Rd \& NE 46th St | 5 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 571 | SW Morrill Rd \& SW 65th St | 5 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 663 | SW Westview Rd \& SW 65th St | 5 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 1 |
| 668 | Wabaunsee St / NW Carlson Rd \& W 2nd St | 5 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 594 | SW South Pointe Dr \& SW 61st St | 5 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 512 | SW Fairlawn Rd \& SW 45th St | 5 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 481 | SW Burlingame Rd \& SW 69th St | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 1 |
| 379 | SE Ratner Rd \& SE 29th St | 5 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 204 | NW Maple Hill Rd \& NW 54th St | 5 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 1 |
| 243 | NW Rossville Rd \& NW 70th St | 5 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 116 | NW Carlson Rd \& NW 39th St | 5 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 119 | NW Carlson Rd / Wabaunsee St \& W 1st St | 5 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 159 | NW Hoch Rd \& NW 66th St | 5 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 1 |
| 156 | NW Hoch Rd \& NW 35th St | 5 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 268 | NW Valencia Rd \& NW 62nd St | 5 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 191 | NW Landon Rd \& NW 62nd St | 5 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 1 |
| 183 | NW Kelshar Dr \& NW 62nd St | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 167 | NW Hodges Rd (S) \& NW 46th St | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 197 | NW Landon Rd (N) \& NW 46th St | 5 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 1 |
| 85 | NW Brickyard Rd \& NW 25th St | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 177 | NW Huxman Rd \& NW 39th St | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 176 | NW Huxman Rd \& NW 35th St | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 180 | NW Huxman Rd \& NW Kiro Ct | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 44 | NE Kendal Wood Dr \& NE 62nd St | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 259 | NW Topeka Blvd \& NW 74th St | 5 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 45 | NE Kendal Wood Ln \& NE 46th St | 5 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 107 | NW Button Rd \& NW 53rd Ter | 5 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 104 | NW Button Rd \& NW 43rd St | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 143 | NW Green Hills Rd \& NW 39th St | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 57 | NE Meriden Rd \& NE 39th St | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 67 | NE Rockaway Trl \& NE 35th St | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 78 | NE Tantara Rd \& NE 35th St | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 246 | NW Sproaton Ln \& NW Menninger Rd | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 145 | NW Green Hills Rd \& NW 50th St | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 28 | NE Baldwin Rd \& NE 39th St | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 48 | NE Kincaid Rd \& NE 39th St | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 579 | SW Ottawa Trl \& SW 10th St | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 492 | SW Chetopa Trl \& SW 10th St | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 533 | SW Indian Hills \& SW Huntoon St | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 514 | SW Fountaindale Rd \& SW 33rd St | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 506 | SW Dukeries Rd \& SW 33rd St | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 577 | SW Moundview Dr \& SW 53rd St | 5 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 585 | SW Quail Run Dr \& SW 53rd St | 5 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 501 | SW Davis Rd \& SW 89th St | 5 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 503 | SW Docking Rd \& SW 89th St | 5 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 524 | SW Glick Rd \& SW 89th St | 5 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 527 | SW Hoch Rd \& SW 89th St | 5 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 285 | SE Adams St \& SE 93rd St | 5 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 386 | SE Ratner Rd \& SE 89th St | 5 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 1 |
| 656 | SW Wanamaker Rd \& SW 69th St | 5 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 576 | SW Morrill Rd \& SW Montara Northway | 5 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 565 | SW Mars Blvd \& SW Gary Ormbsy Dr | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 666 | SW Westview Rd \& SW Montara Northway | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 344 | SE Dupont Rd \& SE 53rd St | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 417 | SE Stanley Rd \& SE 61st St | 5 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 1 |
| 295 | SE Berryton Rd \& SE 69th St (W) | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 304 | SE California Ave \& SE 77th St | 5 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 380 | SE Ratner Rd \& SE 49th St | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |

Shawnee County
Local Road Safety Plan
Intersection Risk Factor Points

| TSID | Intersection Name | Total <br> Score | ADT <br> Score | Access <br> Density <br> Score | Sight <br> Distance Score | Horizontal Curvature Score | Crash Experience Score | Distance from Previous Stop Score | Skewed <br> Approach Score | Intersection Control Score |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 340 | SE Dupont Rd \& SE 49th St | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 354 | SE Howey Rd \& SE 41st St | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 388 | SE Rice Rd \& SE Bates Rd | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 387 | SE Rice Rd \& SE 2nd St | 5 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 437 | SE Tecumseh Rd \& SE 2nd St | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 446 | SE Tecumseh Rd \& SE 7th St | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 433 | SE Tecumseh Rd \& SE 21st St | 5 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 434 | SE Tecumseh Rd \& SE 25th St | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 396 | SE Shawnee Heights Rd \& SE 10th St | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 248 | NW Stinson Rd \& NW 39th St | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 667 | T Rd \& NW 94th St | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 101 | NW Button Rd \& NW 25th St | 4 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 324 | SE Croco Rd \& SE 53rd St | 4 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 13 | N Kansas Ave \& NE/NW 43rd St | 4 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 561 | SW Lewelling Rd \& SW 65th St | 4 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 1 |
| 162 | NW Hoch Rd \& NW 86th St | 4 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 1 |
| 209 | NW Menoken Rd \& NW 33rd St | 4 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 52 | NE Kincaid Rd \& NE 62nd St | 4 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 1 |
| 531 | SW Hodges Rd \& SW 61st St | 4 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 642 | SW Valencia Rd \& SW 89th St | 4 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 416 | SE Stanley Rd \& SE 53rd St | 4 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 1 |
| 326 | SE Croco Rd \& SE 69th St | 4 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 1 |
| 348 | SE Goodell Rd \& SE 2nd St | 4 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 244 | NW Rossville Rd \& NW 74th St | 4 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 489 | SW Carlson Rd \& SW 21st St | 4 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 128 | NW Davis Rd (N) \& NW 86th St | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 |
| 117 | NW Carlson Rd \& NW 62nd St | 4 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 127 | NW Davis Rd \& NW 62nd St | 4 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 179 | NW Huxman Rd \& NW 62nd St | 4 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 195 | NW Landon Rd \& NW 86th St | 4 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 1 |
| 170 | NW Humphey Rd (S) \& NW 46th St | 4 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 201 | NW Leedy Rd (S) \& NW 46th St | 4 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 210 | NW Menoken Rd \& NW 39th St | 4 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 266 | NW Valencia Rd \& NW 15th St | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 |
| 223 | NW Railroad St \& NW 66th St | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 |
| 149 | NW Green Hills Rd \& NW 94th St | 4 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 105 | NW Button Rd \& NW 43rd Ter | 4 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 14 | N Kansas Ave \& NW 39th St | 4 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 203 | NW Magnolia Ave \& NW Menninger Rd | 4 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 147 | NW Green Hills Rd \& NW 59th Ter | 4 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 151 | NW Green Hills Rd \& NW Kendall Dr | 4 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 146 | NW Green Hills Rd \& NW 52nd St | 4 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 547 | SW Indian Hills Rd \& SW Indian Woods PI | 4 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 536 | SW Indian Hills Rd \& SW 17th St | 4 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 559 | SW Knudsen Rd \& SW 53rd St | 4 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 502 | SW Docking Rd \& SW 57th St | 4 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 495 | SW Crawford Rd \& SW 57th St | 4 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 474 | SW Burch Rd \& SW 93rd St | 4 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 554 | SW Jordan Rd \& SW 93rd St | 4 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 574 | SW Morrill Rd \& SW 71s St | 4 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 445 | SE Tecumseh Rd \& SE 53rd St | 4 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 404 | SE Shawnee Heights Rd \& SE 69th St | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 |
| 329 | SE Croco Rd \& SE 85th St | 4 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 1 |
| 442 | SE Tecumseh Rd \& SE 49th St | 4 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 289 | SE Baldwin Rd \& SE 2nd St | 4 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 53 | NE Kincaid Rd \& NE Seward Ave | 4 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 306 | SE Consuelo Rd \& SE 2nd St | 4 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 342 | SE Dupont Rd \& SE 2nd St | 4 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 645 | SW Vawter Dr \& SW 109th St | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 |

Shawnee County
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Intersection Risk Factor Points

| TSID | Intersection Name | Total <br> Score | ADT <br> Score | Access <br> Density <br> Score | Sight Distance Score | Horizontal Curvature Score | Crash Experience Score | Distance from Previous Stop Score | Skewed <br> Approach Score | Intersection Control Score |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 544 | SW Indian Hills Rd \& SW Ambassador PI | 4 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 545 | SW Indian Hills Rd \& SW Arthurs Rd | 4 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 302 | SE California Ave \& SE 55th St | 4 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 510 | SW Fairlawn \& SW 77th St | 4 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 236 | NW Rochester Rd \& NW 78th St | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 |
| 353 | SE Howey Rd \& SE 37th St | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 198 | NW Landon Rd (S) \& NW 46th St | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 276 | NW Wilson Rd \& NW 88th St | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 |
| 238 | NW Rochester Rd \& NW 86th St | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 |
| 439 | SE Tecumseh Rd \& SE 3rd St | 3 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 422 | SE Stubbs Rd \& SE 29th St | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 |
| 488 | SW Carlson Rd \& SW 13th St | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 490 | SW Carlson Rd \& SW 29th St | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 166 | NW Hodges Rd \& NW 66th St | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 172 | NW Hunter Rd (S) \& NW 62nd St | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 199 | NW Leedy Rd \& NW 62nd St | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 171 | NW Hunter Rd \& NW 46th St | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 139 | NW Forbes Rd \& NW 46th St | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 124 | NW Countryside Rd \& NW 25th St | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 188 | NW Landon Rd \& NW 17th St | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 275 | NW Wilson Rd \& NW 78th St | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 |
| 39 | NE Indian Creek Rd \& NE 78th St | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 |
| 219 | NW Nickell Rd \& NW 78th St | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 |
| 50 | NE Kincaid Rd \& NE 54th St | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 |
| 109 | NW Button Rd \& NW Halfday Ln | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 274 | NW Wilder Rd \& NW 39th St | 3 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 47 | NE Kimbal Rd \& NW 43rd St | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 62 | NE Meriden Rd \& NE Collier Rd | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 144 | NW Green Hills Rd \& NW 48th St | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 537 | SW Indian Hills Rd \& Sw 19th St | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 529 | SW Hodges Rd \& SW 21st St | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 |
| 526 | SW Hoch Rd \& SW 61st St | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 500 | SW Davis Rd \& SW 57th St | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 598 | SW Stewart Rd \& SW 93rd St | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 331 | SE Croco Rd \& SE 93rd St | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 447 | SE Tecumseh Rd \& SE 89th St | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 419 | SE Stanley Rd \& SE 89th St | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 664 | SW Westview Rd \& SW Capehart Rd | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 303 | SE California Ave \& SE 61st St | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 418 | SE Stanley Rd \& SE 69th St | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 |
| 328 | SE Croco Rd \& SE 77th St | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 370 | SE Paulen Rd \& SE 85th St | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 |
| 429 | SE Stubbs Rd \& SE 85th St | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 440 | SE Tecumseh Rd \& SE 3rd Ter | 3 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 443 | SE Tecumseh Rd \& SE 4th St | 3 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 475 | SW Burlingame Rd \& SW 109th St | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 |
| 73 | NE Sherman Rd \& NE 74th St | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 |
| 629 | SW Urish Rd \& SW Eagle Point Rd | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 626 | SW Urish Rd \& SW 44th St | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 355 | SE Howey Rd \& SE West Edge Rd | 3 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 194 | NW Landon Rd \& NW 78th St | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 193 | NW Landon Rd \& NW 74th St | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 192 | NW Landon Rd \& NW 70th St | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 190 | NW Landon Rd \& NW 54th St | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 175 | NW Huxman Rd \& NW 21st St | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 123 | NW Countryside Rd \& NW 17th Street | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 523 | SW Glick Rd \& SW 29th St | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 110 | NW Button Rd \& NW Indianola Rd | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 351 | SE Green Rd \& SE 89th St | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |

Shawnee County
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Intersection Risk Factor Points

| TSID | Intersection Name | Total <br> Score | ADT <br> Score | Access <br> Density <br> Score | Sight <br> Distance Score | Horizontal Curvature Score | Crash Experience Score | Distance from Previous Stop Score | Skewed <br> Approach Score | Intersection Control Score |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 483 | SW Burlingame Rd \& SW 85th St | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 390 | SE Shadden Rd \& SE 61st St | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 428 | SE Stubbs Rd \& SE 69th St | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 385 | SE Ratner Rd \& SE 85th St | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 384 | SE Ratner Rd \& SE 77th St | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 350 | SE Green Rd \& SE 2nd St | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 364 | SE Paulen Rd \& SE 105th St | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 395 | SE Shawnee Heights Rd \& SE 109th St | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 643 | SW Vawter Dr \& SW 105th St | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 649 | SW Wanamaker Rd \& SW 101st St | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 543 | SW Indian Hills Rd \& SW 85th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 81 | NW Anthony Rd \& NW 62nd St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 84 | NW Boyd Rd \& NW 54th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 82 | NW Bailey Rd \& NW 54th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 118 | NW Carlson Rd \& NW 86th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 125 | NW Crawford Rd \& NW 86th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 129 | NW Davis Rd (S) \& NW 86th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 134 | NW Docking Rd \& NW 86th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 269 | NW Valencia Rd \& NW 86th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 161 | NW Hoch Rd \& NW 78th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 160 | NW Hoch Rd \& NW 70th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 279 | S Pine St \& E Railroad Ave | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 280 | S Spruce St \& E Railroad Ave | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 281 | S Walnut St \& E Railroad Ave | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 133 | NW Docking Rd \& NW 70th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 250 | NW Tibbs Rd \& NW 70th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 126 | NW Crawford Rd \& SW 33rd St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 515 | US 40 HWY Frontage Road \& SW Docking Rd | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 267 | NW Valencia Rd \& NW 4th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 136 | NW Elmont Rd \& NW 66th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 41 | NE Indian Creek Rd \& NE 86th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 56 | NE Marple Rd \& NE/NW 86th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 237 | NW Rochester Rd \& NW 82nd St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 235 | NW Rochester Rd \& NW 74th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 38 | NE Indian Creek Rd \& NE 66th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 51 | NE Kincaid Rd \& NE 56th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 69 | NE Shaffer Rd \& NE 54th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 70 | NE Shaffer Rd \& NE 56th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 528 | SW Hodges Rd \& SW 10th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 499 | SW Davis Dr \& SW 21st St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 521 | SW Geenridge St \& SW 29th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 493 | SW Clarhan Rd \& SW 37th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 589 | SW Roy Rd \& SW 37th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 530 | SW Hodges Rd \& SW 37th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 504 | SW Douglas Rd \& SW 69th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 11 | N Hanover St \& SW 85th St / E 14th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 638 | SW Urish Rd ( N ) \& SW 85th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 639 | SW Urish Rd (S) SW 85th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 373 | SE Paulen Rd (N) \& SE 69th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 374 | SE Paulen Rd (S) \& SE 69th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 413 | SE Stanley Rd \& SE 77th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 27 | NE / SE Shadden Rd \& SE 2nd St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 34 | NE Herschell Rd \& SE 2nd St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 451 | SE Woodring Rd \& SE 29th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 423 | SE Stubbs Rd \& SE 32nd Ter | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 424 | SE Stubbs Rd \& SE 37th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 414 | SE Stanley Rd \& SE 37th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 556 | SW Jordan Rd \& SW 99th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 291 | SE Berryton Rd \& SE 101st St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |


| TSID | Intersection Name | Total <br> Score | $\begin{aligned} & \text { ADT } \\ & \text { Score } \end{aligned}$ | Access <br> Density <br> Score | Sight Distance Score | Horizontal Curvature Score | Crash Experience Score | Distance from Previous Stop Score | Skewed Approach Score | Intersection Control Score |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 378 | SE Ratner Rd \& SE 101st St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 278 | Pearl St \& NW 54th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 217 | NW Nickell Rd \& NW 63rd St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 218 | NW Nickell Rd \& NW 65th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 150 | NW Green Hills Rd \& NW Fredith Ln | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 277 | O4 Rd \& NW 94th St | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 335 | SE Croco Rd \& SE Elm Cove | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 121 | NW Church Ln \& NW 66th St | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 61 | NE Meriden Rd \& NE 78th St | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 485 | SW Burlingame Rd \& SW 97th St | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 431 | SE Tecumseh Rd \& SE 101st St | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 341 | SE Dupont Rd \& SE 101st St | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 349 | SE Green Rd \& SE 101st St | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

## APPENDIX L LRSP Curve Risk Factor Scores

| TSID | Location | Total Score | Volume Score | Curve <br> Radius <br> Score | Access <br> Density <br> Score | Shoulder Width <br> Score | Edge Condtion Score | Roadside Assessment Score | Superelevation Score | Presence of Warning Signs Score | Crash Experience Score |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 29 | NE Meriden Rd 0.29 mi north of NE Collier Rd | 18 | 4 | 2 | 2 | 1 | 2 | 2 | 2 | 0 | 3 |
| 177 | SW 93rd St 0.02 mi east of SW Indian Hills Rd (E) | 18 | 5 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 0 |
| 86 | NW Menoken Rd \& NW 35th St (E) | 17 | 4 | 3 | 2 | 2 | 1 | 1 | 2 | 2 | 0 |
| 235 | SW Urish Rd 0.28 mi north of SW 61st St | 17 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 |
| 234 | SW Urish Rd 0.18 mi north of SW 61st St | 17 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 |
| 233 | SW Urish Rd 0.13 mi north of SW 61st St | 17 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 |
| 198 | SW Gage Blvd 0.15 mi north of SW 49th St | 16 | 6 | 3 | 2 | 1 | 2 | 2 | 0 | 0 | 0 |
| 210 | SW Indian Hills Rd 0.05 mi north of SW Blue Inn PI | 16 | 6 | 2 | 2 | 1 | 2 | 1 | 0 | 2 | 0 |
| 220 | SW Nottingham Rd 0.05 mi north of SW 37th St | 16 | 6 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 |
| 151 | SE Stubbs Rd 0.34 mi north of SE 69th St | 16 | 3 | 0 | 2 | 2 | 2 | 2 | 2 | 0 | 3 |
| 68 | NW Hoch Rd \& NW 46th St (W) | 16 | 5 | 3 | 2 | 1 | 1 | 1 | 0 | 0 | 3 |
| 218 | SW Nottingham Rd 0.11 mi north of SW 37th St | 16 | 6 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 |
| 54 | NW Brickyard Rd \& NW 62nd St | 16 | 6 | 3 | 2 | 1 | 1 | 1 | 0 | 2 | 0 |
| 237 | SW Urish Rd 0.48 mi south of SW 53rd St | 16 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 0 | 0 |
| 207 | SW Indian Hills Rd \& SW 93rd St (W) | 16 | 5 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 0 |
| 176 | SW Indian Hills Rd \& SW 93rd St (E) | 16 | 5 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 0 |
| 199 | SW Gage Blvd 0.08 mi north of SW 49th St | 15 | 6 | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 |
| 111 | SE 29th St 0.33 mi west of SE Shawnee Heights Rd | 15 | 5 | 3 | 2 | 1 | 2 | 2 | 0 | 0 | 0 |
| 163 | SW 10th St 0.09 mi east of SW Indian Hills Rd | 15 | 5 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 0 |
| 208 | SW Indian Hills Rd \& SW Blue Inn PI | 15 | 6 | 2 | 2 | 1 | 1 | 1 | 0 | 2 | 0 |
| 25 | NE Meriden Rd \& NE 70th St | 15 | 4 | 3 | 2 | 2 | 1 | 1 | 2 | 0 | 0 |
| 33 | NE Silver Rd \& NE 70th St | 15 | 4 | 3 | 2 | 2 | 1 | 1 | 2 | 0 | 0 |
| 61 | NW Carlson Rd 0.05 mi south of NW 33rd St (N) | 15 | 6 | 0 | 2 | 2 | 1 | 2 | 0 | 2 | 0 |
| 169 | SW 10th St 0.53 mi west of SW Indian Hills Rd | 15 | 5 | 1 | 2 | 1 | 2 | 2 | 2 | 0 | 0 |
| 170 | SW 10th St 0.65 mi west of SW Indian Hills Rd | 15 | 5 | 1 | 2 | 1 | 2 | 2 | 2 | 0 | 0 |
| 7 | N Kansas Ave \& NE 35th St | 15 | 5 | 3 | 2 | 1 | 1 | 1 | 0 | 2 | 0 |
| 59 | NW Button Rd \& NW 39th St | 15 | 3 | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 0 |
| 85 | NW Menoken Rd/NW Pipkin Rd \& NW 35th St | 15 | 4 | 3 | 2 | 2 | 1 | 1 | 2 | 0 | 0 |
| 236 | SW Urish Rd 0.46 mi north of SW 61st St | 15 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 |
| 154 | SE Tecumseh Rd \& SE 10th St (W) | 15 | 4 | 3 | 2 | 2 | 1 | 1 | 2 | 0 | 0 |
| 153 | SE Tecumseh Rd \& SE 10th St (E) | 15 | 4 | 3 | 2 | 2 | 1 | 1 | 2 | 0 | 0 |
| 38 | NW 42nd St \& NW Carlson Rd | 14 | 6 | 3 | 1 | 1 | 2 | 1 | 0 | 0 | 0 |
| 248 | SW Westeview Rd 0.03 mi north of SW Greenview Dr | 14 | 3 | 2 | 1 | 1 | 2 | 0 | 2 | 0 | 3 |
| 117 | SE 2nd St \& SE Arapaho Rd (W) | 14 | 3 | 3 | 2 | 1 | 1 | 2 | 2 | 0 | 0 |
| 129 | SE 2nd St \& SE Arapaho Rd (E) | 14 | 3 | 3 | 2 | 1 | 1 | 2 | 2 | 0 | 0 |
| 28 | NE Meriden Rd \& NE 35th St (W) | 14 | 4 | 3 | 2 | 1 | 1 | 1 | 2 | 0 | 0 |
| 35 | NW 13th St 0.10 mi west of NW Valencia Rd | 14 | 2 | 3 | 2 | 1 | 2 | 2 | 2 | 0 | 0 |
| 168 | SW 10th St 0.37 mi west of SW Urish Rd | 14 | 5 | 1 | 2 | 2 | 2 | 2 | 0 | 0 | 0 |
| 138 | SE Paulen Rd \& SE 93rd St | 14 | 5 | 0 | 2 | 2 | 2 | 1 | 2 | 0 | 0 |
| 137 | SE Paulen Rd \& SE 89th St | 14 | 5 | 0 | 2 | 2 | 2 | 1 | 2 | 0 | 0 |
| 110 | SE 29th St 0.26 mi west of SE Shawnee Heights Rd | 14 | 5 | 3 | 1 | 1 | 2 | 2 | 0 | 0 | 0 |
| 209 | SW Indian Hills Rd 0.02 mi S of Oxfordshire Rd | 14 | 6 | 0 | 2 | 1 | 2 | 1 | 0 | 2 | 0 |
| 30 | NE Meriden Rd 0.52 mi south of NE 35th St | 14 | 4 | 1 | 2 | 1 | 2 | 2 | 2 | 0 | 0 |
| 27 | NE Meriden Rd \& NE 35th St (E) | 14 | 4 | 3 | 2 | 1 | 1 | 1 | 2 | 0 | 0 |
| 93 | NW Rossville Rd \& NW 46th St | 14 | 6 | 2 | 1 | 1 | 2 | 2 | 0 | 0 | 0 |
| 62 | NW Carlson Rd 0.14 mi south of NW 33rd St (N) | 14 | 6 | 0 | 1 | 2 | 1 | 2 | 0 | 2 | 0 |
| 200 | SW Glick Rd \& SW 13th St | 14 | 2 | 3 | 2 | 2 | 2 | 1 | 2 | 0 | 0 |
| 166 | SW 10th St 0.16 mi west of SW Urish Rd | 14 | 5 | 1 | 2 | 2 | 2 | 2 | 0 | 0 | 0 |
| 206 | SW Hodges Rd 0.61 mi north of SW 21st St | 14 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 |
| 205 | SW Hodges Rd 0.53 mi north of SW 21st St | 14 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 0 |
| 204 | SW Hodges Rd 0.42 mi north of SW 21st St | 14 | 0 | 3 | 1 | 2 | 2 | 2 | 2 | 2 | 0 |
| 162 | SW 10th St 0.09 mi east of K 4 HWY | 14 | 5 | 0 | 2 | 1 | 2 | 2 | 2 | 0 | 0 |
| 161 | SW 10th St 0.08 mi east of K 4 HWY | 14 | 5 | 0 | 2 | 1 | 2 | 2 | 2 | 0 | 0 |
| 78 | NW Humphrey Rd \& NW 66th St | 14 | 4 | 3 | 2 | 1 | 1 | 1 | 2 | 0 | 0 |
| 55 | NW Brickyard Rd 0.02 mi south of NW 46th St | 14 | 5 | 1 | 2 | 2 | 1 | 1 | 0 | 2 | 0 |
| 56 | NW Brickyard Rd 0.09 mi south of NW 46th St | 14 | 5 | 1 | 2 | 2 | 1 | 1 | 0 | 2 | 0 |
| 84 | NW Menoken Rd \& NW 46th St | 14 | 4 | 2 | 2 | 2 | 1 | 1 | 2 | 0 | 0 |
| 126 | SE 89th St 0.02 mi east of SE Clinton Wildlife Rd | 14 | 3 | 3 | 1 | 1 | 2 | 2 | 2 | 0 | 0 |
| 127 | SE 89th St 0.08 mi east of SE Clinton Wildlife Rd | 14 | 3 | 3 | 1 | 1 | 2 | 2 | 2 | 0 | 0 |
| 41 | NW 60th St 0.05 mi west of NW Hoch Rd | 14 | 5 | 0 | 2 | 1 | 2 | 2 | 2 | 0 | 0 |
| 175 | SW 89th St 300 ft west of Auburn CL | 14 | 6 | 1 | 2 | 1 | 2 | 2 | 0 | 0 | 0 |
| 250 | W 8th St 0.03 mi west of N School St | 14 | 6 | 1 | 2 | 1 | 2 | 2 | 0 | 0 | 0 |
| 92 | NW Rossville Rd \& NW 42nd St | 13 | 6 | 3 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |
| 83 | NW Maple Hill Rd \& NW 46th St | 13 | 5 | 0 | 1 | 2 | 2 | 1 | 2 | 0 | 0 |


| TSID | Location | Total Score | Volume Score | Curve <br> Radius <br> Score | Access <br> Density <br> Score | Shoulder Width <br> Score | Edge Condtion Score | $\qquad$ | Superelevation Score | Presence of Warning Signs Score | Crash Experience Score |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 24 | NE Meriden Rd \& NE 39th St | 13 | 4 | 3 | 2 | 2 | 0 | 0 | 2 | 0 | 0 |
| 232 | SW Urish Rd \& SW Fountaindale Rd | 13 | 6 | 2 | 2 | 1 | 1 | 1 | 0 | 0 | 0 |
| 94 | NW Rossville Rd 0.01 mi south of NW 46th St | 13 | 6 | 2 | 1 | 1 | 1 | 2 | 0 | 0 | 0 |
| 164 | SW 10th St 0.19 mi east of SW Indian Hills Rd | 13 | 5 | 0 | 2 | 2 | 2 | 2 | 0 | 0 | 0 |
| 128 | SE 89th St 0.25 mi east of SE Clinton Wildlife Rd | 13 | 3 | 2 | 1 | 1 | 2 | 2 | 2 | 0 | 0 |
| 182 | SW Auburn Rd 0.42 mi north of SW 103rd St | 13 | 5 | 0 | 2 | 2 | 2 | 2 | 0 | 0 | 0 |
| 181 | SW Auburn Rd 0.29 south of SW 93rd St | 13 | 5 | 0 | 2 | 2 | 2 | 2 | 0 | 0 | 0 |
| 228 | SW University Blvd 0.03 mi north of SW 65th St | 13 | 3 | 3 | 2 | 1 | 1 | 1 | 2 | 0 | 0 |
| 103 | NW Valencia Rd \& NW 13th St (W) | 13 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 0 | 0 |
| 36 | NW 13th St 0.16 mi west of NW Valencia Rd | 13 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 0 | 0 |
| 101 | NW Valencia Rd \& NW 13th St (E) | 13 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 0 | 0 |
| 69 | NW Hoch Rd \& NW 46th St (E) | 13 | 5 | 3 | 2 | 1 | 1 | 1 | 0 | 0 | 0 |
| 77 | NW Humphrey Rd \& NW 62nd St | 13 | 4 | 3 | 2 | 1 | 1 | 0 | 2 | 0 | 0 |
| 10 | NE 35th St 0.14 mi west of NE Kimbal Rd | 13 | 4 | 2 | 2 | 1 | 1 | 1 | 2 | 0 | 0 |
| 57 | NW Brickyard Rd 0.94 mi south of NW 62nd St | 13 | 6 | 2 | 2 | 1 | 1 | 1 | 0 | 0 | 0 |
| 58 | NW Brickyard Rd 1.01 mi south of NW 62nd St | 13 | 6 | 2 | 2 | 1 | 1 | 1 | 0 | 0 | 0 |
| 240 | SW Valencia Rd \& SW 61st St | 13 | 4 | 2 | 2 | 0 | 2 | 1 | 2 | 0 | 0 |
| 123 | SE 89th St 0.08 mi east of SE Stubbs Rd | 13 | 3 | 1 | 2 | 1 | 2 | 2 | 2 | 0 | 0 |
| 124 | SE 89th St 0.13 mi east of SE Stubbs Rd | 13 | 3 | 2 | 1 | 1 | 2 | 2 | 2 | 0 | 0 |
| 148 | SE Stubbs Rd \& SE 61st St | 13 | 3 | 0 | 2 | 2 | 2 | 2 | 2 | 0 | 0 |
| 149 | SE Stubbs Rd 0.09 mi south of SE 61st St | 13 | 3 | 0 | 2 | 2 | 2 | 2 | 2 | 0 | 0 |
| 150 | SE Stubbs Rd 0.31 mi south of SE 61st St | 13 | 3 | 0 | 2 | 2 | 2 | 2 | 2 | 0 | 0 |
| 152 | SE Stubbs Rd 0.42 mi south of SE 61st St | 13 | 3 | 0 | 2 | 2 | 2 | 2 | 2 | 0 | 0 |
| 8 | N Washington St \& E/W 14th St | 13 | 6 | 2 | 2 | 1 | 1 | 1 | 0 | 0 | 0 |
| 130 | SE Berryton Rd 0.13 mi south of SE 93rd St | 12 | 0 | 3 | 1 | 2 | 2 | 2 | 2 | 0 | 0 |
| 184 | SW Burlingame Rd \& SW 53rd St | 12 | 6 | 1 | 2 | 1 | 1 | 1 | 0 | 0 | 0 |
| 23 | NE Kimbal Rd \& NE 35th St | 12 | 4 | 1 | 2 | 1 | 1 | 1 | 2 | 0 | 0 |
| 239 | SW Valencia Rd \& SW 57th St | 12 | 4 | 2 | 1 | 0 | 2 | 1 | 2 | 0 | 0 |
| 9 | N Washington St 0.01 mi south of W 14th St | 12 | 6 | 2 | 2 | 0 | 1 | 1 | 0 | 0 | 0 |
| 216 | SW Montara Pkwy \& SW Gary Ormsby Dr | 12 | 6 | 0 | 2 | 0 | 1 | 1 | 0 | 2 | 0 |
| 213 | SW Jordan Rd 0.07 mi north of SW Coker Rd | 12 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 0 |
| 225 | SW Stewart Rd \& SW 103rd St | 12 | 0 | 3 | 1 | 2 | 2 | 2 | 2 | 0 | 0 |
| 81 | NW Landon Rd \& NW 94th St | 12 | 3 | 3 | 1 | 1 | 1 | 1 | 2 | 0 | 0 |
| 80 | NW Landon Rd \& NW 25th St | 12 | 4 | 3 | 1 | 1 | 0 | 1 | 2 | 0 | 0 |
| 243 | SW Valencia Rd 0.09 mi north of I-70 Frontage Rd | 12 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 0 | 0 |
| 202 | SW Glick Rd 0.72 mi south of SW 13th St | 12 | 2 | 0 | 2 | 2 | 2 | 2 | 2 | 0 | 0 |
| 201 | SW Glick Rd 0.64 mi south of SW 13th St | 12 | 2 | 0 | 2 | 2 | 2 | 2 | 2 | 0 | 0 |
| 99 | NW Topeka Blvd \& NW 94th St (S) | 12 | 5 | 0 | 2 | 1 | 1 | 1 | 2 | 0 | 0 |
| 105 | NW Wilson Rd \& NW 72nd St | 12 | 0 | 3 | 2 | 1 | 2 | 2 | 2 | 0 | 0 |
| 65 | NW Elmont Rd \& NW 72nd St | 12 | 0 | 3 | 2 | 1 | 2 | 2 | 2 | 0 | 0 |
| 89 | NW Rochester Rd 0.32 mi north of NW 50th St | 12 | 5 | 2 | 2 | 1 | 1 | 1 | 0 | 0 | 0 |
| 88 | NW Rochester Rd 0.26 mi north of NW 50th St | 12 | 5 | 2 | 2 | 1 | 1 | 1 | 0 | 0 | 0 |
| 11 | NE 35th St 0.22 mi west of NE Kimbal Rd | 12 | 4 | 1 | 2 | 1 | 1 | 1 | 2 | 0 | 0 |
| 194 | SW Douglas Rd \& SW 77th St | 12 | 2 | 2 | 2 | 1 | 2 | 1 | 2 | 0 | 0 |
| 193 | SW Crawford Rd \& SW 77th St | 12 | 2 | 2 | 2 | 1 | 2 | 1 | 2 | 0 | 0 |
| 178 | SW 97th St 0.01 mi west of SW Topeka Blvd | 12 | 0 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 0 |
| 125 | SE 89th St 0.01 mi west of SE Clinton Wildlife Rd | 12 | 3 | 1 | 1 | 1 | 2 | 2 | 2 | 0 | 0 |
| 106 | SE 101st St 0.02 mi west of SE Shadden Rd | 12 | 0 | 3 | 2 | 1 | 2 | 2 | 2 | 0 | 0 |
| 135 | SE Green Rd \& SE Shadden Rd | 12 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 0 | 0 |
| 136 | SE Paulen Rd \& SE 101st St | 12 | 3 | 1 | 1 | 1 | 2 | 2 | 2 | 0 | 0 |
| 247 | SW Wanamaker Rd 0.09 mi north of SW 105th St | 12 | 3 | 0 | 2 | 1 | 1 | 1 | 2 | 2 | 0 |
| 43 | NW 62nd St 0.14 mi west of NW Green Hills Rd | 12 | 6 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0 |
| 42 | NW 62nd St 0.04 mi west of NW Green Hills Rd | 12 | 6 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0 |
| 159 | SE Ward Rd 0.67 mi east of SE Shawnee Heights Rd | 12 | 0 | 3 | 1 | 1 | 2 | 1 | 2 | 2 | 0 |
| 32 | NE Seward Ave 0.44 mi east of NE Kincaid Rd | 12 | 4 | 1 | 2 | 1 | 1 | 1 | 2 | 0 | 0 |
| 217 | SW Morrill Rd 0.05 mi north of SW Gary Ormsby Dr | 12 | 6 | 2 | 1 | 1 | 0 | 0 | 0 | 2 | 0 |
| 174 | SW 77th St 0.04 mi west of US-75 HWY SB Ramps | 12 | 5 | 0 | 1 | 2 | 0 | 0 | 2 | 2 | 0 |
| 180 | SW Auburn Rd 0.10 south of SW 93rd St | 12 | 5 | 0 | 1 | 2 | 2 | 2 | 0 | 0 | 0 |
| 203 | SW Hodges Rd \& SW 29th St | 12 | 0 | 3 | 1 | 2 | 2 | 2 | 2 | 0 | 0 |
| 13 | NE 94th St/Indian Creek Rd 0.05 mi east of V Rd | 12 | 0 | 3 | 2 | 1 | 1 | 1 | 2 | 2 | 0 |
| 183 | SW Birch Rd \& SW 47th St | 11 | 5 | 3 | 0 | 1 | 1 | 1 | 0 | 0 | 0 |
| 212 | SW Jordan Rd \& SW 103rd St | 11 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 0 | 0 |
| 26 | NE Meriden Rd \& NE 74th St | 11 | 0 | 3 | 2 | 1 | 2 | 1 | 2 | 0 | 0 |
| 51 | NW 78th St 0.40 mi east of US-75 HWY | 11 | 0 | 3 | 2 | 1 | 2 | 1 | 2 | 0 | 0 |


| TSID | Location | Total Score | Volume Score | Curve <br> Radius <br> Score | Access <br> Density <br> Score | Shoulder Width Score | Edge Condtion Score | Roadside Assessment Score | Superelevation Score | Presence of Warning Signs Score | Crash Experience Score |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 197 | SW Douglas Rd 0.56 mi south of SW 69th St | 11 | 2 | 2 | 1 | 1 | 2 | 1 | 2 | 0 | 0 |
| 226 | SW Stewart Rd \& SW 109th St | 11 | 0 | 3 | 1 | 1 | 2 | 2 | 2 | 0 | 0 |
| 131 | SE Berryton Rd 0.16 mi south of SE 93rd St | 11 | 0 | 2 | 1 | 2 | 2 | 2 | 2 | 0 | 0 |
| 76 | NW Hoch Rd 0.46 mi north of NW 70th St | 11 | 2 | 1 | 0 | 1 | 1 | 1 | 2 | 0 | 3 |
| 108 | SE 29th St 0.05 mi east of SE Stanley Rd | 11 | 0 | 3 | 2 | 1 | 2 | 1 | 2 | 0 | 0 |
| 31 | NE Seward Ave 0.30 mi east of NE Kincaid Rd | 11 | 4 | 0 | 2 | 1 | 1 | 1 | 2 | 0 | 0 |
| 219 | SW Nottingham Rd \& SW 37th St | 11 | 6 | 1 | 2 | 0 | 1 | 1 | 0 | 0 | 0 |
| 231 | SW University Blvd 0.25 mi northeast of SW 65th St | 11 | 3 | 2 | 2 | 1 | 1 | 0 | 2 | 0 | 0 |
| 214 | SW Jordan Rd \& SW 97th St | 11 | 0 | 2 | 2 | 1 | 2 | 2 | 2 | 0 | 0 |
| 21 | NE Indian Creek Rd \& NE 43rd St | 11 | 3 | 1 | 2 | 1 | 1 | 1 | 2 | 0 | 0 |
| 241 | SW Valencia Rd 0.03 mi north of I-70 Frontage Rd | 11 | 2 | 0 | 2 | 1 | 2 | 2 | 2 | 0 | 0 |
| 242 | SW Valencia Rd 0.07 mi south of I-70 EB Ramps | 11 | 2 | 0 | 1 | 2 | 2 | 2 | 2 | 0 | 0 |
| 244 | SW Valencia Rd 0.14 mi south of I-70 EB Ramps | 11 | 2 | 0 | 1 | 2 | 2 | 2 | 2 | 0 | 0 |
| 165 | SW 10th St 0.16 mi west of K 4 HWY | 11 | 0 | 2 | 2 | 1 | 2 | 2 | 2 | 0 | 0 |
| 90 | NW Rochester Rd 0.40 mi north of NW 50th St | 11 | 5 | 1 | 2 | 1 | 1 | 1 | 0 | 0 | 0 |
| 82 | NW Leedy Rd \& NW 35th St | 11 | 0 | 3 | 2 | 1 | 1 | 2 | 2 | 0 | 0 |
| 12 | NE 46th St 0.02 mi east of NE Sherman Rd | 11 | 6 | 1 | 2 | 0 | 0 | 0 | 0 | 2 | 0 |
| 79 | NW Huxman Rd \& NW 17th St | 11 | 4 | 3 | 1 | 1 | 0 | 0 | 2 | 0 | 0 |
| 195 | SW Douglas Rd 0.07 mi south of SW 69th St | 11 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 0 | 0 |
| 139 | SE Paulen Rd 0.08 mi north of SE 101st St | 11 | 3 | 1 | 2 | 1 | 1 | 1 | 2 | 0 | 0 |
| 132 | SE Berryton Rd 0.20 mi north of SE 101st St | 11 | 0 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 0 |
| 246 | SW Vawter Dr 0.08 mi north of SW 107th St | 11 | 3 | 0 | 1 | 1 | 1 | 1 | 2 | 2 | 0 |
| 245 | SW Vawter Dr \& SW 107th St | 11 | 3 | 0 | 1 | 1 | 1 | 1 | 2 | 2 | 0 |
| 104 | NW 70th St 0.06 mi north of NW Valencia Rd (S) | 11 | 0 | 2 | 2 | 1 | 2 | 2 | 2 | 0 | 0 |
| 230 | SW University Blvd 0.13 mi west of SW Topeka Blvd | 10 | 3 | 1 | 1 | 1 | 1 | 1 | 2 | 0 | 0 |
| 155 | SE Ward Rd 0.38 mi east of SE Shawnee Heights Rd | 10 | 0 | 2 | 2 | 1 | 2 | 1 | 2 | 0 | 0 |
| 187 | SW Burlingame Rd \& SW Lewelling Rd | 10 | 3 | 1 | 1 | 1 | 1 | 1 | 2 | 0 | 0 |
| 229 | SW University Blvd 0.04 mi west of SW Topeka Blvd | 10 | 3 | 2 | 1 | 1 | 1 | 0 | 2 | 0 | 0 |
| 91 | NW Rossville Rd \& NW 78th St | 10 | 5 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |
| 60 | NW Capper Rd \& NW 78th St | 10 | 5 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |
| 196 | SW Douglas Rd 0.32 mi south of SW 69th St | 10 | 2 | 1 | 1 | 1 | 2 | 1 | 2 | 0 | 0 |
| 133 | SE Berryton Rd 0.23 mi south of SE 93rd St | 10 | 0 | 1 | 1 | 2 | 2 | 2 | 2 | 0 | 0 |
| 119 | SE 2nd St 0.36 mi east of SE Herschell Rd | 10 | 0 | 2 | 1 | 1 | 2 | 2 | 2 | 0 | 0 |
| 221 | SW Nottingham Rd 0.34 mi south of SW 33rd St | 10 | 6 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 |
| 2 | 1-70 Frontage Road \& NW Docking Rd | 10 | 0 | 3 | 1 | 1 | 2 | 1 | 2 | 0 | 0 |
| 107 | SE 10th St 0.48 mi west of SE Shawnee Heights Rd | 10 | 0 | 3 | 2 | 1 | 1 | 1 | 2 | 0 | 0 |
| 112 | SE 2nd St 0.05 mi east of NE Goodell Rd | 10 | 3 | 1 | 2 | 1 | 0 | 1 | 2 | 0 | 0 |
| 114 | SE 2nd St 0.12 mi east of NE Goodell Rd | 10 | 3 | 1 | 2 | 1 | 0 | 1 | 2 | 0 | 0 |
| 102 | NW 70th St \& NW Valencia Rd (N) | 10 | 0 | 1 | 2 | 1 | 2 | 2 | 2 | 0 | 0 |
| 98 | NW Topeka Blvd \& NW 94th St (N) | 10 | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 0 | 0 |
| 34 | NE Wenonah Rd \& NE 43rd St | 10 | 3 | 0 | 2 | 1 | 1 | 1 | 2 | 0 | 0 |
| 160 | SW 10th St 0.08 mi west of K 4 HWY | 10 | 0 | 1 | 2 | 1 | 2 | 2 | 2 | 0 | 0 |
| 66 | NW Elmont Rd \& NW Railroad St | 10 | 0 | 2 | 2 | 1 | 2 | 1 | 2 | 0 | 0 |
| 134 | SE Berryton Rd 0.34 mi north of SE 101st St | 10 | 0 | 1 | 0 | 2 | 2 | 1 | 2 | 2 | 0 |
| 73 | NW Hoch Rd 0.21 mi south of NW 66th St | 10 | 2 | 0 | 0 | 1 | 2 | 1 | 2 | 2 | 0 |
| 75 | NW Hoch Rd 0.31 mi south of NW 66th St | 10 | 2 | 0 | 0 | 1 | 2 | 1 | 2 | 2 | 0 |
| 95 | NW Tibbs Rd \& NW 62nd St | 10 | 5 | 0 | 2 | 1 | 1 | 1 | 0 | 0 | 0 |
| 100 | NW Topeka Blvd 0.07 mi south of NW 43rd St | 10 | 6 | 0 | 2 | 1 | 0 | 1 | 0 | 0 | 0 |
| 46 | NW 66th St 0.16 mi west of NW Railroad St | 10 | 0 | 2 | 2 | 1 | 1 | 2 | 2 | 0 | 0 |
| 44 | NW 66th St 0.09 mi west of NW Railroad St | 10 | 0 | 2 | 2 | 1 | 1 | 2 | 2 | 0 | 0 |
| 109 | SE 29th St 0.11 mi east of SE Stanley Rd | 10 | 0 | 2 | 2 | 1 | 2 | 1 | 2 | 0 | 0 |
| 157 | SE Ward Rd 0.79 mi east of SE Shawnee Heights Rd | 10 | 0 | 3 | 1 | 1 | 2 | 1 | 2 | 0 | 0 |
| 158 | SE Ward Rd 0.58 mi east of SE Shawnee Heights Rd | 10 | 0 | 3 | 1 | 1 | 2 | 1 | 2 | 0 | 0 |
| 120 | SE 2nd St 0.43 mi east of SE Herschell Rd | 10 | 0 | 3 | 0 | 1 | 2 | 2 | 2 | 0 | 0 |
| 118 | SE 2nd St 0.32 mi west of SE Herschell Rd | 10 | 0 | 1 | 2 | 1 | 2 | 2 | 2 | 0 | 0 |
| 20 | NE Goodell Rd 0.14 mi north of SE 2nd St | 10 | 4 | 1 | 0 | 1 | 1 | 1 | 2 | 0 | 0 |
| 227 | SW Topeka Blvd 0.13 mi south of SW Gary Ormsby Dr | 10 | 6 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 0 |
| 22 | NE Indian Creek Rd \& V Rd | 10 | 0 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 0 |
| 87 | NW Oldham Rd \& NW 62nd St | 9 | 0 | 3 | 1 | 1 | 1 | 1 | 2 | 0 | 0 |
| 142 | SE Shadden Rd \& SE Camp Creek Rd | 9 | 2 | 0 | 1 | 1 | 2 | 1 | 2 | 0 | 0 |
| 3 | 1-70 Frontage Road 0.07 mi west of NW Valencia Rd | 9 | 0 | 2 | 2 | 1 | 2 | 0 | 2 | 0 | 0 |
| 5 | 1-70 Frontage Road 0.65 mi west of NW Valencia Rd | 9 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 0 | 0 |
| 189 | SW Burlingame Rd 0.11 mi north of SW 77th St | 9 | 3 | 0 | 1 | 1 | 1 | 1 | 2 | 0 | 0 |
| 171 | SW 33rd St 0.44 mi east of SW Crawford Rd | 9 | 0 | 2 | 2 | 1 | 1 | 1 | 2 | 0 | 0 |


| TSID | Location | Total Score | Volume Score | Curve <br> Radius <br> Score | Access <br> Density <br> Score | Shoulder Width <br> Score | Edge Condtion Score | Roadside Assessment Score | Superelevation Score | Presence of Warning Signs Score | Crash Experience Score |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 122 | SE 2nd St 0.47 mi west of NE Herschell Rd | 9 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 0 | 0 |
| 115 | SE 2nd St 0.15 mi east of SE Herschell Rd | 9 | 0 | 0 | 2 | 1 | 2 | 2 | 2 | 0 | 0 |
| 37 | NW 25th St 0.10 mi west of NW Countryside Rd | 9 | 4 | 0 | 1 | 1 | 0 | 1 | 2 | 0 | 0 |
| 6 | I-70 Frontage Road 0.70 mi west of NW Valencia Rd | 9 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 0 | 0 |
| 249 | SW Westside Dr \& SW 10th St | 9 | 0 | 0 | 2 | 1 | 2 | 2 | 2 | 0 | 0 |
| 167 | SW 10th St 0.20 mi west of SW Westside Dr | 9 | 0 | 0 | 2 | 1 | 2 | 2 | 2 | 0 | 0 |
| 223 | SW Patton Rd \& SW 10th St | 9 | 0 | 0 | 2 | 1 | 2 | 2 | 2 | 0 | 0 |
| 224 | SW Patton Rd 0.32 mi north of SW 10th St | 9 | 0 | 0 | 2 | 1 | 2 | 2 | 2 | 0 | 0 |
| 15 | NE Brown Rd \& NE 84th St (W) | 9 | 0 | 3 | 1 | 1 | 1 | 1 | 2 | 0 | 0 |
| 14 | NE Brown Rd \& NE 84th St (E) | 9 | 0 | 3 | 1 | 1 | 1 | 1 | 2 | 0 | 0 |
| 18 | NE Brown Rd \& NE 90th St (E) | 9 | 0 | 3 | 1 | 1 | 1 | 1 | 2 | 0 | 0 |
| 19 | NE Brown Rd \& NE 90th St (W) | 9 | 0 | 3 | 1 | 1 | 1 | 1 | 2 | 0 | 0 |
| 52 | NW 78th St 0.45 mi east of US-75 HWY | 9 | 0 | 2 | 1 | 1 | 2 | 1 | 2 | 0 | 0 |
| 145 | SE Shawnee Heights Rd \& SE 105st St | 9 | 2 | 0 | 2 | 1 | 1 | 1 | 2 | 0 | 0 |
| 141 | SE Paulen Rd 0.33 mi north of SE 101st St | 9 | 3 | 0 | 1 | 1 | 1 | 1 | 2 | 0 | 0 |
| 74 | NW Hoch Rd 0.33 mi north of NW 70th St | 9 | 2 | 2 | 0 | 1 | 1 | 1 | 2 | 0 | 0 |
| 72 | NW Hoch Rd 0.21 mi north of NW 70th St | 9 | 2 | 2 | 0 | 1 | 1 | 1 | 2 | 0 | 0 |
| 70 | NW Hoch Rd 0.01 mi south of NW 94th St | 9 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 0 | 0 |
| 97 | NW Topeka Blvd \& NW 43rd St | 9 | 6 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 |
| 147 | SE Stanley Rd 0.05 mi west fo SE 29th St | 9 | 0 | 1 | 2 | 1 | 2 | 1 | 2 | 0 | 0 |
| 116 | SE 2nd St 0.21 mi west of SE Herschell Rd | 9 | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 0 | 0 |
| 146 | SE Stanley Rd 0.07 mi north of SE 53rd St | 9 | 0 | 1 | 2 | 1 | 2 | 1 | 2 | 0 | 0 |
| 1 | I-70 Frontage Rd just west of NW Valencia Rd | 9 | 0 | 3 | 1 | 1 | 1 | 1 | 2 | 0 | 0 |
| 188 | SW Burlingame Rd 0.45 mi south of SW 57th St | 8 | 6 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 222 | SW Nottingham Rd 0.47 mi south of SW 33rd St | 8 | 6 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 113 | SE 2nd St 0.05 mi west of SE Herschell Rd | 8 | 0 | 0 | 1 | 1 | 2 | 2 | 2 | 0 | 0 |
| 4 | I-70 Frontage Road 0.17 mi west of NW Valencia Rd | 8 | 0 | 1 | 2 | 1 | 1 | 1 | 2 | 0 | 0 |
| 185 | SW Burlingame Rd \& SW 57th St | 8 | 6 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 192 | SW Burlingame Rd 0.46 mi south of SW 69th St | 8 | 3 | 0 | 1 | 1 | 1 | 0 | 2 | 0 | 0 |
| 121 | SE 2nd St 0.44 mi west of NE Herschell Rd | 8 | 0 | 0 | 1 | 1 | 2 | 2 | 2 | 0 | 0 |
| 96 | NW Tibbs Rd 0.26 mi south of NW 70th St | 8 | 0 | 1 | 1 | 1 | 2 | 1 | 2 | 0 | 0 |
| 238 | SW Valencia Rd \& SW 13th St | 8 | 2 | 0 | 0 | 2 | 1 | 1 | 2 | 0 | 0 |
| 16 | NE Brown Rd \& NE 86th St (E) | 8 | 0 | 3 | 0 | 1 | 1 | 1 | 2 | 0 | 0 |
| 48 | NW 78th St 0.13 mi east of US-75 HWY | 8 | 0 | 0 | 2 | 1 | 2 | 1 | 2 | 0 | 0 |
| 49 | NW 78th St 0.26 mi east of US-75 HWY | 8 | 0 | 1 | 1 | 1 | 2 | 1 | 2 | 0 | 0 |
| 50 | NW 78th St 0.35 mi west of NW Wilson Rd | 8 | 0 | 1 | 1 | 1 | 2 | 1 | 2 | 0 | 0 |
| 143 | SE Shadden Rd 0.25 mi north of SE 101st St | 8 | 2 | 0 | 0 | 1 | 2 | 1 | 2 | 0 | 0 |
| 140 | SE Paulen Rd 0.08 mi south of SE 93rd St | 8 | 3 | 0 | 1 | 1 | 1 | 0 | 2 | 0 | 0 |
| 156 | SE Ward Rd 0.45 mi east of SE Shawnee Heights Rd | 8 | 0 | 1 | 1 | 1 | 2 | 1 | 2 | 0 | 0 |
| 191 | SW Burlingame Rd 0.32 mi south of SW 77th St | 8 | 3 | 1 | 2 | 0 | 1 | 1 | 0 | 0 | 0 |
| 17 | NE Brown Rd \& NE 86th St (W) | 8 | 0 | 3 | 0 | 1 | 1 | 1 | 2 | 0 | 0 |
| 172 | SW 35th St 0.48 mi west of K 4 HWY | 7 | 0 | 1 | 1 | 1 | 1 | 1 | 2 | 0 | 0 |
| 64 | NW Docking Rd 0.46 mi south of NW 70th St | 7 | 0 | 3 | 0 | 1 | 1 | 0 | 2 | 0 | 0 |
| 45 | NW 66th St 0.12 mi west of NW Hoch Rd | 7 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 0 | 0 |
| 53 | NW 86th St 1.22 mi west of NW Landon Rd | 7 | 0 | 1 | 1 | 0 | 1 | 0 | 2 | 2 | 0 |
| 144 | SE Shadden Rd 0.72 mi south of SE 89th St | 7 | 2 | 0 | 0 | 1 | 2 | 0 | 2 | 0 | 0 |
| 71 | NW Hoch Rd 0.13 mi south of NW 94th St | 7 | 2 | 0 | 0 | 1 | 1 | 1 | 2 | 0 | 0 |
| 186 | SW Burlingame Rd \& SW 77th St | 7 | 3 | 0 | 2 | 0 | 1 | 1 | 0 | 0 | 0 |
| 47 | NW 70th St 0.17 mi west of NW Valencia Rd | 6 | 0 | 2 | 0 | 1 | 1 | 0 | 2 | 0 | 0 |
| 63 | NW Docking Rd 0.46 mi north of NW 62nd St | 6 | 0 | 2 | 0 | 1 | 1 | 0 | 2 | 0 | 0 |

## APPENDIX M

## LRSP Project Locations and Project Sheets



Project Name: NE Meriden Road/NE 70th Street and NE Silver Road from NE 62nd Street to NE 70th Street Contact Name: Curt Niehaus

E-mail: curt.niehaus@snco.us

Date: 6/8/23
Prepared By: AKT
Checked By: TJP

## SEGMENT

## Location Description

Road: NE Meriden Road/NE 70th Street and NE Silver Road From: NE 62nd Street

To: NE 70th Street
Length (miles):
30, 40

Project Location Maps


Segment Information and Systemic Ranking Summary

*Score from highest ranking segment used


Opinion of Probable Cost (Short Term Improvements)

| Item Description | Quantity | Unit | Unit Price |  | Item Cost |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Install 6" Retroreflective Edgeline (Both Sides of Road) | 2.98 | MILE | \$ | 6,000 | \$ | 17,880 |
| Install 4" Retroreflective Centerline | 2.98 | MILE | \$ | 3,000 | \$ | 8,940 |
| Delineate Roadside Hazards with Retroreflective Markers | 97 | EACH | \$ | 100 | \$ | 9,700 |
| Clear and Grub (15 Feet Off Edge of Road, If Applicable) | 0.35 | MILE | \$ | 30,000 | \$ | 10,500 |
| Improve Edge Rut Conditions with Aggregate at Edge Drop-off Locations | 2.98 | MILE | \$ | 5,000 | \$ | 14,900 |
| Review Pavement Condition/Type and Install Edgeline Rumble Strips (If Feasible) | 0 | MILE | \$ | 5,000 | \$ | - |
| Review Pavement Condition/Type and Install Centerline Rumble Strips (If Feasible) | 0 | MILE | \$ | 2,000 | \$ | - |
| Post-Mounted Delineators | 2.98 | MILE | \$ | 5,000 | \$ | 14,900 |
| Review and Upgrade Curve Signage to Meet MUTCD and KDOT Standards | 2 | CURVE | \$ | 1,000 | \$ | 2,000 |
| Install Curve Signage to Meet MUTCD and KDOT Standards (lf Needed) | 0 | CURVE | \$ | 3,500 | \$ | - |
| Install In-Lane Curve Warning Pavement Markings | 2 | CURVE | \$ | 2,000 | \$ | 4,000 |
| Retroreflective Strips on Curve Signage | 2 | CURVE | \$ | 500 | \$ | 1,000 |
| Reshape/Repair Roadway Surface and Apply Dust Suppressants | 0 | MILE | \$ | 5,000 | \$ | - |
| Short Term Improvements Subtotal: |  |  |  |  | \$ | 84,000 |

Opinion of Probable Cost (Longer Term Improvements)

| Item Description | Quantity | Unit |  | rice |  | Cost |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Remove/Relocate Fixed Objects in Clear Zone | 4 | EACH | \$ | 1,000 | \$ | 4,000 |
| Install 18-inch Aggregate Shoulder Treatment (With Transition to Earth) | 0 | MILE | \$ | 25,000 | \$ | - |
| Pave 2' Shoulder with Safety Edge (Both Sides of Road - Includes Earthwork) | 2.98 | MILE | + | 150,000 | \$ | 447,000 |
| Install Edgeline Rumble Strips | 2.98 | MILE | \$ | 5,000 | \$ | 14,900 |
| Install Centerline Rumble Strips | 2.98 | MILE | \$ | 2,000 | \$ | 5,960 |
| Instal/Upgrade Guardrail with Reflectors | 325 | FOOT | \$ | 80 | \$ | 26,000 |
| Flattening and Widening Foreslopes (Excludes Culvert Extensions) | 2.98 | MILE | \$ | 85,000 | \$ | 253,300 |
| Install High Friction Surface Treatment (HFST) on Curve | 2 | CURVE | \$ | 50,000 | \$ | 100,000 |
| Review and Upgrade Roadway Surface on Unpaved Roads | 0 | MILE | \$ | 8,000 | \$ | - |
| Continued on back of this page. |  | Longer Term Improvements Subtotal: |  |  | \$ | 852,000 |



## Opinion of Probable Construction Cost Disclaimer:

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## Project Location Map Sources:

Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013,
DigitalGlobe, GeoEye, i-cubed, USDA, AEX, Getmapping, Aerogrip, IGN, IGP, swisstopo, and the GIS User Community

Shawnee County Local Road Safety Plan
Project Description for Roadway Segment Improvements
Project Name: NW/NE 62nd Street from NW Green Hills Road to NE Meriden Road
Contact Name: Curt Niehaus
E-mail: curt.niehaus@snco.us
Date: 6/8/23
Prepared By: AKT
Checked By: TJP


Checked By:

## SEGMENT

Road: NW/NE 62nd Street


Segment Information and Systemic Ranking Summary

| Systemic Ranking Summary | Value | Score $^{*}$ |
| :---: | :---: | :---: |
| Average Daily Traffic (ADT) | 2,020 | 5 |
| Access Points per Mile | 38.0 | 2 |
| Edge Condition | 1.7 | 3 |
| Roadside Assessment | 1.3 | 3 |
| Pavement Width (ft) | 21.0 | 2 |
| Shoulder Width (ft) | 1.0 | 2 |
| Lane Departure Crash Rate | 0.3 | 0 |
| Presence of Pavement Markings | Yes | 0 |
| Surface Type | Paved | 0 |
| Total Risk Factor Score (24 max) | $\mathbf{1 7}$ |  |
| \multirow{3}**{} |  |  |

*Score from highest ranking segment used


Opinion of Probable Cost (Short Term Improvements)

| Item Description | Quantity | Unit | Unit Price |  | Item Cost |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Install 6" Retroreflective Edgeline (Both Sides of Road) | 3.50 | MILE | \$ | 6,000 | \$ | 21,000 |
| Install 4" Retroreflective Centerline | 3.50 | MILE | \$ | 3,000 | \$ | 10,500 |
| Delineate Roadside Hazards with Retroreflective Markers | 133 | EACH | \$ | 100 | \$ | 13,300 |
| Clear and Grub (15 Feet Off Edge of Road, If Applicable) | 0.35 | MILE | \$ | 30,000 | \$ | 10,500 |
| Improve Edge Rut Conditions with Aggregate at Edge Drop-off Locations | 3.50 | MILE | \$ | 5,000 | \$ | 17,500 |
| Review Pavement Condition/Type and Install Edgeline Rumble Strips (If Feasible) | 0 | MILE | \$ | 5,000 | \$ | - |
| Review Pavement Condition/Type and Install Centerline Rumble Strips (If Feasible) | 0 | MILE | \$ | 2,000 | \$ | - |
| Post-Mounted Delineators | 3.50 | MILE | \$ | 5,000 | \$ | 17,500 |
| Review and Upgrade Curve Signage to Meet MUTCD and KDOT Standards | 0 | CURVE | \$ | 1,000 | \$ | - |
| Install Curve Signage to Meet MUTCD and KDOT Standards (If Needed) | 0 | CURVE | \$ | 3,500 | \$ | - |
| Install In-Lane Curve Warning Pavement Markings | 0 | CURVE | \$ | 2,000 | \$ | - |
| Retroreflective Strips on Curve Signage | 0 | CURVE | \$ | 500 | \$ | - |
| Reshape/Repair Roadway Surface and Apply Dust Suppressants | 0 | MILE | \$ | 5,000 | \$ | - |
| Short Term Improvements Subtotal: |  |  |  |  | \$ | 91,000 |

Opinion of Probable Cost (Longer Term Improvements)

| Item Description | Quantity | Unit |  | Price |  | Cost |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Remove/Relocate Fixed Objects in Clear Zone | 4 | EACH | \$ | 1,000 | \$ | 4,000 |
| Install 18-inch Aggregate Shoulder Treatment (With Transition to Earth) | 0 | MILE | \$ | 25,000 | \$ | - |
| Pave 2' Shoulder with Safety Edge (Both Sides of Road - Includes Earthwork) | 3.50 | MILE | \$ | 150,000 | \$ | 525,000 |
| Install Edgeline Rumble Strips | 3.50 | MILE | \$ | 5,000 | \$ | 17,500 |
| Install Centerline Rumble Strips | 3.50 | MILE | \$ | 2,000 | \$ | 7,000 |
| Install/Upgrade Guardrail with Reflectors | 550 | FOOT | \$ | 35 | \$ | 19,250 |
| Flattening and Widening Foreslopes (Excludes Culvert Extensions) | 3.50 | MILE | \$ | 85,000 | \$ | 297,500 |
| Install High Friction Surface Treatment (HFST) on Curve | 0 | CURVE | \$ | 50,000 | \$ | - |
| Review and Upgrade Roadway Surface on Unpaved Roads | 0 | MILE | \$ | 8,000 | \$ | - |
| Continued on back of this page. |  | Longer Term Improvements Subtotal: |  |  | \$ | 871,000 |



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Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013,
DigitalGlobe, GeoEye, i-cubed, USDA, AEX, Getmapping, Aerogrip, IGN, IGP, swisstopo, and the GIS User Community

Shawnee County Local Road Safety Plan
Project Description for Roadway Segment Improvements
Project Name: SE 37th Street from SE Croco Road to SE Shawnee Heights Road
Contact Name: Curt Niehaus
E-mail: curt.niehaus@snco.us
Date: 6/8/23
Prepared By: AKT
Checked By: TJP

Road: SE 37th Street

## Location Description



Segment Information and Systemic Ranking Summary


| Other Information |  |
| :---: | :---: |
| Paved Shoulder | No |
| Shoulder Material | Turf |
| Speed Limit (mph) | $\mathbf{4 0}$ |
| Number of Lanes | $\mathbf{2}$ |
| Lane Width (ft) | $\mathbf{1 2}$ |
| Edgeline Rumble Strips | Not Present |
| Centerline Rumble Strips | Not Present |
| Curves | $\mathbf{0}$ |
| Curves with Warning Signs | $\mathbf{0}$ |
| Total Crashes | $\mathbf{9}$ |

Opinion of Probable Cost (Short Term Improvements)

| Item Description | Quantity | Unit | Unit Price |  | Item Cost |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Install 6" Retroreflective Edgeline (Both Sides of Road) | 3.10 | MILE | \$ | 6,000 | \$ | 18,600 |
| Install 4" Retroreflective Centerline | 3.10 | MILE | \$ | 3,000 | \$ | 9,300 |
| Delineate Roadside Hazards with Retroreflective Markers | 49 | EACH | \$ | 100 | \$ | 4,900 |
| Clear and Grub (15 Feet Off Edge of Road, If Applicable) | 0.50 | MILE | \$ | 30,000 | \$ | 15,000 |
| Improve Edge Rut Conditions with Aggregate at Edge Drop-off Locations | 3.10 | MILE | \$ | 5,000 | \$ | 15,500 |
| Review Pavement Condition/Type and Install Edgeline Rumble Strips (If Feasible) | 3.10 | MILE | \$ | 5,000 | \$ | 15,500 |
| Review Pavement Condition/Type and Install Centerline Rumble Strips (If Feasible) | 3.10 | MILE | \$ | 2,000 | \$ | 6,200 |
| Post-Mounted Delineators | 3.10 | MILE | \$ | 5,000 | \$ | 15,500 |
| Review and Upgrade Curve Signage to Meet MUTCD and KDOT Standards | 0 | CURVE | \$ | 1,000 | \$ | - |
| Install Curve Signage to Meet MUTCD and KDOT Standards (If Needed) | 0 | CURVE | \$ | 3,500 | \$ | - |
| Install In-Lane Curve Warning Pavement Markings | 0 | CURVE | \$ | 2,000 | \$ | - |
| Retroreflective Strips on Curve Signage | 0 | CURVE | \$ | 500 | \$ | - |
| Reshape/Repair Roadway Surface and Apply Dust Suppressants | 0 | MILE | \$ | 5,000 | \$ | - |
| Short Term Improvements Subtotal: |  |  |  |  | \$ | 101,000 |

Opinion of Probable Cost (Longer Term Improvements)

| Item Description | Quantity | Unit |  | Price |  | Cost |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Remove/Relocate Fixed Objects in Clear Zone | 4 | EACH | \$ | 1,000 | \$ | 4,000 |
| Install 18-inch Aggregate Shoulder Treatment (With Transition to Earth) | 0 | MILE | \$ | 25,000 | \$ | - |
| Pave 2' Shoulder with Safety Edge (Both Sides of Road - Includes Earthwork) | 3.10 | MILE | \$ | 150,000 | \$ | 465,000 |
| Install Edgeline Rumble Strips | 3.10 | MILE | \$ | 5,000 | \$ | 15,500 |
| Install Centerline Rumble Strips | 3.10 | MILE | \$ | 2,000 | \$ | 6,200 |
| Install/Upgrade Guardrail with Reflectors | 685 | FOOT | \$ | 35 | \$ | 23,975 |
| Flattening and Widening Foreslopes (Excludes Culvert Extensions) | 3.10 | MILE | \$ | 85,000 | \$ | 263,500 |
| Install High Friction Surface Treatment (HFST) on Curve | 0 | CURVE | \$ | 50,000 | \$ | - |
| Review and Upgrade Roadway Surface on Unpaved Roads | 0 | MILE | \$ | 8,000 | \$ | - |
| Continued on back of this page. |  | Longer Term Improvements Subtotal: |  |  | \$ | 779,000 |

E-mail: curt.niehaus@snco.us

Prepared By: AKT
Checked By: TJP

SEGMENT
Opinion of Probable Cost (Additional Potential Improvements)

There are a variety of other safety improvements that could be considered that were not included on the front page of the project sheet due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed throughout the county. The following countermeasures could be considered appropriate by the county and included below as additional potential improvements.

| Item Description | Quantity | Unit | Unit Price |  | Item Cost |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Improve Edge Rut Conditions with Aggregate at Edge Drop-off Locations | 0 | MILE | \$ | 5,000 | \$ | - |
| Post-Mounted Delineators | 0 | MILE | \$ | 5,000 | \$ | - |
| Install 18-inch Aggregate Shoulder Treatment (With Transition to Earth) | 3.10 | MILE | \$ | 25,000 | \$ | 77,500 |
| Conduct Road Safety Audit/Assessment (RSA) | 0 | EACH | \$ | 40,000 | \$ | - |
| Transverse Rumble Strips Prior to Curve | 0 | CURVE | \$ | 5,000 | \$ | - |
| Superelevation Correction on Curves | 0 | CURVE | \$ | 50,000 | \$ | - |
| Speed Activated Flashers on Chevron Signs | 0 | SIGN | \$ | 4,000 | \$ | - |
| Dynamic Speed Feedback Sign on Curve Warning Sign |  | SIGN | \$ | 4,000 | \$ | - |
| Extend Culverts (RCB) | 1 | EACH | \$ | 50,000 | \$ | 50,000 |
| Extend Culverts (CMP and RCPs) | 8 | EACH | \$ | 7,000 | \$ | 56,000 |
| Other: |  |  |  |  |  |  |
| Additional Potential Improvements Subtotal: |  |  |  |  | \$ | 184,000 |
| *Mobilization is $10 \%+/$ of the subtotal with a minimum of $\$ 2,500$ and a maximum of $\$ 75,000$ <br> **To be considered by county as they move forward with design of the recommendations | Short Term Improvements Subtotal: |  |  |  | \$ | 101,000 |
|  | Longer Term Improvements Subtotal: |  |  |  | \$ | 779,000 |
|  | Construction Subtotal: |  |  |  | \$ | 1,064,000 |


| Mobilization: (\% +/-)* | 10\% | , | 75,000 |
| :---: | :---: | :---: | :---: |
| Traffic Control: (\% +/-) | 5\% | \$ | 53,200 |
| Contingency: (\% +/-) | 20\% | \$ | 212,800 |
| Estimated Construc | Cost | \$ | 1,405,000 |

Crash History Along this 3.1 Mile Roadway Segment

|  | 2020 | 2019 | 2018 | 2017 | 2016 |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Number of Fatal Crashes | 0 | 0 | 0 | 0 | 0 |
| Number of Fatalities | 0 | 0 | 0 | 0 | 0 |
| Number of Disabling Injury Crashes | 0 | 0 | 0 | 0 | 0 |
| Number of Disabling Injuries | 0 | 0 | 0 | 0 | 0 |
| Number of Injury Crashes | 0 | 0 | 0 | 1 | 0 |
| Number of Injuries | 0 | 0 | 0 | 1 | 0 |
| Number of Property Damage Only Crashes | 0 | 0 | 4 | 3 | 1 |

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DigitalGlobe, GeoEye, i-cubed, USDA, AEX, Getmapping, Aerogrip, IGN, IGP, swisstopo, and the GIS User Community

Shawnee County Local Road Safety Plan
Project Description for Roadway Segment Improvements
Project Name: NW Rochester Road from NW Menninger Road to NW 46th Street
Contact Name: Curt Niehaus
E-mail: curt.niehaus@snco.us
Date: 6/8/23
Prepared By: AKT
Checked By: TJP

Road: NW Rochester Road
From: NW Menninger Road
To: NW 46th Street


Segment Information and Systemic Ranking Summary

*Score from highest ranking segment used


Opinion of Probable Cost (Short Term Improvements)

| Item Description | Quantity | Unit | Unit Price |  | Item Cost |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Install 6" Retroreflective Edgeline (Both Sides of Road) | 1.86 | MILE | \$ | 6,000 | \$ | 11,160 |
| Install 4" Retroreflective Centerline | 1.86 | MILE | \$ | 3,000 | \$ | 5,580 |
| Delineate Roadside Hazards with Retroreflective Markers | 91 | EACH | \$ | 100 | \$ | 9,100 |
| Clear and Grub (15 Feet Off Edge of Road, If Applicable) | 0.10 | MILE | \$ | 30,000 | \$ | 3,000 |
| Improve Edge Rut Conditions with Aggregate at Edge Drop-off Locations | 0 | MILE | \$ | 5,000 | \$ | - |
| Review Pavement Condition/Type and Install Edgeline Rumble Strips (If Feasible) | 1.86 | MILE | \$ | 5,000 | \$ | 9,300 |
| Review Pavement Condition/Type and Install Centerline Rumble Strips (If Feasible) | 1.86 | MILE | \$ | 2,000 | \$ | 3,720 |
| Post-Mounted Delineators | 1.86 | MILE | \$ | 5,000 | \$ | 9,300 |
| Review and Upgrade Curve Signage to Meet MUTCD and KDOT Standards | 0 | CURVE | \$ | 1,000 | \$ | - |
| Install Curve Signage to Meet MUTCD and KDOT Standards (If Needed) | 0 | CURVE | \$ | 3,500 | \$ | - |
| Install In-Lane Curve Warning Pavement Markings | 0 | CURVE | \$ | 2,000 | \$ | - |
| Retroreflective Strips on Curve Signage | 0 | CURVE | \$ | 500 | \$ | - |
| Reshape/Repair Roadway Surface and Apply Dust Suppressants | 0 | MILE | \$ | 5,000 | \$ | - |
| Short Term Improvements Subtotal: |  |  |  |  | \$ | 52,000 |

Opinion of Probable Cost (Longer Term Improvements)

| Item Description | Quantity | Unit |  | Price |  | Cost |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Remove/Relocate Fixed Objects in Clear Zone | 4 | EACH | \$ | 1,000 | \$ | 4,000 |
| Install 18-inch Aggregate Shoulder Treatment (With Transition to Earth) | 0 | MILE | \$ | 25,000 | \$ | - |
| Pave 2' Shoulder with Safety Edge (Both Sides of Road - Includes Earthwork) | 1.86 | MILE | \$ | 150,000 | \$ | 279,000 |
| Install Edgeline Rumble Strips | 1.86 | MILE | \$ | 5,000 | \$ | 9,300 |
| Install Centerline Rumble Strips | 1.86 | MILE | \$ | 2,000 | \$ | 3,720 |
| Instal//Upgrade Guardrail with Reflectors | 100 | FOOT | \$ | 80 | \$ | 8,000 |
| Flattening and Widening Foreslopes (Excludes Culvert Extensions) | 1.86 | MILE | \$ | 85,000 | \$ | 158,100 |
| Install High Friction Surface Treatment (HFST) on Curve | 0 | CURVE | \$ | 50,000 | \$ | - |
| Review and Upgrade Roadway Surface on Unpaved Roads | 0 | MILE | \$ | 8,000 | \$ | - |
| Continued on back of this page. |  | Longer Term Improvements Subtotal: |  |  | \$ | 463,000 |



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DigitalGlobe, GeoEye, i-cubed, USDA, AEX, Getmapping, Aerogrip, IGN, IGP, swisstopo, and the GIS User Community

Shawnee County Local Road Safety Plan
Project Description for Roadway Segment Improvements
Project Name: NE 35th Street from US-75 to NW Topeka Boulevard
Contact Name: Curt Niehaus
E-mail: curt.niehaus@snco.us
Date: 6/8/23
Prepared By: AKT
Checked By: TJP

Road: NE 35th Street

## Location Description

From: US-75
To: NW Topeka Boulevard
Length (miles):
43, 44, 47
2.95


Segment Information and Systemic Ranking Summary

| Systemic Ranking Summary | Value | Score $^{*}$ |
| :---: | :---: | :---: |
| Average Daily Traffic (ADT) | 990 | 4 |
| Access Points per Mile | 76.1 | 2 |
| Edge Condition | 1.0 | 3 |
| Roadside Assessment | 1.0 | 3 |
| Pavement Width (ft) | 24.0 | 0 |
| Shoulder Width (ft) | 1.0 | 2 |
| Lane Departure Crash Rate | $\mathbf{0 . 0}$ | 0 |
| Presence of Pavement Markings | No | 2 |
| Surface Type | Paved | 0 |
| Total Risk Factor Score (24 max) | 16 |  |


| Other Information |  |
| :---: | :---: |
| Paved Shoulder | No |
| Shoulder Material | Turf |
| Speed Limit (mph) | $\mathbf{3 5}$ |
| Number of Lanes | $\mathbf{2}$ |
| Lane Width (ft) | $\mathbf{1 2}$ |
| Edgeline Rumble Strips | Not Present |
| Centerline Rumble Strips | Not Present |
| Curves | $\mathbf{0}$ |
| Curves with Warning Signs | $\mathbf{0}$ |
| Total Crashes | $\mathbf{1 1}$ |

Opinion of Probable Cost (Short Term Improvements)

| Item Description | Quantity | Unit | Unit Price | Item Cost |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Install 6" Retroreflective Edgeline (Both Sides of Road) | 2.95 | MILE | $\$$ | 6,000 | $\$$ |
| Install 4" Retroreflective Centerline | 2.95 | 17,700 |  |  |  |
| Delineate Roadside Hazards with Retroreflective Markers | 225 | MILE | $\$$ | 3,000 | $\$$ |
| Clear and Grub (15 Feet Off Edge of Road, If Applicable) | 0,850 |  |  |  |  |
| Improve Edge Rut Conditions with Aggregate at Edge Drop-off Locations | 0.85 | MACH | $\$$ | 100 | $\$$ |
| Review Pavement Condition/Type and Install Edgeline Rumble Strips (If Feasible) | 22,500 |  |  |  |  |
| Review Pavement Condition/Type and Install Centerline Rumble Strips (If Feasible) | 2.95 | $\$$ | 30,000 | $\$$ |  |
| Post-Mounted Delineators | $2.95,500$ |  |  |  |  |
| Review and Upgrade Curve Signage to Meet MUTCD and KDOT Standards | 2.95 | MILE | $\$$ | 5,000 | $\$$ |
| Install Curve Signage to Meet MUTCD and KDOT Standards (If Needed) | 2.95 | 14,750 |  |  |  |
| Install In-Lane Curve Warning Pavement Markings | 0 | MILE | $\$$ | 5,000 | $\$$ |
| Retroreflective Strips on Curve Signage | 0 | 14,750 |  |  |  |
| Reshape/Repair Roadway Surface and Apply Dust Suppressants | 0 | MILE | $\$$ | 2,000 | $\$$ |

Opinion of Probable Cost (Longer Term Improvements)

| Item Description | Quantity | Unit |  | Price |  | Cost |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Remove/Relocate Fixed Objects in Clear Zone | 4 | EACH | \$ | 1,000 | \$ | 4,000 |
| Install 18-inch Aggregate Shoulder Treatment (With Transition to Earth) | 0 | MILE | \$ | 25,000 | \$ | - |
| Pave 2' Shoulder with Safety Edge (Both Sides of Road - Includes Earthwork) | 2.95 | MILE | \$ | 150,000 | \$ | 442,500 |
| Install Edgeline Rumble Strips | 2.95 | MILE | \$ | 5,000 | \$ | 14,750 |
| Install Centerline Rumble Strips | 2.95 | MILE | \$ | 2,000 | \$ | 5,900 |
| Install/Upgrade Guardrail with Reflectors | 685 | FOOT | \$ | 35 | \$ | 23,975 |
| Flattening and Widening Foreslopes (Excludes Culvert Extensions) | 2.95 | MILE | \$ | 85,000 | \$ | 250,750 |
| Install High Friction Surface Treatment (HFST) on Curve | 0 | CURVE | \$ | 50,000 | \$ | - |
| Review and Upgrade Roadway Surface on Unpaved Roads | 0 | MILE | \$ | 8,000 | \$ | - |
| Continued on back of this page. |  | Longer Term Improvements Subtotal: |  |  | \$ | 742,000 |



There are a variety of other safety improvements that could be considered that were not included on the front page of the project sheet due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed throughout the county. The following countermeasures could be considered appropriate by the county and included below as additional potential improvements.

| Item Description | Quantity | Unit | Unit Price |  | Item Cost |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Improve Edge Rut Conditions with Aggregate at Edge Drop-off Locations | 0 | MILE | \$ | 5,000 | \$ | - |
| Post-Mounted Delineators | 0 | MILE | \$ | 5,000 | \$ | - |
| Install 18-inch Aggregate Shoulder Treatment (With Transition to Earth) | 2.95 | MILE | \$ | 25,000 | \$ | 73,750 |
| Conduct Road Safety Audit/Assessment (RSA) | 0 | EACH | \$ | 40,000 | \$ | - |
| Transverse Rumble Strips Prior to Curve | 0 | CURVE | \$ | 5,000 | \$ | - |
| Superelevation Correction on Curves | 0 | CURVE | \$ | 50,000 | \$ | - |
| Speed Activated Flashers on Chevron Signs | 0 | SIGN | \$ | 4,000 | \$ |  |
| Dynamic Speed Feedback Sign on Curve Warning Sign | 0 | SIGN | \$ | 4,000 | \$ | - |
| Extend Culverts (RCB) | 6 | EACH | \$ | 50,000 | \$ | 300,000 |
| Extend Culverts (CMP and RCPs) | 2 | EACH | \$ | 7,000 | \$ | 14,000 |
| Other: |  |  |  |  |  |  |
| Additional Potential Improvements Subtotal: |  |  |  |  | \$ | 388,000 |
| *Mobilization is $10 \%+/-$ of the subtotal with a minimum of $\$ 2,500$ and a maximum of $\$ 75,000$ <br> **To be considered by county as they move forward with design of the recommendations | Short Term Improvements Subtotal: |  |  |  | \$ | 125,000 |
|  | Longer Term Improvements Subtotal: |  |  |  | \$ | 742,000 |
|  | Construction Subtotal: |  |  |  | \$ | 1,255,000 |

Additional Project Benefits:
The improvements recommended along this segment can also have the benefit of positively impacting the following identified facilities:

- Intersections 226, 251

Crash History Along this 2.95 Mile Roadway Segment

|  | 2020 | 2019 | 2018 | 2017 | 2016 |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Number of Fatal Crashes | 0 | 0 | 0 | 0 | 0 |
| Number of Fatalities | 0 | 0 | 0 | 0 | 0 |
| Number of Disabling Injury Crashes | 0 | 0 | 0 | 0 | 0 |
| Number of Disabling Injuries | 0 | 0 | 0 | 0 | 0 |
| Number of Injury Crashes | 1 | 1 | 1 | 0 | 0 |
| Number of Injuries | 4 | 1 | 1 | 0 | 0 |
| Number of Property Damage Only Crashes | 0 | 2 | 2 | 1 | 3 |

## Opinion of Probable Construction Cost Disclaimer:

Kimley-Horn, TranSystems, and WSP have no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Kimley-Horn, TranSystems, and WSP at this time and represent only our judgment as design professionals familiar with the construction industry. Kimley-Horn, TranSystems, and WSP cannot and do not guarantee that proposals, bids, or actual construction costs will not vary from these opinions of probable costs.

## Project Description Form Disclaimer:

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## Project Location Map Sources:

Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013,
DigitalGlobe, GeoEye, i-cubed, USDA, AEX, Getmapping, Aerogrip, IGN, IGP, swisstopo, and the GIS User Community



Segment Information and Systemic Ranking Summary


| Other Information |  |
| :---: | :---: |
| Paved Shoulder | No |
| Shoulder Material | Turf |
| Speed Limit (mph) | $\mathbf{3 5}$ |
| Number of Lanes | $\mathbf{2}$ |
| Lane Width (ft) | $\mathbf{1 1}$ |
| Edgeline Rumble Strips | Not Present |
| Centerline Rumble Strips | Not Present |
| Curves | $\mathbf{0}$ |
| Curves with Warning Signs | $\mathbf{0}$ |
| Total Crashes | $\mathbf{2 2}$ |

Opinion of Probable Cost (Short Term Improvements)

| Item Description | Quantity | Unit | Unit Price | Item Cost |
| :--- | :---: | :---: | :---: | :---: |
| Install 6" Retroreflective Edgeline (Both Sides of Road) | 5.48 | MILE | $\$$ | 6,000 |
| Install 4" Retroreflective Centerline | $\$$ | 32,880 |  |  |
| Delineate Roadside Hazards with Retroreflective Markers | 5.48 | MILE | $\$$ | 3,000 |
| Clear and Grub (15 Feet Off Edge of Road, If Applicable) | $\$$ | 16,440 |  |  |
| Improve Edge Rut Conditions with Aggregate at Edge Drop-off Locations | 0.90 | EACH | $\$$ | 100 |
| Review Pavement Condition/Type and Install Edgeline Rumble Strips (If Feasible) | $\$$ | 16,500 |  |  |
| Review Pavement Condition/Type and Install Centerline Rumble Strips (If Feasible) | 5.48 | MILE | $\$$ | 30,000 |
| Post-Mounted Delineators | 5.48 | $\$$ | 27,000 |  |
| Review and Upgrade Curve Signage to Meet MUTCD and KDOT Standards | 5.48 | MILE | $\$$ | 5,000 |
| Install Curve Signage to Meet MUTCD and KDOT Standards (If Needed) | 5 | 27,400 |  |  |
| Install In-Lane Curve Warning Pavement Markings | 0 | MILE | $\$$ | 5,000 |
| Retroreflective Strips on Curve Signage | $\$$ | $2,4,400$ |  |  |
| Reshape/Repair Roadway Surface and Apply Dust Suppressants | 0 | MILE | $\$$ | 5,000 |

Opinion of Probable Cost (Longer Term Improvements)

| Item Description | Quantity | Unit |  | Price |  | Cost |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Remove/Relocate Fixed Objects in Clear Zone | 4 | EACH | \$ | 1,000 | \$ | 4,000 |
| Install 18-inch Aggregate Shoulder Treatment (With Transition to Earth) | 0 | MILE | \$ | 25,000 | \$ | - |
| Pave 2' Shoulder with Safety Edge (Both Sides of Road - Includes Earthwork) | 5.48 | MILE | \$ | 150,000 | \$ | 822,000 |
| Install Edgeline Rumble Strips | 5.48 | MILE | \$ | 5,000 | \$ | 27,400 |
| Install Centerline Rumble Strips | 5.48 | MILE | \$ | 2,000 | \$ | 10,960 |
| Install/Upgrade Guardrail with Reflectors | 440 | FOOT | \$ | 80 | \$ | 35,200 |
| Flattening and Widening Foreslopes (Excludes Culvert Extensions) | 5.48 | MILE | \$ | 85,000 | \$ | 465,800 |
| Install High Friction Surface Treatment (HFST) on Curve | 0 | CURVE | \$ | 50,000 | \$ | - |
| Review and Upgrade Roadway Surface on Unpaved Roads | 0 | MILE | \$ | 8,000 | \$ | - |
| Continued on back of this page. |  | Longer Term Improvements Subtotal: |  |  | \$ | 1,366,000 |



There are a variety of other safety improvements that could be considered that were not included on the front page of the project sheet due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed throughout the county. The following countermeasures could be considered appropriate by the county and included below as additional potential improvements.

| Item Description | Quantity | Unit | Unit Price |  | Item Cost |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Improve Edge Rut Conditions with Aggregate at Edge Drop-off Locations | 0 | MILE | \$ | 5,000 | \$ | - |
| Post-Mounted Delineators | 0 | MILE | \$ | 5,000 | \$ | - |
| Install 18-inch Aggregate Shoulder Treatment (With Transition to Earth) | 5.48 | MILE | \$ | 25,000 | \$ | 137,000 |
| Conduct Road Safety Audit/Assessment (RSA) | 0 | EACH | \$ | 40,000 | \$ | - |
| Transverse Rumble Strips Prior to Curve | 0 | CURVE | \$ | 5,000 | \$ | - |
| Superelevation Correction on Curves | 0 | CURVE | \$ | 50,000 | \$ | - |
| Speed Activated Flashers on Chevron Signs | 0 | SIGN | \$ | 4,000 | \$ |  |
| Dynamic Speed Feedback Sign on Curve Warning Sign | 0 | SIGN | \$ | 4,000 | \$ | - |
| Extend Culverts (RCB) | 4 | EACH | \$ | 50,000 | \$ | 200,000 |
| Extend Culverts (CMP and RCPs) | 8 | EACH | \$ | 7,000 | \$ | 56,000 |
| Other: |  |  |  |  |  |  |
| Additional Potential Improvements Subtotal: |  |  |  |  | \$ | 393,000 |
| *Mobilization is $10 \%+/$ of the subtotal with a minimum of $\$ 2,500$ and a maximum of $\$ 75,000$ <br> **To be considered by county as they move forward with design of the recommendations | Short Term Improvements Subtotal: |  |  |  | \$ | 186,000 |
|  | Longer Term Improvements Subtotal: |  |  |  | \$ | 1,366,000 |
|  | Construction Subtotal: |  |  |  | \$ | 1,945,000 |

Additional Project Benefits:
The improvements recommended along this segment can also have the benefit of positively impacting the following identified facilities:

- Intersections 468, 478, 513, 652

Crash History Along this 5.48 Mile Roadway Segment

|  | 2020 | 2019 | 2018 | 2017 | 2016 |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Number of Fatal Crashes | 0 | 0 | 0 | 0 | 0 |
| Number of Fatalities | 0 | 0 | 0 | 0 | 0 |
| Number of Disabling Injury Crashes | 0 | 0 | 1 | 0 | 0 |
| Number of Disabling Injuries | 0 | 0 | 1 | 0 | 0 |
| Number of Injury Crashes | 1 | 2 | 0 | 0 | 1 |
| Number of Injuries | 1 | 2 | 0 | 0 | 2 |
| Number of Property Damage Only Crashes | 3 | 2 | 2 | 3 | 7 |

## Opinion of Probable Construction Cost Disclaimer:

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## Project Location Map Sources:

Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013,
DigitalGlobe, GeoEye, i-cubed, USDA, AEX, Getmapping, Aerogrip, IGN, IGP, swisstopo, and the GIS User Community

Shawnee County Local Road Safety Plan
Project Description for Roadway Segment Improvements
Project Name: SW Auburn Road from SW 85th Street to K-4
Contact Name: Curt Niehaus
E-mail: curt.niehaus@snco.us
Date: 6/8/23
Prepared By: AKT
Checked By: TJP

SEGMENT


Segment Information and Systemic Ranking Summary

*Score from highest ranking segment used


Opinion of Probable Cost (Short Term Improvements)

| Item Description | Quantity | Unit |  | rice |  | Cost |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Install 6" Retroreflective Edgeline (Both Sides of Road) | 7.52 | MILE | \$ | 6,000 | \$ | 45,120 |
| Install 4" Retroreflective Centerline | 7.52 | MILE | \$ | 3,000 | \$ | 22,560 |
| Delineate Roadside Hazards with Retroreflective Markers | 155 | EACH | \$ | 100 | \$ | 15,500 |
| Clear and Grub (15 Feet Off Edge of Road, If Applicable) | 0.40 | MILE | \$ | 30,000 | \$ | 12,000 |
| Improve Edge Rut Conditions with Aggregate at Edge Drop-off Locations | 7.52 | MILE | \$ | 5,000 | \$ | 37,600 |
| Review Pavement Condition/Type and Install Edgeline Rumble Strips (If Feasible) | 7.52 | MILE | \$ | 5,000 | \$ | 37,600 |
| Review Pavement Condition/Type and Install Centerline Rumble Strips (If Feasible) | 7.52 | MILE | \$ | 2,000 | \$ | 15,040 |
| Post-Mounted Delineators | 7.52 | MILE | \$ | 5,000 | \$ | 37,600 |
| Review and Upgrade Curve Signage to Meet MUTCD and KDOT Standards | 2 | CURVE | \$ | 1,000 | \$ | 2,000 |
| Install Curve Signage to Meet MUTCD and KDOT Standards (If Needed) | 0 | CURVE | \$ | 3,500 | \$ | - |
| Install In-Lane Curve Warning Pavement Markings | 1 | CURVE | \$ | 2,000 | \$ | 2,000 |
| Retroreflective Strips on Curve Signage | 2 | CURVE | \$ | 500 | \$ | 1,000 |
| Reshape/Repair Roadway Surface and Apply Dust Suppressants | 0 | MILE | \$ | 5,000 | \$ | - |
| Short Term Improvements Subtotal: |  |  |  |  | \$ | 229,000 |

Opinion of Probable Cost (Longer Term Improvements)

| Item Description | Quantity | Unit |  | rice |  | $\underline{\text { Cost }}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Remove/Relocate Fixed Objects in Clear Zone | 4 | EACH | \$ | 1,000 | \$ | 4,000 |
| Install 18-inch Aggregate Shoulder Treatment (With Transition to Earth) | 0 | MILE | \$ | 25,000 | \$ | - |
| Pave 2' Shoulder with Safety Edge (Both Sides of Road - Includes Earthwork) | 7.52 | MILE | + | 150,000 | \$ | 1,128,000 |
| Install Edgeline Rumble Strips | 7.52 | MILE | \$ | 5,000 | \$ | 37,600 |
| Install Centerline Rumble Strips | 7.52 | MILE | \$ | 2,000 | \$ | 15,040 |
| Instal/Upgrade Guardrail with Reflectors | 2,140 | FOOT | \$ | 35 | \$ | 74,900 |
| Flattening and Widening Foreslopes (Excludes Culvert Extensions) | 7.52 | MILE | \$ | 85,000 | \$ | 639,200 |
| Install High Friction Surface Treatment (HFST) on Curve | 0 | CURVE | \$ | 50,000 | \$ | - |
| Review and Upgrade Roadway Surface on Unpaved Roads | 0 | MILE | \$ | 8,000 | \$ | - |
| Continued on back of this page. |  | Longer Term Improvements Subtotal: |  |  | \$ | \$ 1,899,000 |



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## Project Location Map Sources:

Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013,
DigitalGlobe, GeoEye, i-cubed, USDA, AEX, Getmapping, Aerogrip, IGN, IGP, swisstopo, and the GIS User Community


## Use Restricted 23 U.S.C. § 407

## Shawnee County Local Road Safety Plan

## Project Description for Intersection Improvements

Project Name: SW Valencia Road at SW 57th Street \& SW 61st Street Contact Name: Curt Niehaus

E-mail: curt.niehaus@snco.us

Date: 5/31/23
Prepared By: AKT
Checked By: TJP


Intersection Information and Systemic Ranking Summary

| Systemic Ranking Summary | Value | Score $^{\star}$ |
| :---: | :---: | :---: |
| Average Daily Traffic (ADT) | $\mathbf{6 5 0}$ | $\mathbf{2}$ |
| Access Points within 500 feet | $\mathbf{3}$ | $\mathbf{2}$ |
| Sight Distance | Limited | $\mathbf{3}$ |
| Intersection Control | One-way Stop | $\mathbf{1}$ |
| Fatal or Debilitating Injury Crashes | $\mathbf{0}$ | $\mathbf{0}$ |
| Dist. from Previous Stop Sign (mi) | N/A | $\mathbf{0}$ |
| Intersection on Curve | Yes | $\mathbf{3}$ |
| Minimum Approach Angle | $\mathbf{3 0}$ | $\mathbf{3}$ |
| Total Risk Factor Score (24 max) |  | $\mathbf{1 4}$ |


| Other Information |  |
| :---: | :---: |
| Major Road ADT | $\mathbf{5 3 5}$ |
| Minor Road ADT | $\mathbf{1 1 5}$ |
| Intersection Crash Rate (TMEV) | $\mathbf{8 . 4}$ |
| Lighting | Not Present |
| Flashing Beacon | Not Present |
| Transverse Rumble Strips | Not Present |
| Number of Paved Approaches | $\mathbf{5}$ |
| Intersection Type | $\mathbf{3 S T}$ |
| Total Crashes | $\mathbf{1}$ |

*Score from highest ranking intersection used
Cost (Short Term Improvements)

| Item Description | Quantity | Unit |  | Price |  | ost |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Retroreflective Strips on Intersection Control Sign Posts | 2 | INTERSECTION | \$ | 500 | \$ | 1,000 |
| Clear and Grub | 7 | LEG | \$ | 5,000 | \$ | 35,000 |
| Review Pavement Condition/Type and Install Transverse Rumble Strips on Paved Stop-Controlled Approaches | 0 | LEG | \$ | 2,500 | \$ | - |
| Upgrade Signs and Pavement Markings (Paved Approaches) | 5 | LEG | \$ | 2,200 | \$ | 11,000 |
| Upgrade Signs (Unpaved Approaches) | 2 | LEG | \$ | 1,100 | \$ | 2,200 |
| Install Second Stop Sign and Stop Ahead Signs | 0 | LEG | \$ | 1,500 | \$ | - |
| Install Beacon on Stop Signs or Stop Sign with LED Flashing Lights | 0 | SIGN | \$ | 2,500 | \$ | - |
| Install Solar-Powered Flashing Beacon on Intersection Warning Sign | 0 | LEG | \$ | 2,500 | \$ | - |
|  | Short Term Improvements Subtotal: |  |  |  | \$ | 50,000 |

## Cost (Longer Term Improvements)

| Item Description | Quantity | Unit | Unit Price | Item Cost |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Intersection Lighting (One Luminaire) | 0 | EACH | $\$$ | 5,500 | $\$$ |
| Realign Intersection Approaches to Reduce or Eliminate Skew (Paved) | 1 | LEG | $\$$ | 300,000 | $\$$ |
| Realign Intersection Approaches to Reduce or Eliminate Skew (Unpaved) | 1 | LEG | $\$ 00,000$ |  |  |

Continued on back of this page.

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DigitalGlobe, GeoEye, i-cubed, USDA, AEX, Getmapping, Aerogrip, IGN, IGP, swisstopo, and the GIS User Community

| Shawnee County Local Road Safety Plan <br> Project Description for Intersection Improvements | Risk Factor Score: 14 |  |
| :---: | :---: | :---: |
| Project Name: SW Valencia Road at SW 57th Street \& SW 61st Street Contact Name: Curt Niehaus | Date: $5 / 31 / 23$ Prepared By: AKT |  |
| E-mail: curt.niehaus@snco.us | Checked By: TJP | INTERSECTION |
| Opinion of Probable Cost (Additional Potential Improvements) |  |  |
| Road: SW Valencia Road Road: SW Valencia Road <br> Road: SW 61st Street Road: SW 57th Street |  | GPS ID: 640,641 |

There are a variety of other safety improvements that could be considered that were not included on the front page of the project sheet due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed throughout the county. The following countermeasures could be considered appropriate by the county and included below as additional potential improvements.


The improvements recommended along this segment can also have the benefit of positively impacting the following identified facilities:

## - Curves 239, 240

## Crash History at this intersection

|  | 2020 | 2019 | 2018 | 2017 | 2016 |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Number of Fatal Crashes | 0 | 0 | 0 | 0 | 0 |
| Number of Fatalities | 0 | 0 | 0 | 0 | 0 |
| Number of Disabling Injury Crashes | 0 | 0 | 0 | 0 | 0 |
| Number of Disabling Injuries | 0 | 0 | 0 | 0 | 0 |
| Number of Injury Crashes | 0 | 0 | 1 | 0 | 0 |
| Number of Injuries | 0 | 0 | 1 | 0 | 0 |
| Number of Property Damage Only Crashes | 0 | 0 | 0 | 0 | 0 |

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## Use Restricted 23 U.S.C. § 407



Curve Information and Systemic Ranking Summary

| Systemic Ranking Summary | Value $^{2}$ | Score $^{\star}$ |
| :---: | :---: | :---: |
| Average Daily Traffic (ADT) | 2,375 | 6 |
| Curve Radius (ft) | $\mathbf{1 7 0}$ | $\mathbf{3}$ |
| Access Points within 500 feet | $\mathbf{1}$ | $\mathbf{1}$ |
| Shoulder Width (ft) | $\mathbf{3 . 0}$ | $\mathbf{1}$ |
| Edge Condition | 1.0 | $\mathbf{2}$ |
| Roadside Assessment | 2.0 | $\mathbf{1}$ |
| Superelevation | Yes | $\mathbf{0}$ |
| Fatal or Debilitating Injury Crashes | $\mathbf{0}$ | $\mathbf{0}$ |
| Presence of Warning Signs | Yes | $\mathbf{0}$ |
| Total Risk Factor Score (24 max) |  | $\mathbf{1 4}$ |


| Other Information |  |
| :---: | :---: |
| Paved Shoulder | No |
| Shoulder Material | Turf |
| Speed Limit (mph) | $\mathbf{5 0}$ |
| Number of Lanes | $\mathbf{2}$ |
| Lane Width | $\mathbf{1 1}$ |
| Edgeline Rumble Strips | Not Present |
| Centerline Rumble Strips | Not Present |
| Surface Type | Paved |
| Total Crashes | $\mathbf{6}$ |

*Score from highest ranking curve used
Opinion of Probable Cost (Short Term Improvements)


Opinion of Probable Cost (Longer Term Improvements)

| Item Description | Quantity | Unit | Unit Price |  | Item Cost |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Install 18-inch Aggregate Shoulder Treatment (With Transition to Earth) | 0 | MILE | \$ | 25,000 | \$ | - |
| Pave 2' Shoulder with Safety Edge (Both Sides of Road - Includes Earthwork) | 0.10 | MILE | \$ | 150,000 | \$ | 15,000 |
| Install Edgeline Rumble Strips | 0.10 | MILE | \$ | 5,000 | \$ | 500 |
| Install Centerline Rumble Strips | 0.10 | MILE | \$ | 2,000 | \$ | 200 |
| Install/Upgrade Guardrail | 0 | FOOT | \$ | 80 | \$ | - |
| Install High Friction Surface Treatment (HFST) on Curve | 0 | CURVE | \$ | 50,000 | \$ | - |
| Review and Upgrade Roadway Surface on Unpaved Curves | 0 | MILE | \$ | 8,000 | \$ | - |
|  |  | ger Term |  | Subtotal: | \$ | 16,000 |

Continued on back of this page.
Project Location Map Sources:
Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013, DigitalGlobe, GeoEye, i-cubed, USDA, AEX, Getmapping, Aerogrip, IGN, IGP, swisstopo, and the GIS User Community

## Shawnee County Local Road Safety Plan <br> Project Description for Curve Improvements <br> Project Name: NW 42 Street at NW Carlson Road \& NW Rossville Road <br> Date: 6/8/23 <br> Contact Name: Curt Niehaus <br> Prepared By: AKT <br> CURVE <br> Opinion of Probable Cost (Additional Potential Improvements)

There are a variety of other safety improvements that could be considered that were not included on the front page of the project sheet due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed throughout the county. The following countermeasures could be considered appropriate by the county and included below as additional potential improvements.

| Item Description | Quantity | Unit | Unit Price |  | Item Cost |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| On-Pavement Markings for Speed Control | 0 | EACH | \$ | 3,000 | \$ | - |
| Transverse Rumble Strips Prior to Curve | 2 | CURVE | \$ | 5,000 | \$ | 10,000 |
| Speed Activated Flashers on Chevron Signs | 0 | CURVE | \$ | 4,000 | \$ | - |
| Dynamic Speed Feedback Sign on Curve Warning Sign | 0 | EACH | \$ | 4,000 | \$ | - |
| Superelevation Correction on Curves | 0 | CURVE | \$ | 50,000 | \$ | - |
| Reconstruct Curves with Intersection Tie-ins | 0 | MILE | \$ | 500,000 | \$ | - |
| Reconstruct Culvert | 0 | EACH | \$ | 10,000 | \$ | - |
| Install 18-inch Aggregate Shoulder Treatment (With Transition to Earth) | 0.1 | MILE | \$ | 25,000 | \$ | 2,500 |
| Other: |  |  |  |  |  |  |
|  | dditional Po | tential Imp | rove | Subtotal: | \$ | 13,000 |
| *Mobilization is $10 \%+/$ - of the subtotal with a minimum of \$2,500 and a maximum of \$75,000 |  | Term Imp | rove | Subtotal: | \$ | 20,000 |
| **To be considered by county as they move forward with design of the recommendations | Longer | Term Imp | rove | Subtotal: | \$ | 16,000 |
|  |  | $\mathrm{Co}$ | nstr | Subtotal: | \$ | 49,000 |
|  |  | Mobilizatio | : | 10\% | \$ | 4,900 |
|  |  | affic Cont | l: | 5\% | \$ | 2,620 |
|  |  | Contingen | y: | 20\% | \$ | 10,480 |
|  |  | Estimated | C | coion Cost | \$ | 67,000 |
|  |  |  | (D | 12\% | \$ | 8,040 |
|  |  |  | Utilit |  | \$ | - |
|  |  |  |  |  | \$ | - |
| Crash History Along this 0.1 Mile Curve |  | CE | spe | 15\% | \$ | 10,050 |
|  |  | Esti | nat | ject Total | \$ | 86,000 |


|  | 2020 | 2019 | 2018 | 2017 | 2016 |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Number of Fatal Crashes | 0 | 0 | 0 | 0 | 0 |
| Number of Fatalities | 0 | 0 | 0 | 0 | 0 |
| Number of Disabling Injury Crashes | 0 | 0 | 0 | 0 | 0 |
| Number of Disabling Injuries | 0 | 0 | 0 | 0 | 0 |
| Number of Injury Crashes | 0 | 1 | 0 | 1 | 0 |
| Number of Injuries | 0 | 2 | 0 | 1 | 0 |
| Number of Property Damage Only Crashes | 1 | 1 | 2 | 0 | 0 |

Opinion of Probable Construction Cost Disclaimer:
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## Project Description Form Disclaimer:

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## Use Restricted 23 U.S.C. § 407

Project Name: SW Gage Boulevard curves 0.08 and 0.15 miles north of SW 49th Street Contact Name: Curt Niehaus

E-mail: curt.niehaus@snco.us

Road: SW Gage Boulevard
Length (feet): 490

Length (Miles): 0.09

Date: 6/16/23
Prepared By: AKT
Checked By: TJP


GPS ID: 198, 199
Closest City: Topeka


Curve Information and Systemic Ranking Summary

| Systemic Ranking Summary | Value | Score* | Other Information |  |
| :---: | :---: | :---: | :---: | :---: |
| Average Daily Traffic (ADT) | 1,750 | 6 | Paved Shoulder | No |
| Curve Radius (ft) | 220 | 3 | Shoulder Material | Turf |
| Access Points within 500 feet | 5 | 2 | Speed Limit (mph) | 35 |
| Shoulder Width (ft) | 2.0 | 1 | Number of Lanes | 2 |
| Edge Condition | 1.0 | 2 | Lane Width | 11.5 |
| Roadside Assessment | 1.0 | 2 | Edgeline Rumble Strips | Not Present |
| Superelevation | Yes | 0 | Centerline Rumble Strips | Not Present |
| Fatal or Debilitating Injury Crashes | 0 | 0 | Surface Type | Paved |
| Presence of Warning Signs | Yes | 0 | Total Crashes | 5 |

*Score from highest ranking curve used
Opinion of Probable Cost (Short Term Improvements)

| Item Description | Quantity | Unit |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Review and Upgrade Curve Signage to Meet MUTCD and KDOT Standards | 2 | CURVE | \$ | 1,000 | \$ | 2,000 |
| Install Curve Signage to Meet MUTCD and KDOT Standards (If Needed) | 0 | CURVE | \$ | 3,500 | \$ | - |
| Install In-Lane Curve Warning Pavement Markings | 1 | CURVE | \$ | 2,000 | \$ | 2,000 |
| Retroreflective Strips on Curve Signage | 2 | CURVE | \$ | 500 | \$ | 1,000 |
| Install 6" Retroreflective Edgeline (Both Sides of Road) | 0.09 | MILE | \$ | 6,000 | \$ | 540 |
| Install 4" Retroreflective Centerline | 0.09 | MILE | \$ | 3,000 | \$ | 270 |
| Clear and Grub (15 Feet Off Edge of Road, If Applicable) | 2 | CURVE | \$ | 5,000 | \$ | 10,000 |
| Improve Edge Rut Conditions with Aggregate at Edge Drop-off Locations | 0.09 | MILE | \$ | 5,000 | \$ | 450 |
| Review Pavement Condition/Type and Install Edgeline Rumble Strips (If Feasible) | 0.09 | MILE | \$ | 5,000 | \$ | 450 |
| Review Pavement Condition/Type and Install Centerline Rumble Strips (If Feasible) | 0.09 | MILE | \$ | 2,000 |  | 180 |
| Post-Mounted Delineators | 0.09 | MILE | \$ | 5,000 | \$ | 450 |
|  | Short Term Improvements Subtotal: |  |  |  | \$ | 18,000 |

Opinion of Probable Cost (Longer Term Improvements)

| Item Description | Quantity | Unit | Unit Price |  | Item Cost |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Install 18-inch Aggregate Shoulder Treatment (With Transition to Earth) | 0 | MILE | \$ | 25,000 | \$ | - |
| Pave 2' Shoulder with Safety Edge (Both Sides of Road - Includes Earthwork) | 0.09 | MILE | \$ | 150,000 | \$ | 13,500 |
| Install Edgeline Rumble Strips | 0.09 | MILE | \$ | 5,000 | \$ | 450 |
| Install Centerline Rumble Strips | 0.09 | MILE | \$ | 2,000 | \$ | 180 |
| Install/Upgrade Guardrail | 0 | FOOT | \$ | 80 | \$ | - |
| Install High Friction Surface Treatment (HFST) on Curve | 0 | CURVE | \$ | 50,000 | \$ | - |
| Review and Upgrade Roadway Surface on Unpaved Curves | 0 | MILE | \$ | 8,000 |  | - |
|  |  | ger Term |  | Subtotal: | \$ | 15,000 |

Continued on back of this page.
Project Location Map Sources:
Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013, DigitalGlobe, GeoEye, i-cubed, USDA, AEX, Getmapping, Aerogrip, IGN, IGP, swisstopo, and the GIS User Community


There are a variety of other safety improvements that could be considered that were not included on the front page of the project sheet due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed throughout the county. The following countermeasures could be considered appropriate by the county and included below as additional potential improvements.

| Item Description | Quantity | Unit | Unit Price |  | Item Cost |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| On-Pavement Markings for Speed Control | 0 | EACH | \$ | 3,000 | \$ | - |
| Transverse Rumble Strips Prior to Curve | 1 | CURVE | \$ | 5,000 | \$ | 5,000 |
| Speed Activated Flashers on Chevron Signs | 0 | CURVE | \$ | 4,000 | \$ | - |
| Dynamic Speed Feedback Sign on Curve Warning Sign | 0 | EACH | \$ | 4,000 | \$ | - |
| Superelevation Correction on Curves | 0 | CURVE | \$ | 50,000 | \$ | - |
| Reconstruct Curves with Intersection Tie-ins | 0 | MILE | \$ | 500,000 | \$ | - |
| Reconstruct Culvert | 0 | EACH | \$ | 10,000 | \$ | - |
| Install 18-inch Aggregate Shoulder Treatment (With Transition to Earth) | 0.09 | MILE | \$ | 25,000 | \$ | 2,250 |
| Other: |  |  |  |  |  |  |
| *Mobilization is $10 \%+/$ - of the subtotal with a minimum of $\$ 2,500$ and a maximum of $\$ 75,000$ **To be considered by county as they move forward with design of the recommendations | Additional Potential Improvements Subtotal: Short Term Improvements Subtotal: Longer Term Improvements Subtotal: Construction Subtotal: |  |  |  | \$ | 8,000 |
|  |  |  |  |  | \$ | 18,000 |
|  |  |  |  |  | \$ | 15,000 |
|  |  |  |  |  | \$ | 41,000 |
|  | Mobilization: $(\%+/-)^{*}$ $10 \%$ <br> Traffic Control: $(\%+/-)$ $5 \%$ <br> Contingency: $(\%+/-)$ $20 \%$ <br> Estimated Construction Cost  |  |  |  | \$ | 4,100 |
|  |  |  |  |  | \$ | 2,180 |
|  |  |  |  |  | \$ | 8,720 |
|  |  |  |  |  | \$ | 56,000 |
|  | PE (Design)Utilities**ROW** |  |  |  | \$ | 6,720 |
|  |  |  |  |  | \$ | - |
|  |  |  |  |  | \$ | - |
| Crash History Along this 0.09 Mile Curve | CE (Inspection) 15\% |  |  |  | \$ | 8,400 |
|  |  | Esti | nat | ect Total | \$ | 72,000 |


|  | 2020 | 2019 | 2018 | 2017 | 2016 |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Number of Fatal Crashes | 0 | 0 | 0 | 0 | 0 |
| Number of Fatalities | 0 | 0 | 0 | 0 | 0 |
| Number of Disabling Injury Crashes | 0 | 0 | 0 | 0 | 0 |
| Number of Disabling Injuries | 0 | 0 | 0 | 0 | 0 |
| Number of Injury Crashes | 0 | 1 | 0 | 0 | 0 |
| Number of Injuries | 0 | 2 | 0 | 0 | 0 |
| Number of Property Damage Only Crashes | 2 | 0 | 0 | 1 | 1 |

Opinion of Probable Construction Cost Disclaimer:
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[^0]:    091841008
    2019-05-30 KDOT LRSP Tech Memo Crash Analysis.docx

[^1]:    091841008
    2019-05-30 KDOT LRSP Tech Memo Crash Analysis.docx
    KDOT LRSPs - Phase 1
    May 2019

[^2]:    091841011
    KDOT LRSP Risk Factor Ranking and Countermeasure Selection - Phase 4.docx

