

# 3 ROADWAY PROJECTS

LEAVENWORTH COUNTY SALES TAX PROJECTS

Leavenworth County | April 2015



PROJECT

1

**MCINTYRE  
ROAD**

Between  
K-7 and K-5



PROJECT

2

**147TH  
STREET**

Fairmount Road to  
Parallel Road



PROJECT

3

**EISENHOWER  
ROAD**

155th Street to  
Tonganoxie Road



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April 23, 2015

Mr. Michael W. Spickelmier, P.E.  
Public Works Director  
Leavenworth County, Kansas  
300 Walnut; Suite 007  
Leavenworth, Kansas 66048-2815

Re: Letter of Interest and Proposal for Engineering Services for  
LVCO Sales Tax Projects – McIntyre Road, 147th Street, and Eisenhower Road

Mike,

The Alfred Benesch & Company Team appreciates the opportunity to continue our 15+ years of service and partnership with Leavenworth County Public Works. We are extremely excited to assist your staff with these projects, as many of us live in and around LVCO.

As we mentioned to you and Mickey over the past few months, the capabilities and experience within our Bonner Springs Office continue to grow. **We have added traffic engineering and public involvement team members.** Jim Jussel is a professional traffic operations engineer (PTOE) and will lead all traffic aspects for any of your projects. Stephanie Rittershaus is a certified public involvement specialist, and will lead all engagement efforts with citizens and project stakeholders. The roadway and structures staff you have come to know and trust over the years remain committed to LVCO.

The Benesch Team is prepared to assist or lead right-of-way and permitting services. We appreciate that your staff has typically handled these elements, but we are prepared to partner as needed. **The Benesch Team includes J&J Surveying and ROW Associates, both firms are established partners.** J&J Surveying has worked with Benesch on projects across several counties in both Kansas and Missouri. ROW Associates has partnered with us on multiple occasions, including several major corridor improvements. We are confident that our team will meet LVCO expectations.

Benesch believes that we can leverage our established relationships and successful track record with the local project partners, as well as KDOT, to provide LVCO with added value. Whether it is the City of Leavenworth, City of Lansing, or the City of Basehor, we are prepared to coordinate your project. We look forward to assisting you on any of the upcoming projects, but have particular interest in the McIntyre Road and 147th Street projects.

Our team values the trusted relationship we have built with you and your staff. We understand your objectives and we will address the traffic, roadway, hydraulic, environmental, structural, permitting, and construction needs. We look forward to the opportunity to demonstrate that the trust you place in our firm is well founded.

Respectfully,

A handwritten signature in blue ink, appearing to read "Carl B. Reed".

Dr. Carl B. Reed, P.E.  
Project Principal

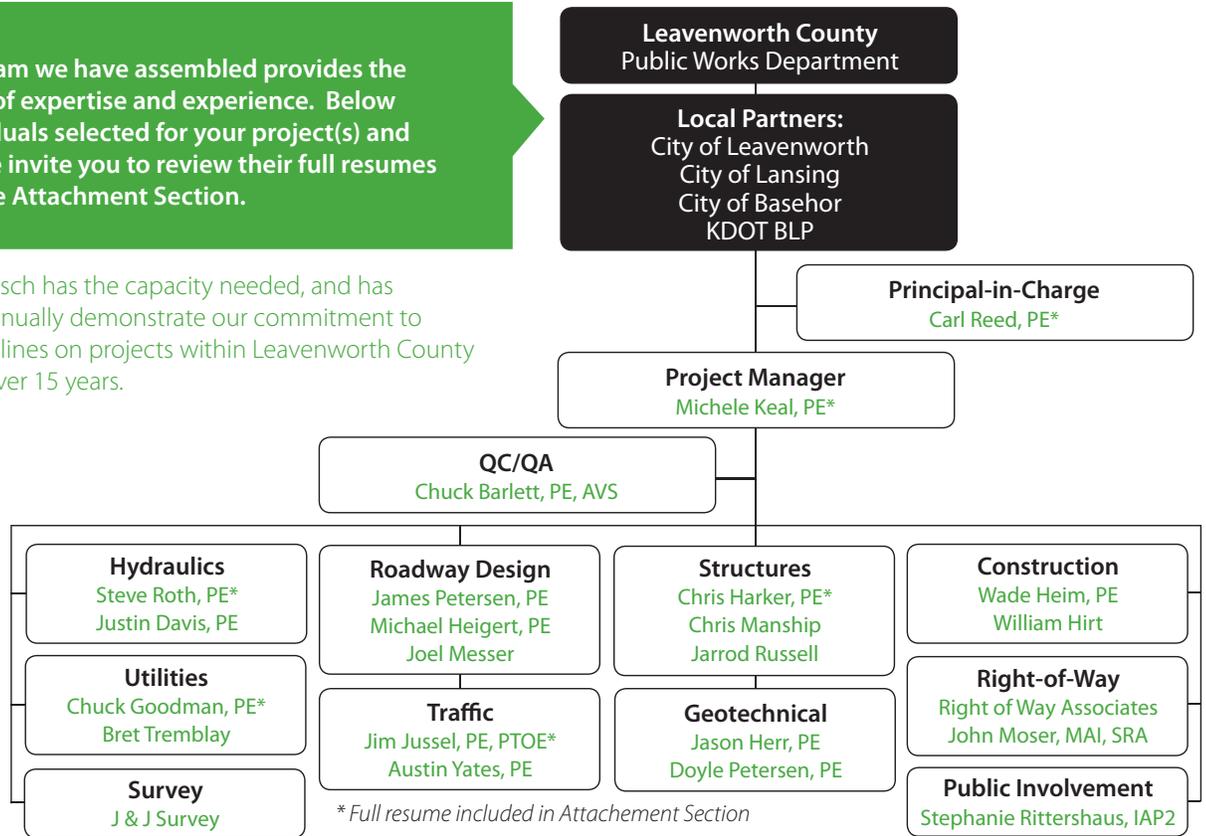
Enclosures

PROJECT TEAM

The project team we have assembled provides the right balance of expertise and experience. Below are key individuals selected for your project(s) and their roles. We invite you to review their full resumes included in the Attachment Section.



Benesch has the capacity needed, and has continually demonstrate our commitment to deadlines on projects within Leavenworth County for over 15 years.



**Michele Keal, PE, Project Manager.** One of the most important keys to success for any project is a strong project manager. For this project, we believe that the individual managing day-to-day design tasks should also serve as Project Manager. Michele Keal, PE will dedicate herself to the management of all project tasks from the initial project kick-off meetings through construction. She will be the main point of contact and will be responsible for all project deliverables.

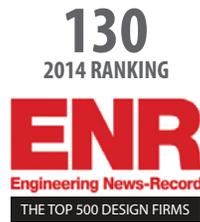
Her knowledge of project issues and involvement in design decisions, from the beginning, will result in efficiencies and quality plans. Her leadership will guide our project team to be proactive, rather than reactive, and provide the County with guidance as we overcome design hurdles and constraints. The dynamic nature of the decision making process, coupled with the coordination required with multiple stakeholders and utilities, requires a detailed documentation process. In addition to meeting minutes produced after progress meetings and field visits, our approach will include creating a spreadsheet where all design decisions are documented with the date and reason for the design change/revision clearly noted. We have found that these practices lead to more successful projects, prevent surprises and allow us to meet deadlines within identified budgets.



**Jim Jussel, PE, PTOE, Traffic.** Jim has 20 years of experience as a professional traffic operations engineer. Jim's project experience includes traffic impact studies, corridor studies, pedestrian safety studies, traffic signal design, roundabout analysis and design, roadway design, street lighting, traffic control plans, and intersection geometric improvements. His experience also includes integrating traffic calming measures in traffic design and creating pavement marking and signing plans.



**Chuck Goodman, PE, Utilities.** Chuck will serve as Assistant Project Manager. He has a diverse background in the design and construction of highways, roadways and bridges. Prior to joining Benesch, he spent 12 ½ years as a Construction Engineer with the Kansas Department of Transportation. Mr. Goodman's project assignments have familiarized him with KDOT, APWA and FHWA policies and procedures. He also has established relationships with utility companies and subsurface utility location companies.



### OUR PERSONAL COMMITMENT

We believe the County should expect more than engineering expertise in a consulting firm partner – you deserve a fully invested partnership. Benesch is that partner. As Leavenworth County, the Cities of Leavenworth, Lansing, and Basehor, begin the process of upgrading three project sites, the selection of a project partner is a key milestone. Leavenworth County (LVCO), and local city partners, are not just established clients but also our home. Benesch staff have lived in these communities for decades and have a personal commitment to increased safety, ongoing growth, and general appeal of the area. Our friends and family travel these roads, shop at the businesses, and will be directly affected by planned development and upgrades. Our personal ties to the communities involved with these projects is what drives our commitment to quality and success. These projects are more than a job, they are an opportunity for our team to positively affect those we care most about.



### BENESCH – A TRUSTED PARTNER

The first step in achieving success is planning for it. Experience is important, but people and relationships are often what sets one firm apart from another. The foundation of any partnership is trust - trust that has developed over time, working together through challenges. Our team has served LVCO and local partners for over 15 years. We have partnered on many projects ranging from inspections, new design, maintenance repairs, construction observation and emergency needs. While we can point to many individual project successes, Benesch is proud of the fact that we have contributed to the ongoing momentum in LVCO. Our staff actively contributes and serves on development initiatives within LVCO communities, like the LCDC (Leavenworth County Development Committee). As a result, we understand and appreciate both the challenges faced by communities and visions they have for the future. We have a unique ability and opportunity to understand the bigger picture and are fully invested in a partnership that helps achieve a greater vision for the County.

Our experience working alongside LVCO is important because it demonstrates commitment and knowledge. We understand your preferences and expectations and have proven we can meet them. Our goal has not changed – we want to work as an extension of your staff. The trust we have developed will be invaluable as we anticipate needs, serve as your advocate before KDOT, and develop solutions that maximize LVCO resources. Our established relationships will facilitate efficient project delivery and help LVCO avoid frustrations. Because we have worked together, we will be able to begin work immediately with no learning curve. Collectively, we understand each other, are comfortable working together and respect each other’s contributions. This will allow us to streamline communications and designs; resulting in efficiencies that save you time and money.

3 OFFICES  
IN KANSAS

**RESPONSIVENESS – THE VALUE OF PROXIMITY**

Benesch is positioned to serve your projects as a local provider. Our office in Bonner Springs is located within a short drive of each project location. Several of our staff also live within minutes of the project sites. We have served LVCO and local communities as on-call engineers for routine and emergency needs for years. Beyond engineering services, our ability to respond promptly is important. We can be on-site quicker than most, and we are located less than five minutes from KDOT’s Construction Office that will oversee these projects. Proximity, in conjunction with personal investment, will result in a level of responsiveness and efficiency that translates into savings. Our proximity and commitment are demonstrated by the fact that we have already collected traffic counts at project intersections to provide us a better understanding of the current traffic conditions.

**Key Stakeholder Relationships & Coordination.** In addition to serving these stakeholders individually, Benesch has designed projects that required coordination between multiple stakeholders. We work diligently to accommodate all interests through open discussion and

team analysis. Our team will work tirelessly to ensure that all parties have ideal space for collaboration and interaction. Our coordination strategies have proven to be effective and we encourage you to speak with references we have provided that represent each of the likely project stakeholders.

Our relationships also include local contractors. Often overlooked, an effective working affiliation with contractors plays a vital role in project success. Benesch engages local contractors, those likely to bid on these projects, to evaluate trends in costs, appreciate schedules and labor commitments, and develop realistic expectations for construction phases. As a result, we typically estimate projects within 10% of project bids.

In the decades that we have been serving LVCO and the surrounding communities, we have established working relationships with many project stakeholders including:

- LVCO Engineering Staff
- City of Leavenworth
- City of Lansing
- City of Basehor
- KDOT Bureau of Local Projects
- Jim Pickett, Kansas City Metro Engineer
- KDOT Bonner Springs Construction Office

**BENESCH - THE FULL SERVICE SOLUTION**

Benesch is a local, full service provider. This means cradle to grave delivery from conceptual layouts, through design and construction, and into future maintenance.

Our team includes experience and expertise covering:

- |   |  |
|---|--|
| • Traffic Analysis, Modeling & Forecasting      | • Intersection, Signal & Lighting Design |
| • Traffic Data Collection & Crash Data Analysis | • Structural Design                      |
| • Utility Location & Coordination               | • Geotechnical Services                  |
| • Drainage Design & Erosion Control             | • Public Involvement                     |
| • Hydraulic Modeling & Design                   | • Project Cost Management                |
| • Surveying & ROW Acquisition                   | • Construction Observation               |
| • Roadway Design                                | • Project Coordination                   |

Benesch will manage your projects with personnel based in Bonner Springs. We are also pre-qualified with KDOT to provide construction phase services. Prequalification provides LVCO the ability to utilize Benesch as needed, while still meeting QBS requirements established by KDOT.

**Environmental Services.** Benesch’s team of environmental scientists routinely help clients comply with a myriad of environmental regulations. Our staff consists of biologists and environmental scientists all experienced in providing comprehensive natural resources review for transportation projects, including wetland delineations; Nationwide and Individual Section 404 permits; wetland and stream mitigation plans; wetland monitoring; threatened and endangered species guidance and input on native vegetation. LVCO may also benefit from our Hazardous Materials expertise. Beyond Phase I and II Environmental Site Assessments (ESAs), we will

PUBLIC INVOLVEMENT TOOLS



Online Survey



Project Website



Public Open House



Graphic Displays



Property Owner Workshops



Traditional & Social Media



KDOT US-50 PROJECT

Benesch is working with the Kansas Department of Transportation to study potential improvements as a result of public comments and concerns expressed during Local Consult meetings. This includes a focus on passing lane additions that would ease travel by improving passing opportunities along US-50 now and into the future. The team is evaluating potential improvements to three intersections on US-50 in Spearville. Other enhancements that might improve safety or traffic operations along the corridor are also being considered.

Involving the public in this process will provide citizens the opportunity to engage in study efforts and provide valuable feedback.

counsel LVCO on an appropriate risk-based approach to manage any site-related hazardous material issues. Our environmental team has collectively completed well over 1000 ESAs, and we understand how to manage projects that involve identification of unknown wastes.

**Public Involvement.** Benesch has a certified public involvement specialist and a team of professionals who lead public involvement efforts related to transportation projects throughout Kansas and the Midwest. They are responsible for messaging and coordinating public participation programs and providing general marketing and public relations services. Our designers are visual storytellers, adept at communicating without words and making great words look even better. We turn complex material into a universal language that any audience can easily understand.

It is clear that these projects will be important to many. Likely, it will be most important to those people who live nearby. We will recommend public involvement methods that incorporate stakeholders early and engage them in solution-oriented processes. Our team will tell a meaningful story, listen to concerns and make reasonable accommodations where we can. We can help you build consensus around tricky issues by bringing diverse interests to the table for honest dialogue. We are confident we can implement a cost-effective Public Involvement Program consistent with established project objectives and anticipated budget. We believe that proactive communication and having consistent project information available throughout the design and construction phase is critical to overall project success.

**Value Planning Approach.** Value Planning is more than a buzzword. It's a proven, transparent process that results in documented, defensible decisions and ultimately achieve the greatest return on your infrastructure investment. Benesch incorporates this approach into every project we undertake, and our clients benefit because of it. Applying value planning and engineering ensures more than doing a project right – it ensures we do the right project. Functional, acceptable, cost effective solutions will be identified by our team. Benesch is a national leader in value planning and engineering. Our staff is trained and certified as value specialists. We are committed to providing LVCO and local partners with immediate and long-term benefits. Each of the three project sites offer multiple opportunities for value planning. As such, Benesch will present alternatives that maximize value. This value-centered approach is unmatched by any other firm.

**Managing Costs.** Engineering design is only part of the equation. Typically, a consultant's approach is limited to engineering – design, construction estimates and possibly construction observation. The Benesch partnership is different – our plan employs a total project cost management approach. Project funding, scheduling, permitting, utilities, right-of-way, and public involvement all factor into design decisions. As we present design alternatives, short and long term cost implications will be evaluated and presented. LVCO and local partners will be provided with all information to fully understand the benefit and cost (value) of each design decision. **This is what Benesch provides, and it is the difference between a partnership and someone else's engineering.**



**Lessons Learned.** Experience is often the best teacher. Benesch has provided similar roadway design services in multiple locations. Whether nationwide, or here in the KC Metro, we have successfully designed roadway and intersection upgrades comparable to 147th Street, McIntyre Road, and Eisenhower Road for dozens of clients.

We know that each project is unique and requires a tailored approach. However, three project elements frequently dictate the relative success or failure of a project:

- Utility Coordination
- Right-of-Way
- Permitting

Ironically, these three project elements have little to do with engineering. Thus, the success of an engineering project regularly lies not in engineering; but in communication.

The Benesch Team is skilled in managing and addressing each of these challenges. Although LVCO often oversees each of these elements, the scale and complexity of utility coordination, right-of-way, and project permitting may necessitate our involvement. Whether scheduling or cost implications, our experience will help you avoid frustration and complications, through upfront attention to non-engineering elements.

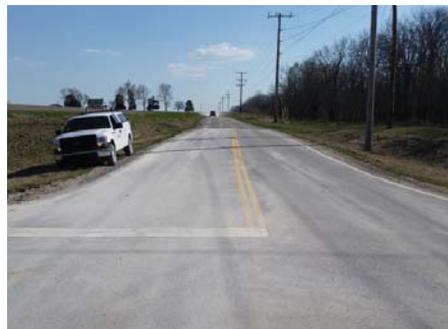
Beyond knowing the what and the how, Benesch appreciates the why.

Roadway upgrades, particularly those along corridors such as 147th Street, McIntyre Road, and Eisenhower Road, often have goals beyond improving safety and functionality. We also appreciate other project drivers. Chief among these drivers is the opportunity each project represents for the County and Cities to facilitate growth.

**147th Street** will provide another key, north-south corridor for the growing Basehor community, facilitate the vision of an expanded Falcon Lakes development, provide access to the planned Basehor City Center Development, and improve access to the industrial park and new subdivisions just north of Parallel Parkway.

**McIntyre Road** will provide a much needed east-west connection between K-7 and K-5 along the southern border of Lansing. This upgrade will encourage future growth and contribute to commercial and/or industrial development plans in southern Leavenworth County. This growth plan can be coordinated with expansion plans in northern Wyandotte County.

**Eisenhower Road**, which serves as the border between the cities of Leavenworth and Lansing, has developed into a major east-west corridor between K-7 and Tonganoxie Road. With Hallmark, Walmart, and several new subdivisions situated along this corridor, traffic volumes are likely to increase. The fact that Eisenhower provides access to 20th Street (the major north-south route on the west side of Leavenworth), further substantiates corridor significance. The City of Leavenworth will continue to grow to the west (its only option) and Eisenhower Road will serve as a means for commuters to get to and from central areas of the County.



Benesch has already performed cursory review, data gathering and made contact with several agencies. To demonstrate our commitment we have:

- Visited each of the project sites
- Collected crash data along project routes
- Photographed and logged sites
- Contacted the Kansas State Historic Society
- Collected traffic counts
- Accessed National Pipeline Mapping
- Compiled traffic data from counties, cities, KDOT
- Identified Possible Wetland Locations
- Reviewed FEMA Flood Maps
- Spoken with KDOT about possible coordination

### UNDERSTANDING THE PROJECT SITES

Benesch is excited to see that LVCO will continue to implement a larger vision for the County through the design and construction of these three roadway improvement projects. We are keenly aware of the master plans and growth projections for LVCO communities and the County as a whole. Benesch hopes to contribute on these roadway upgrades that are funded through the recently approved extension of the Leavenworth County sales tax. We have assembled a team knowledgeable, capable, and prepared to partner with you on any of the three projects. Each project presents unique challenges and opportunities.

On the following pages, we have provided a brief description and outlined our approach for each project site. Under the leadership of LVCO and local cities, the transportation network throughout the County has improved greatly over the last decade. Residents of LVCO have noticed, and they continue to support infrastructure investment. The following preliminary approaches outline how Benesch will assist in these ongoing efforts.





### MCINTYRE ROAD UNDERSTANDING

McIntyre Road serves as connection between two state routes, US-73 (K-7) and K-5. Ultimately K-5 provides access to I-435, KCI, and the greater metro area. Currently, residents in LVCO have one convenient route to I-435 and that is through the City of Leavenworth. Improvements to McIntyre Road will provide motorists with another option for traveling east-west through the County and between the two major north-south corridors of K-7 and K-5. This will clearly upgrade convenience, it will improve safety, and likely facilitate growth along the route. Current residents along the route expressed excitement and support for these improvements to Benesch staff during our field visits.

The new paved section will allow safe travel at desirable speeds. With this improvement comes the work of replacing drainage structures and relocating utilities. Considerable grading will be necessary to transition from a 25 mph to a 50-55mph section, providing adequate drainage facilities and clear zones.

Coordination with KDOT will be required at the connection to K-7, as well as at the intersection K-5. We'll meet with KDOT early in the design process to open the lines of communication. If KDOT is interested in design options for improving the intersection at K-5, or for modifications at the K-7 intersection, Benesch will work to provide alternatives. We understand that LVCO and Lansing are interested in pursuing a comprehensive upgrade that includes intersection modifications at both K-7 and K-5. However, project scope and footprint will be adjusted depending upon KDOT's ability to contribute.

Benesch has a well-established relationship with KDOT Bureau of Local Projects (BLP), the Kansas City Metro Engineer, Jim Pickett, as well as the Bonner Springs Construction Office. Jim will likely be the first to be engaged, considering his oversight of maintenance and construction of all KDOT projects on the Kansas side of the Metro. Coordination of any work at K-7 will go through Jim, consider his knowledge of the 20-year plan for the corridor.

The City of Lansing has also identified McIntyre Road as a proposed future trafficway. Through discussions with the City, Benesch has learned there may be opportunities to provide the County with improvements, as well as work with the City to meet their needs. **The City of Lansing would like a 32-foot-wide curb and gutter section in the half-mile section that is within the City limits, and has indicated they are willing to fund improvements.** A viable option may be to provide the curbed section, at potential speeds of 45 mph, and transition to a 50-55 mph section with shoulders and open ditches beyond the City limits. To determine needs at key intersections, Benesch will evaluate current and future traffic operations.

### TRAFFIC OPERATIONS

Benesch will likely recommend a corridor study related to this project. A corridor study for a rural roadway is important to help identify safety concerns, intersection geometric modifications and sight distance issues. Traffic operations will be viewed differently when compared to a more urban roadway. Jim Jussel will lead traffic engineering elements. Key corridor study elements are discussed in more detail below.



**Data Collection.** Data collection provides the underlying foundation of all analysis and the basis for which recommendations are established. For this phase, we can utilize Miovision cameras to obtain peak hour turning movements at key corridor intersections – K-7 and K-5. Additionally, machine counts can be obtained along the McIntyre Road corridor. The machine counts will be used to obtain daily volume counts, vehicle classifications and determine the current 85th percentile speed.



**Traffic Operations Analysis.** This phase of analysis involves the greatest level of integration with functional design. Key information required for functional design is provided and traffic impacts associated with design recommendations are, in turn, evaluated. This is the point where planning (through traffic forecasting) and engineering (through functional design) are brought together and studied as one. Our forecasting and analysis approach creates a seamless connection between planning and engineering.

Intersection and corridor operation conditions will be evaluated for current and future year using Highway Capacity Manual Methodology. Key concerns of the two main intersections are detailed below:



#### K-7 (US-73)

Early coordination with KDOT will be important to determine their interest in evaluating the intersection, which is currently unsignalized. Evaluating needs of a northbound, right-turn lane will likely be the main geometric modification to be considered. The length of the southbound, left-turn lane will also be evaluated to ensure it meets current design standards.



#### K-5

This intersection is unique to the corridor. Today it functions as an all-way, stop-controlled intersection. K-5 is designated on the north and east legs of the intersection and both legs are currently paved. It is anticipated that traffic operations at the intersection are within acceptable ranges, however, the larger concern involves sight distance at the intersection.

*Our team will consider and evaluate alternatives to ensure that our recommendation meets project needs, does not violate constraints, and is accepted by all stakeholders including Leavenworth, City of Lansing, KDOT and property owners.*

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**23** CRASHES REPORTED  
OVER THE PAST  
10 YEARS

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9 INTERSECTION RELATED 13 ROADWAY RELATED

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### CRASH DATA ANALYSIS

We have obtained high-level crash data information available along the McIntyre Road corridor. There were 23 crashes reported over the past 10 years. Nine crashes were intersection related and were located at either K-7 or K-5. Thirteen crashes were roadway related, but potential causes are simply presumed at this point. Benesch will acquire more detailed information as part of our preliminary project phase. We know that two of the roadway related crashes involved animals. Roadway related crashes indicate that the lack of shoulders, vertical profile or no pavement may have attributed to the other roadway crashes.

At the intersection with K-5, two of the four reported injury crashes were head-on or side-swipe conflicts. This is concerning considering this intersection is already all-way, stop controlled. These crashes may be related to limited sight distance at the intersection. Typically we look at the past five years of data. While the number of reported crashes over the five year period is relatively low, additional analysis should be considered to provide a comparison to both the County and state-wide averages.



### UTILITIES

As with any project, potential utility impacts will play a significant role in the design of an upgraded McIntyre Road. Funding for utility relocations is often allocated from a source separate from engineering and construction. This can lead to a lack of appreciation for project implications utilities can have. To avoid this scenario, Benesch employs a Total Project Cost Management methodology. For McIntyre, utility relocation costs will directly impact the construction budget and must be kept to a minimum to maximize dollars invested in functional and safety upgrades.

Utility companies will be engaged early in the project (likely during the corridor study phase if pursued). Quite often many relocation-related challenges can be avoided if communication channels are established and maintained. **Chuck Goodman will serve as the utility coordination engineer for the Benesch Team.** He will assure coordination with the utility companies occurs, utilities are properly identified and located (perhaps through subsurface investigation), and that impacts on project schedule and costs are minimized. Part of Benesch's project cost management is developing and maintaining a realistic estimate of utility costs. Mr. Goodman has extensive experience in utility coordination on similar sized and larger projects throughout the Metro area. He has established relationships with local utility companies and subsurface exploration firms.



Along McIntyre Road, there is a concentration of waterlines, valves, and other utility lines in the northeast quadrant of the K-7 intersection. It will be important to minimize impacts to these lines. Since this roadway will most likely be a candidate for some significant vertical profile improvement, impacts to utility facilities at this intersection and along the roadway may be unavoidable. During the early stages of the project, an evaluation of cost-benefit ratios of different alternatives will be performed.

### DRAINAGE DESIGN & EROSION CONTROL

Based on our site visits, many of the existing structures along McIntyre Road have a minimal amount of cover. Our first order of business will be to review these locations with County and City maintenance staff to determine if any locations are frequently overtopped. Based on our hydrologic and hydraulic analysis, we will be able to recommend a new structure type that functions with the proposed roadway section, meets the guidance for cover over a culvert and protects the traveling public from frequent overtopping. In addition to culverts along the roadway, there is also a private pond that sits at the project's edge that will require special attention and efforts, ensuring sediment does not leave the project and enter the pond.

A Stormwater Pollution and Prevention plan will be developed and maintained by the contractor. Additionally, environmental scientists at Benesch have viewed the pond in relation to the project footprint. Depending on the roadway footprint the small pond and a nearby potential wetland area could potentially be impacted. If design cannot avoid impacts, then a Section 404 permit may be required. Benesch has in-house staff with a great deal of permitting experience throughout the Midwest and in Kansas able to provide guidance and permitting assistance if needed.

### RIGHT-OF-WAY MANAGEMENT

Because vertical profile modifications may be part of McIntyre Road upgrades, right-of-way (ROW) implications need to be considered from day one. Considering interest the City of Lansing has expressed in providing curb and gutter section, an upfront cost analysis will be necessary. There are several options available to reduce ROW needs, however the cost of the ROW may result in being the most effective solution. Future growth plans along McIntyre Road will also be considered, and may dictate ROW acquisition for current and future needs. The Benesch Team is experienced in the entire ROW process and is prepared to lead this effort if requested by LVCO and Lansing.

Project Issues Map



This image depicts several identified project issues that will shape scope, schedule and costs of the McIntyre Road project. This map will be the starting point for our efforts and used in our project kick-off meeting.





### 147TH STREET UNDERSTANDING

The greater vision for LVCO includes improved access both north-south and east-west across the County. Ultimately the plan is to provide residents and motorists with a roadway network that effectively and efficiently accesses the entire County. The 147th Street project has been planned and discussed with residents for a number of years, and will provide a new north-south route in southeast Leavenworth County. Upgrades along 147th Street that have occurred north of Fairmount Road will be continued to the south. Ultimately 147th Street will provide a reliable connection between the City of Basehor and the southern edge of the City of Lansing. Improvements to this roadway will likely facilitate and foster growth of subdivisions in northern Basehor, at the Falcon Lakes Development, and other locations.

The proposed 147th Street project will extend the paved road section from Fairmount Road south, to Parallel Road within the City of Basehor. The gravel roadway will be up-graded to a collector route and improved to two twelve-foot asphalt lanes, with four to six foot shoulders. Roadway grading and power line relocation outside of the clear zone will provide the traveling public with an additional north-south route for traveling through the County.

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**Benesch will develop a plan that incorporates changes in grading, drainage analysis, relocation of utilities and right of way needs.**

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Benesch will provide the County with a project team they know and have come to trust. We will develop a plan that incorporates changes in grading, drainage analysis for replacement of cross road structures and ditch capacity, relocation of utilities and right of way needs. The existing vertical alignment will be analyzed and modified to meet 40-45 mph design speeds. Benesch has had discussions with the City of Basehor, and they are in concurrence with this criteria. The City has a 286-acre mixed-use development plan - Basehor City Center, which includes 526 homes, multi-family dwellings, senior living and retail space. The development is located between 155th Street and 147th Street, south of Leavenworth Road, and has two access points on 147th Street. The speed on 147th should be manageable for residents to safely access the road from their entrances. If a traffic study was completed for this development, our traffic team can use the information in our project design. If not, our team can forecast the amount of traffic from the development and will use this information for the roadway and intersection design.



### TRAFFIC OPERATIONS

Although 147th Street is a rural roadway, improvements and planned development suggest a need to examine traffic operations. Benesch will identify any safety concerns, intersection geometric modifications or sight distance issues. Jim Jussel will lead the traffic engineering elements for the project. Key traffic elements are discussed in more detail below.



**Data Collection.** The data collection phase is the underlying foundation of all analysis and the basis for which recommendations are established. For this phase, we will utilize Miovision cameras to obtain peak hour turning movements at the key corridor intersections – Fairmount Road, Hollingsworth Road, Donahoo Road, Leavenworth Road and Parallel Road. Additionally, 24-hour machine counts will be obtained along the 147th Street corridor. Machine counts will be used to obtain daily traffic counts, vehicle classifications and 85th percentile speeds.



**Traffic Operations Analysis.** This phase of analysis involves the greatest level of integration with functional design. Key information required for functional design is provided and traffic impacts associated with design recommendations are, in turn, evaluated. This is the point where planning (through traffic forecasting, including the proposed mixed-use development) and engineering (through functional design) are brought together and studied as one. Our forecasting and analysis approach creates a seamless connection between planning and engineering. Intersection and corridor operation conditions will be evaluated for current and future year using Highway Capacity Manual Methodology. Each intersection will be evaluated for the need for auxiliary turn lanes with the intersecting street. Crash data review will likely be the determining factor when considering adding turn lanes.



### CRASH DATA ANALYSIS

We have obtained high-level crash data information along the 147th Street corridor. There were 19 crashes reported over the past 10 years. Thirteen crashes were intersection related and were located mainly at Fairmount Road and Hollingsworth Road. Six of the crashes were roadway related. Without more detailed information it is difficult to determine the potential cause of the crashes. A noteworthy detail is that none of the crashes appeared to involve striking an animal, which is unusual for a rural roadway such as 147th Street. This would indicate the roadway crashes are a result of no shoulders, an inadequate vertical profile or no pavement.

There were 10 reported crashes at the intersection with Fairmount Road. Seven of the crashes were right angle, two of the crashes resulted in injuries and one ended in a fatality. These crashes may be related to the limited sight distance at the intersection. Additional information will be needed from the actual crash reports to determine direction of travel. There is an existing vertical curve to the east of the intersection that may be contributing to the crashes. Benesch will review crash reports to help determine if additional improvements or traffic controls should be considered. Visibility at the intersection may need to be improved to warn drivers on Fairmount Road of the upcoming intersection. Benesch has led the design of ITS solutions to help notify drivers of potential vehicles entering the intersection.

The Hollingsworth Road intersection has three reported intersection crashes. Two of the reported crashes and one injury, were identified as right angle crashes. Again, additional review of the actual crash report will help determine the potential cause. Benesch will develop crash rates to compare to average crash rates in Leavenworth County, if information is available, or the statewide average. Crash rates can help our team identify geometric design concerns or determine if crashes have occurred at random.



### UTILITIES

Identifying issues key to the project's success early in the design will help mitigate additional costs and potential schedule delays. As with many projects, a major project component on the 147th Street project will be utility impacts. In fact, our preliminary review indicates that utility related project elements along 147th Street may account for a larger percent of the project-specific budget, than either of the other two projects. Numerous utilities will likely be impacted along 147th Street between Fairmount and Parallel Roads. For this reason, a comprehensive coordination plan with all utilities is essential. This will be one of the first objectives of our project team, if selected. The preliminary project schedule will depend heavily upon the degree in which utilities are impacted. As mentioned previously, Chuck Goodman will serve as the utility coordination engineer. He has considerable experience on corridor upgrades in and around Kansas City. He has established relationships with utility companies and contractors that provide subsurface utility exploration (SUE). **Chuck's experience with SUE services will likely prove valuable, considering existing lines will need to be accurately located at multiple intersections along 147th Street.**



Accommodating existing utilities along 147th Street will account for some of the more significant challenges. Multiple gas lines and a gas substation are located in the southwest quadrant of the Donahoo Road intersection. In the southwest quadrant of the Leavenworth Road intersection is a large electric substation. This substation could be

significantly impacted if improvements to 147th Street, south of Leavenworth Road, include improvements to the vertical profile. A home in the southeast quadrant also makes shifting the alignment to the east less than desirable. Impacts to this substation will be monitored closely in all phases of the design to know upfront what costs will be incurred for relocation and/or modification.



### DRAINAGE DESIGN & EROSION CONTROL

Based on our site visits to 147th Street we have identified the following drainage/environmental concerns;

- Multiple ponds in close proximity to the roadway
- The Falcon Lakes Golf Course
- The 120" CMP that is located in a FEMA Zone A area.

To ensure that sediment does not leave the project and enter the private ponds or the Falcon Lakes Golf Course, we will pay special attention to the preparation of a site specific Stormwater Pollution and Prevention Plan. Additionally, environmental scientists at Benesch have viewed the pond in relation to the project footprint. Depending on the roadway footprint the small pond and a nearby potential wetland area could potentially be impacted. If design cannot avoid impacts, then a Section 404 permit may be required. Benesch has in-house staff with a great deal of permitting experience throughout the Midwest and in Kansas able to provide guidance and permitting assistance if needed.

Project Issues Map



In addition to the sensitivity of the adjacent ponds and golf course there is a 120” CMP located under 147th Street, south of Leavenworth Road. This structure lies within a FEMA Flood Map Zone A area. Based on this determination, we will be required to replace the structure while providing minimal impacts to the backwater level upstream of the structure. This is a situation that will require a Section 404 Nationwide permit which Benesch in-house staff can assist in preparing.

**RIGHT OF WAY MANAGEMENT**

Right-of-way (ROW) will play a significant role on the 147th Street project. Numerous constraints are present along the corridor, ranging from utilities, a golf course, private residents, existing drainage structures, a bridge, and a church. Slight shifts in the horizontal alignment, undesirable intersection approaches, and sight distance issues may also contribute to ROW needs. Several options will be available to minimize ROW needs, and multiple options will likely be utilized at various locations along the project. The Benesch Team is well experienced with the entire ROW process and is prepared to lead this effort if requested.

**KEY ISSUES**

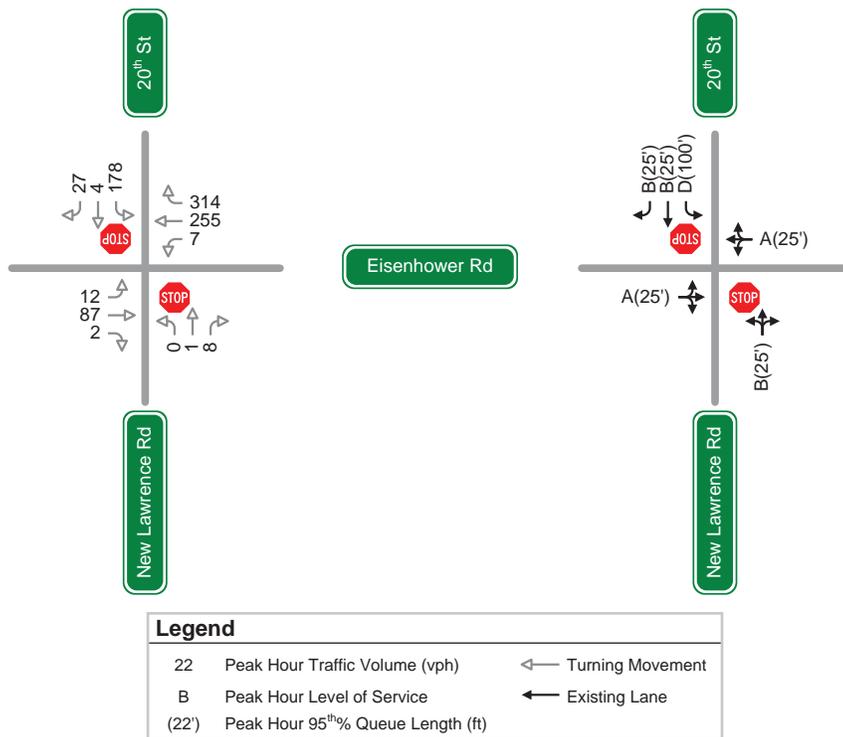
This image depicts several of the identified project issues that will shape the scope, schedule and cost of the 147th Street project. This map will be used as a starting point during our project kick-off meeting.



### EISENHOWER ROAD UNDERSTANDING

Eisenhower Road is a main east-west arterial that serves the City of Leavenworth, City of Lansing and County of Leavenworth citizens. It is four-lane, undivided roadway from 155th Street to K-7 (US-73). Traffic analysis will be vital to the success of this project and to ensure acceptable traffic operations along the corridor. Our approach will be to complete a detailed corridor study to evaluate design alternatives. Our preliminary assessment suggests that the existing four-lane section that terminates near 155th Street should be extended westward to at least 20th Street/New Lawrence Road. West of this location to Tonganoxie Road, the route becomes more rural with less active development. However, the amount of undeveloped land along the corridor provides an opportunity for future City growth. This future growth should be considered when evaluating future traffic needs. A phased approach or evaluation of the roadway section may be a desirable option as the City and County seek short and long-term solutions. A three lane roadway can carry similar amount of traffic to the four-lane undivided roadway.

2015 Existing Traffic Conditions (5:00 PM - 6:00 PM)



### TRAFFIC OPERATIONS

This phase of analysis involves the greatest level of integration with functional design. Key information required for the functional design is provided and traffic impacts associated with design recommendations are, in turn, evaluated. This is the point in the project where planning (through traffic forecasting) and engineering (through functional design) are brought together and studied as one unit. Our traffic forecasting and analysis approach creates a seamless connection between planning and engineering elements.

Current and future year isolated intersection and corridor operation conditions will be evaluated using Highway Capacity Manual and National Cooperative Highway Research Program (NCHRP) methodologies. Each intersection will be evaluated for the need for auxiliary turn lanes with the intersecting street. A factor in this determination will be crash data review.

As part of our cursory review, Benesch completed turning movement counts during the afternoon commuter peak to help gain a better understanding of current traffic conditions. Traffic volumes on 155th Street were relatively light.

Turning movement counts at the intersection with New Lawrence Road/20th Street revealed that the southbound left movement is currently about 178 vehicles per hour (vph). The westbound, right-turn volume was determined to be 314 vph, a summary of turning movements are shown along with existing levels of service.



**Data Collection.** The data collection phase is the underlying foundation of all analysis and the basis for which recommendations are established. For this phase, we will utilize Miovision cameras to obtain peak hour turning movements at the key corridor intersections – 155th Street, 20th Street/ New Lawrence Road and Tonganoxie Road. Additionally, 24-hour machine counts will be obtained along the corridor. The machine counts will be used to obtain daily traffic volume counts, vehicle classifications and 85th percentile speeds.

### CRASH DATA ANALYSIS

Benesch has obtained high-level crash data information along the Eisenhower Road corridor. There were 32 crashes reported over the past 10 years. Nine (9) crashes were intersection related and were not concentrated at one intersection. Each intersection had about three crashes. Six of the crashes were roadway related. Without more detailed information it is difficult to determine the potential cause of the roadway crashes. Seventeen reported crashes involved animals.

### UTILITIES

As with any project, utility impacts will play a significant role in the development of these projects. The Benesch Team will use Chuck Goodman as the Utility Coordination Engineer and



his responsibility will be to assure coordination with utility companies throughout all project phases. As design progresses, it will be important to have a thorough understanding of utility relocation costs so the construction budget can be maximized. Chuck has extensive experience in utility coordination on similar-sized as well as larger projects.

Even though this project site has typical utility facilities (underground and overhead communication, gas, electric, water, sanitary sewer, etc.), there are some unique features to consider. Just west of 155th Street is an underground Petroleum Pipeline to which impacts will need to be kept at a minimum. Communication with the owner will be key as to depth, casing and other requirements.



Just west of 155th Street, on the north side, is a water pump station. This station is served by underground electric lines and it will be key to keep impacts to this facility to a minimum. Beginning just west of Branch's Way (on the north side of Eisenhower Road) are large, steel overhead electric transmission poles and lines. It is imperative Eisenhower Road improvements in this area not impact these structures as costs to relocate these structures is substantial. These structures also have large concrete footings that we will need to be avoided.

## PROJECT 3 | EISENHOWER ROAD: UNDERSTANDING & APPROACH

### DRAINAGE DESIGN & EROSION CONTROL

Based on our site visits, many of the existing structures along Eisenhower Road have a minimal amount of cover. Our first order of business will be to review these locations with County and City maintenance staff to determine if any of these locations are frequently overtopped. Based on our hydrologic and hydraulic analysis we will be able to recommend a new structure type that works with the proposed roadway section, meets the guidance for cover over a culvert and protects the traveling public from frequent overtopping. In addition to culverts along the roadway, there is also a private pond that sits at the project's edge that will require special attention and efforts ensuring sediment does not leave the project and enter the pond.

A Stormwater Pollution and Prevention plan will be developed and maintained by the contractor. Environmental scientists at Benesch have viewed the pond in relation to the project footprint. Depending on the roadway footprint the pond small and a nearby potential wetland area could potentially be impacted. If design cannot avoid impacts, then a Section 404 permit may be required. Benesch has in-house staff with a great deal of permitting experience throughout the Midwest and in Kansas able to provide guidance and permitting assistance if needed.

Project Issues Map



This image depicts several identified project issues that will shape scope, schedule and costs of the Eisenhower Road project. This map will be the starting point for our efforts and used in our project kick-off meeting.

## State Avenue: 82nd to 94th Street Kansas City, Kansas



Benesch completed a roadway design project for State Ave – 82nd to 94th Street for the Unified Government of Kansas City, KS and Wyandotte County. The significance of this roadway has increased recently since it has been identified as a rapid transit corridor in the City-Wide Master Plan. The purpose of the project was to extend the improvements that have already been implemented to the east, between 47th Street and 82nd Streets.

In addition to resurfacing the roadway, new curb and gutters and storm sewers were designed. The existing concrete medians were replaced with curbed, landscaped and irrigated medians, bringing vibrancy back to the corridor. This portion of State Avenue has commercial development on the east end and residential development on the west end. Sidewalks were provided on both sides, incorporating an 8' path on the north side. A KCATA bus stop will be just west of 82nd Street. New signal design was completed for the intersections at 90th, 86th, and 82nd Streets, providing for ADA compliant crosswalks and curb ramps. New ADA compliant curb ramps were constructed at all City cross streets. New LED street lighting, signal warrant analysis of the existing intersections and four traffic signals that included rapid transit pre-emption and LED street lighting were included in the project.

### Contact:

Bill Heatherman  
Unified Government of Wyandotte  
County/Kansas City, Kansas  
913-573-5700

## Parallel Parkway Improvements Kansas City, Kansas



The improvements to Parallel Parkway, divided into two projects, include widening, raised medians, new pavement, curb and gutters, storm sewers, lighting, signals, and sidewalks. The new roadway alignment benefited the surrounding community by: improving traffic and pedestrian safety; reducing the number of distressed, vacant and unsafe properties; minimizing environmental impacts, especially to parkland; reducing the number of hazardous waste sites; minimizing impacts to active businesses and occupied residences; promoting economic growth and redevelopment; and eliminating overpasses at 10th Street and the abandoned UPRR. Identifying approximately 20 potential areas of utility conflicts, Benesch developed a schedule of recommended pothole locations and oversaw the investigations. Coordination meetings were conducted prior to and following utility relocation work.

LPA construction administration and observation includes KDOT certified inspectors, on-site soil and concrete testing, and CMS documentation. The 17th to 9th Street project was completed in late summer 2005, and the 9th to 5th Street project was completed in 2012. Our inspection team was required to maintain a line of communication between the different responsible departments of the City, the contractor, subcontractors, and utility companies. Our primary responsibilities included: daily inspection and documentation; daily construction administration and coordination with the City, contractors, and affected business/property owners; post construction activities associated with evaluation & acceptance of project; concrete and soil testing through a subcontractor.

### Contact:

Wayne Moody  
Unified Government of Wyandotte  
County / Kansas City, Kansas  
913-573-5700

# South Coddington & West Van Dorn Safety Project

City of Lincoln, Nebraska



This project will provide needed safety improvements at the intersection of Coddington Avenue and West Van Dorn Street. As part of the project, an alternative analysis study was completed to identify the best geometric or traffic control measure that will improve the overall safety of the intersection. The intersection has experienced numerous right angle crashes over the years and has been identified as a high crash location in the City of Lincoln for several years. The alternative that Benesch recommended to improve safety at the intersection was a single lane roundabout. This improvement alternative will reduce the number of conflict points at the intersection and eliminates the severe, right angle crashes.

The existing asphalt will be removed and replaced with concrete pavement and ties into the recent Coddington Avenue improvements located north of Van Dorn. Access to adjacent businesses and residences will be maintained at all times.

A new sidewalk is proposed on all four quadrants of the intersection. Additionally, existing stormwater facilities will be removed and reconstructed to maintain proper drainage.

Benesch provided roadway, traffic, roundabout and drainage design, NEPA environmental services, public involvement, and geotechnical investigation. Unique considerations exist in regards to construction phasing, utility coordination, access to nearby businesses and maintaining connection to Pioneers Park and golf course.

**Contact:**

Craig Aldridge  
City of Lincoln  
Engineering Services  
402-441-7711

# US-24 Corridor Study

Manhattan to Wamego, Kansas



Benesch was the lead consultant for this effort to develop a Corridor Management Plan and associated regulatory policies for Pottawatomie County, KDOT, and the cities of Manhattan, St. George, and Wamego. The study area included 14 miles of U.S. Highway 24 from east Manhattan to east of Wamego, and three miles of Kansas Highway 99. The partners initiated the study to develop a coordinated planning effort to address the increasing demands on infrastructure due to rapid development.

Services include a market analysis, land use planning, traffic engineering (including travel-demand model), transportation planning, and legal consulting on regulatory policies / interlocal agreements. The project also includes extensive public involvement, some examples of which included a community questionnaire, community presentations, stakeholder interviews, a citizens' advisory group, public meetings and media outreach. GIS services for this project included a utility investigation within the study area. GIS was used to map existing water and sanitary lines; lay-out of new utilities for the corridor; and the creation of maps and exhibits for the study. A spatial analysis using land use data was performed to determine infrastructure needs along the corridor.

**Contact:**

Rob Ott, PE  
City Engineer  
City of Manhattan  
785-587-2415

## US-83 Thomas-Sheridan County Line, East to Junction US-83/K-23 Kansas Department of Transportation



US-83 in Sheridan and Thomas counties is a two-lane rural highway. There is an urban four-lane section through the town of Selden. The Kyle railroad runs along the north side of US-83 in town in conjunction with the grain elevators.

Details of the project include rebuilding eleven miles of US-83 on offset alignment, from the junction of US-83 and K-23 to the Sheridan/Thomas County Line. To provide additional safety benefits along the highway, the typical section will increase the shoulder width to ten feet. In the city limits of Selden new curb and gutter will be built and drainage and erosion concerns will be addressed. An important aspect of the project was planning construction phasing so that it would not interfere with access to the grain elevator during harvest season. The project also involved utility relocations and right of way.

**Contact:**

Deb Tanking  
Kansas Department of Transportation  
785-296-0269

## K-177 Highway Improvements Geary and Morris Counties, KS Kansas Department of Transportation



Benesch completed a modernization project that begins on Highway K-177 five miles north of the US-177/US-56 intersection in Council Grove, Kansas and continues north to the I-70/K-177 interchange. This project identified safety, operational (traffic flow, capacity) and geometric (shoulders, hills, curves, intersections) deficiencies along the corridor and through an analytical process, with input from area stakeholders, determined cost-effective improvements that can be implemented within an established budget.

Our efforts began with extensive data collection and field investigation to gather important information about the roadway. During the duration of the project we sought input from the citizens and stakeholders who travel and live near the project through our public involvement efforts.

Through an analytical process, Benesch considered available funding, community priorities and improvements that provide the greatest return on investment. Once solutions had been outlined, we presented our recommendations to improve existing infrastructure, provide economic opportunities, preserve the natural resources and ultimately improve the user experience and safety throughout this important corridor.

Design efforts are now underway for \$25 million in operational, geometric, and safety improvements. The project is scheduled for construction in 2017 and has been well received by stakeholders.

**Contact:**

Amy Rockers  
Kansas Department of Transportation  
785-296-3658

## K-156 Roadway Improvements Ellsworth County, Kansas



The objective of this 15 mile-long transportation project was the improvement of a section of roadway, including the corresponding structural elements, along K-156 in Ellsworth County, Kansas. The main objective of the project was to improve this rolling 2-lane highway with little to no shoulders with few passing opportunities, to a “Super 2-Lane” highway with essentially zero “No Passing Zones” in the 15 mile segment. The roadway pavement was completely reconstructed, 10-foot fully paved shoulders were added, and the vertical profile was improved to a condition where zero no passing zones with regard to passing sight distance at a design speed of 70 mph. Drainage improvements, pavement markings, signing, erosion control, traffic control, and replacements and extensions of culverts (box and pipe structures) were also key components on this project.

In addition to the above elements, utility coordination assistance, wetland mitigation design, environmental permitting assistance, and right-of-way assistance was provided to the Kansas Department of Transportation on the project.

**Contact:**

Scott King, PE  
Kansas Department of Transportation  
785.296.3901

## County Rd 30 Resurfacing & T-24 Bridge Over Tonganoxie Creek Leavenworth County, Kansas



The T-24 Bridge Replacement over Tonganoxie Creek is an example of Benesch’s capability to provide construction/field observation. Benesch staff provided the field construction observation for this 3-span continuous RCSH bridge replacement project (34’-46’-34’). In addition, as a follow-up project, Benesch provided similar construction observation services for the bituminous surfacing project along County Road 30. Benesch provided a full range of services for these two projects. Services included: overseeing Pile Driving, formwork/Falsework erection, rebar layout, concrete pours; erecting detour signing and construction traffic control; preparing existing gravel surface for new surface; Placing & Compacting AB-3 Base; trimming AB-3 base; Laying and trimming AB-3 for shoulders; laying two lifts of bituminous surfacing; installing permanent signing; and placing permanent epoxy pavement markings.

Benesch oversaw the construction and the roadway resurfacing. In addition to ensuring proper methods of construction were employed and all safety procedures were followed, Benesch and its sub-partners provided all material testing.

Benesch provided construction contract administration and full construction documentation including entries into KDOT’s CMS. Documentation included project diaries, working day assessment, pay item entries and calculations, weekly reports, pay estimates, change order explanations and quantities, material test report records for certifications and project final quantities.

**Contact:**

Michael Spickelmier  
Leavenworth County, KS  
County Engineer  
913.684.0470

# Tonganoxie Road (ST-33 & ST-15) Over Stranger Creek

Leavenworth County, Kansas



The ST-15 and ST-33 bridges are located approximately 2.1 miles east and 3.0 miles north of the town of Tonganoxie in Leavenworth County, Kansas. These structures carry County Road #5 (Tonganoxie Road) across both Stranger Creek itself and one of its tributaries, and is situated just south of the T-intersection with Donahoo Road. The structural, functional and hydraulic inadequacies of these two structures had been understood for a number of years. Low posted load-limits, numerous maintenance repairs, narrow roadway widths, substandard bridge barriers, and routine scour damage all played a part in Leavenworth County's (LVCO) decision to design replacement structures.

The original project scope was solely for the replacement of the ST-15 Bridge. The desire to replace both structures along with the ¼-mile-long section of roadway located between them required KDOT approval. Benesch was required to work with KDOT's BLP, their Planning Department, and the Budget Department in order to modify the project scope. Due to the close proximity of the bridges, it was necessary to develop a hydraulic model that included both structures. During larger storm events the floodplains for the two independent bridges combine into one -- making the two structures interdependent. The new ST-15 Bridge will be a standard three-span KDOT RCSH Bridge, while the ST-33 Bridge will be replaced with a four-span prestressed concrete girder bridge.

## Contact:

Michael Spickelmier  
Leavenworth County, KS  
County Engineer  
913.684.0470

# 178<sup>th</sup> Street (ST-43) Over Hog Creek

Leavenworth County, Kansas



This project involved the replacement of a functionally obsolete and structurally inadequate fracture critical bridge. The original single-span steel high truss was also constricting the water flow along Hog Creek. As a result; the new three-span concrete haunch slab bridge (36'-48'-36') addresses the functional and structural limitations of the original structure, while also improving the hydraulic performance.

178<sup>th</sup> Street is a gravel roadway that serves as a convenient connection between to major east-west corridors. The new bridge design took these future plans into account and accommodated a future wider roadway with a 30-foot-wide deck.

Due to the profile grade along 178<sup>th</sup> Street, the bridge is located at the valley. This presented a challenge from a hydraulic standpoint, considering the bridge needed to be raised to meet freeboard and overtopping criteria. The solution called for the bridge to be raised while still allowing the flow from a design storm to potentially overtop the approach pavement.

The new structure incorporated concrete web-wall piers founded on spread footings bearing on rock. The fixed abutments are pile supported. New guardrail, approach pavement and markings, and rip rap were also integrated. Coordination between KDOT's BLP, LVCO, permitting agencies, and property owners was uneventful, and the project was delivered on time and on budget. As a result, Benesch was selected to provide construction inspection services as well.

## Contact:

Michael Spickelmier  
Leavenworth County, KS  
County Engineer  
913.684.0470



**Carl Reed, PE**  
Principal-in-Charge

Mr. Reed currently serves as a Project Principal at Alfred Benesch & Company. His knowledge and experience in structural and roadway design, as well as inspection allow him to provide effective and cost-efficient engineering solutions. His contribution to Bensch includes the design of various bridge projects including poured-in-place concrete, structural steel, and P/S girder systems. He has also been involved in the design of various structural systems, feasibility studies, reports, construction administration, project specification, field investigation, bridge inspection, bridge load rating, and provided special building inspections. With over 40 years experience in the industry, Mr. Reed provides an excellent resource.

**Railroad Design & Project Management Experience:**

- 42nd Street Bridge Over A.T. & S.F. Railroad Yards; KCK
- 99th St. Bridge Over Kansas City Southern RR; KCMO
- NB/SB I-35 Bridges Over BNSF Railroad; Coffey Co, KS
- EB/WB I-435 Bridges Over BNSF Railroad; Johnson Co, KS

**Bridge Design and Project Management Experience**

- Parallel Pkwy Reconstruction (5th to 17th); KCK
- Tonganoxie Rd. Bridges Over Stranger Ck; LVCO
- 142nd St. Bridge Over I-70; KCK
- 243rd St. Bridge Over Buttermilk Ck; LVCO
- K-23 Bridge Over Cimarron River; Meade Co., KS
- Dempsey Rd. Bridge Over Stranger Ck; LVCO
- K-96 Bridge Over Neosho River; Neosho Co., KS
- Dempsey Rd. Redeck Over Stranger Ck; LVCO
- US 283 Bridge Over Solomon River; Norton, KS
- 3rd St. Bridge Rehabilitation Over Jersey Ck; KCK
- I-435/I-35 “Maltese Cross” Interchange; JOCO
- Route 7 Bridge Over Big Creek; Henry Co, MO
- NB/SB K-7 Bridges Over 119th Street; JOCO
- Hardsaw Rd Bridge Over Sni-A-Bar Ck; KCMO

**Building Design and Project Management Experience**

- Bayer HES Research Facility; Stillwell, KS
- Justice Complex; KCK
- Bayer Bio-Chemistry Building; Stillwell, KS
- Northeast Middle School Addition; KCMO

**Education**

B.S. Civil Engineering,  
Univ. of Kansas  
  
M.S. Civil Engineering,  
Univ. of Kansas  
  
D.E. Structural Engineering,  
Univ. of Kansas

**Years of Experience:** 40

**Registrations and Certifications**

Professional Engineer  
Kansas  
Missouri

**Michele Keal, PE**  
Project Manager



Ms. Keal’s experience spans over 18 years, designing and managing rural highway projects, urban arterials, and interchanges for DOT’s, and has worked extensively for counties and cities in Kansas. In addition to her design experience with diamond and directional interchanges, she also has had the opportunity to lead design teams on the design of diverging diamond interchanges for multiple DOTs in the mid-west. On all project types, she leads a diverse team of roadway and bridge design team members and is responsible for all design elements as well as project budget, schedules and quality control.

**Seminary Road, City of Kansas City, Kansas.** Seminary Road, from Cherokee Street to Iowa Street was reconstructed following the design of the Turkey Creek/Cherokee Interceptor. The project included full pavement reconstruction, curbs and gutters, and sidewalk. Design and construction were complete within the existing Right-of-Way and drainage was coordinated with the U.S. Army Corps of Engineers.

**Front Street, City of Kansas City, Missouri.** Front Street is a highly industrialized route that lacks capacity for both vehicles and pedestrians. The City of Kansas City, Missouri and the Missouri Department of Transportation have an urban agreement to upgrade the corridor through the addition of two new through lanes. In addition to new lanes along the route, design has also included reconfiguration of the Chouteau Trafficway intersection, a railroad grade separation at Kansas Avenue, and sidewalks added to give pedestrian walkability to the route.

**State Avenue - 82nd to 94th Street, City of Kansas City, Kansas.** State Avenue is a four-lane major arterial roadway running east-west in Kansas City, Kansas. It is designated as US-24 Highway with an Average Annual Daily Traffic count of 13,900 vehicles. The purpose of the project was to extend the improvements that have already been implemented to the east, between 47th Street and 82nd Streets. In addition to resurfacing the roadway, new curb and gutters and storm sewers were designed. The existing concrete medians were replaced with curbed, landscaped and irrigated medians, bringing vibrancy back to the corridor. Benesch, working closely with BPU, Time Warner, and AT&T, managed activities for water, power, and phone/cable relocations. SUE Services were utilized during the design process to identify and avoid a costly fiber optic line relocation.

**Education**

BS, Civil Engineering,  
Kansas State University

**Years of Experience:** 18

**Registrations and Certifications**

Professional Engineer  
Kansas  
Missouri  
Iowa



**Jim Jussel, PE, PTOE**  
Traffic

Mr. Jussel has 20 years of experience as a professional traffic operations engineer, working in the public and private sector. Mr. Jussel's project experience includes traffic impact studies, pedestrian safety studies, traffic signal design, roundabout analysis and design, roadway design, street lighting and intersection geometric improvements. His experience also includes integrating traffic calming measures in traffic design and creating pavement marking and signing plans.

**Olathe Traffic Signals, Olathe, KS.** Designed traffic signals at the intersections of College Boulevard and Woodland Road; and Ridgeway Road and 106th Street. The project included converting the existing 105th Street intersection into a three-quarter access intersection.

**78th Street, Kansas City, KS.** Completed the corridor study from I-70 to State Ave. The project included realigning Tauromee Avenue to align with Elizabeth Avenue. Designed the traffic signals at Tauromee Avenue, Elizabeth Avenue, and the I-70 interchange ramps. Completed the design of the roadway street lighting, pavement marking and signage plans. The project also included an advance signal ahead sign that was tied to the traffic signal at Tauromee Avenue. The sign provided additional warning to southbound drivers of a "Red" signal ahead.

**K-18/K-113 Interchange Study, Manhattan, KS.** Completed the detailed traffic analysis for the K-18/K-113 interchange in Manhattan, KS. The project included the intersections of Rosencutter and Southwind. As part of the data collection, vehicle queuing study was completed during the turning movement counts to provide additional data for the calibration of the Synchro traffic analysis. A Value Planning study was completed to develop alternatives to consider and to provide a documented process in the selection of the preferred alternative. The preferred alternative was determined to be a diverging diamond interchange.

**12th Ave North – West Fargo.** Project Manager for Phase 1 of the Cooperative Project Concept Report (PCR) and Design Plans for 12th Ave N corridor located in West Fargo, ND. The project included detailed traffic analysis, crash data review and development of alternatives to improve the overall roadway to serve the increase in traffic along the corridor. Completed LED street lighting design for 2.5 mile corridor.

**Education**

B.S. Civil Engineering,  
University of Nebraska-Lincoln

Associate Degree Architectural  
Drafting, Southeast Community  
College

**Years of Experience:** 20

**Registrations and Certifications**

Professional Engineer  
Kansas  
Missouri  
Nebraska

Professional Traffic Operations  
Engineer, National, 2003



**Chris Harker, PE**  
Structures

Mr. Harker's responsibilities include both field and office work. As a design engineer, his responsibilities include structural and civil design, hydraulic assessments, load-rating analyses, cost estimating, plan review, development of specifications, and overall project management. His design projects have included highway and rural bridges, culverts, building rehabilitations, roadways, retaining walls, and levees.

Mr. Harker most often fills the role of structural design engineer, yet frequently takes upon the responsibility of project manager. In addition to traditional structural design, Mr. Harker also performs load-rating analyses and hydraulic assessments as necessary. He conducted formal research in prestress bond development, serviceability performance, concrete casting procedures, and concrete material properties. Furthermore, he has experience with bridge instrumentation and various field-testing techniques.

**Bridge Design Engineering**

- I-44 Bridge Over 71 Highway; Newton Co., MO
- Blue Ridge Cut-Off Over I-70; Jackson Co., MO
- 40 Highway Over I-435; Jackson Co., MO
- Nichols Road Over Route 54; Camden Co., MO
- Route KK Over Route 54; Camden Co., MO
- 142nd St. Bridge Over I-70; KCK
- K-23 Bridge Over Cimarron River; Meade Co., KS
- E-450 Road Over Deer Ck; Douglas Co., KS
- 359th Street Over Middle Ck; Miami Co., KS
- Noland Road Over I-70; Jackson Co, MO
- Northwest District Bridge Redecks; St. Joe, MO
- Route Z Over Big Otter Ck; Henry Co., MO
- US-73 Over Piper Ck; Wyandotte Co., KS
- Woodend Road Over Wolf Ck; Bonner Springs, KS
- 142nd St. Over Little Kaw Ck; Wyandotte Co., KS
- Route 248 Over Route 65; Branson, MO
- Tonganoxie Rd. Bridges Over Stranger Ck; LVCO
- 243rd St. Bridge Over Buttermilk Ck; LVCO
- Dempsey Rd. Bridge Over Stranger Ck; LVCO
- Dempsey Rd. Redeck Over Stranger Ck; LVCO
- 3rd St. Bridge Rehabilitation Over Jersey Ck; KCK
- Route 54 Over Coon Ck; St. Clair Co., MO

**Education**

BS, Civil Engineering,  
Kansas State University

MS, Structural Engineering,  
Kansas State University

MS, Management, Baker University

**Years of Experience**

11

**Registrations and Certifications**

Professional Engineer  
Kansas  
Missouri

NHI Certified Bridge Inspector



**Steve Roth, PE**  
Hydraulics

Mr. Roth is the Water and Municipal Service Group Manager in the Benesch Bonner Spring's office. During his career he has acted as a construction inspector, designer, project engineer, and project manager on a wide variety of projects. His experience also includes the rehabilitation or reconstruction of multiple municipal streets and parkways. He has developed horizontal and vertical alignments; completed hydrologic analyses of culverts and bridges; produced cross sections; developed pavement marking, erosion control, and lighting; calculated construction quantities; coordinated utility relocations; and developed construction estimates.

**29th Street, Kansas City, Kansas.** 29th Street in Kansas City, Kansas required two distinct types of design. First, storm run-off onto 29th Street between Minnesota and State Avenue collected into a low area directly in front of a local small business. To provide positive drainage away from the business, the roadway profile had to be lowered two feet along this section of 29th Street. With this magnitude of change in the roadway profile, the design team realized other entrances and side streets along the roadway would also have to be significantly changed. In addition, sidewalks were able to be accommodated, even with the significant change in grade. The section of 29th Street between State Avenue and Nebraska Avenue is within a residential neighborhood. Benesch prepared plans for mill and overlay, curb and gutter replacement, an additional right turn lane at State Avenue, and grading and replacement of sidewalk along the west side of 29th Street.

**State Avenue, 47th to 69th Street.** State Avenue is a four lane major arterial roadway running east-west in Kansas City, Kansas. It is designated as US-24 Highway with an Average Annual Daily Traffic count of 13,900 vehicles. The purpose of the project was to make major improvements between 47th Street, just west of the I-635 interchange, to 69th Street, east of the Turner Diagonal. Beyond the typical mill and overlay project, the City also elected to make several improvements within the roadway of State Avenue to enhance its appearance. This led to the removal of the existing concrete medians and their replacement with landscaped medians. The landscaped medians include zoned irrigation systems, under drain systems, engineered curbing, and retaining walls for the protection of both vehicle traffic and the plantings.

**Education**

BS Civil Engineering, University of Kansas

Years of Experience: 18

**Registrations and Certifications**

Professional Engineer  
Kansas  
Missouri

LEED Accredited Professional



**Chuck Goodman, PE**  
Utilities / Right-of-Way

Mr. Goodman is a Senior Project Manager in the Benesch Manhattan, KS office. In that capacity, he is responsible for design and management of public works projects dealing with all transportation-related issues. He has a diverse background in the design and construction of highways, roadways and bridges. Areas of emphasis include: project management, geometric design, quality assurance, public involvement, utility coordination and contract administration. Prior to joining Benesch, he spent 12 ½ years as a Construction Engineer with the Kansas Department of Transportation. Mr. Goodman's project assignments have familiarized him with KDOT, APWA and FHWA policies and procedures.

Mr. Goodman has broad based technical and geographic experience in transportation engineering for streets and highways. He has been responsible for the project management and design of highway and roadway improvement projects for city, county and state agencies. These projects have included geometric improvements, subsurface utility engineering, safety enhancements and public involvement. He has served as the project engineer "in charge" for urban and rural arterial roadway design projects. He has also served as Construction Engineer and Project Manager for many roadway construction projects.

Chuck has also been a primary manager for projects being administered by KDOT's Bureau of Local Projects. These projects have included bridge replacement and rehabilitation design, roadway realignment and widening design and construction engineering.

**Relevant Experience**

- K-27 Middle Ladder Creek Bridge Replacement and Roadway Rehabilitation in Wallace County, Kansas – KDOT
- Four Separate Bridge Replacement Projects in Leavenworth County, Kansas – KDOT Bureau of Local Projects
- Middle Creek Bridge Rehabilitation and Roadway Rehabilitation on 359th Street in Miami County, Kansas
- K-23 Cimarron River Bridge Replacement and Roadway Relocation in Meade County, Kansas - KDOT
- Parallel Parkway Reconstruction (17th to 9th St.) – Kansas City, Kansas

**Education**

B.S. in Civil Engineering,  
Kansas State University

Years of Experience: 27

**Registrations and Certifications**

Professional Engineer:  
Kansas  
Missouri

Kansas Department of  
Transportation Certified Inspector



PROJECT

1

## MCINTYRE ROAD

Between  
K-7 and K-5



PROJECT

2

## 147TH STREET

Fairmount Road to  
Parallel Road



PROJECT

3

## EISENHOWER ROAD

155th Street to  
Tonganoxie Road