November 15, 2013

Mr. Kenny Voss, P.E.
Local Program Administrator
Missouri Department of Transportation
PO Box 270
Jefferson City, MO 65102

RE: LPA – Traffic Engineering & TEAP

Dear Mr. Voss:

Local municipalities do not always have the luxury of in-house traffic engineering expertise or the budget for needed traffic analyses. HDR's Missouri staff has been providing traffic engineering services to local municipalities – whether through TEAP, LPA, or other means – for many years. We understand the challenges these agencies face, making do with limited resources, and we understand that they want problems resolved quickly and practically. In addition to our local expertise, we also have national resources to draw from when unique situations occur that might benefit from multiple perspectives. In short, HDR is able to provide a "one-stop shop" for traffic engineering solutions to municipalities of any size, and we very much want to be included in LPA on-call traffic engineering opportunities in Missouri.

General Experience

HDR has been in business since 1917, with a presence in the Missouri-Kansas region since 1985. We have eight offices in Missouri, with staff in Kansas City, St. Louis, Springfield, Columbia, Lee's Summit, St. Charles, Forsyth, and Osage Beach. Specific team members' years of experience are highlighted later in this letter, but HDR has been performing traffic engineering services in Missouri for decades. Specific recent relevant projects are summarized below.

Clarke Street Traffic Engineering Study (MoDOT TEAP), DeSoto, MO. Under MoDOT's TEAP program, HDR evaluated Clarke Street, a two-lane road of largely rural character in the City of DeSoto. The study included an examination of horizontal and vertical geometry, existing signage/lighting, accident history, and access issues. The study recommended some widening, improvements to existing vertical curves, additional signage and pavement markings, intersection realignment, lighting/utility modifications, and access improvements.

On-Call Traffic Engineering Services, Lee's Summit, MO. HDR provided on-call traffic services on a renewable annual basis for several years prior to the City expanding its staff. Projects included a downtown parking inventory, review of traffic studies for several developments, cost estimate review for a very large development project, feasibility analysis for a potential five-leg roundabout, and development of Citywide traffic signal design standards.

Six Signal Design Projects, Kansas City, MO. HDR designed six traffic signal modifications in various locations for the City of Kansas City, as part of an initiative to upgrade signals Citywide. Project tasks included coordination with utility providers, preliminary/final design, preparation of Project Manuals, development of cost opinions, and review/approval by MoDOT (five of the six signals received STP funding). The designs were prepared for the following intersections: 23rd/Jackson, 27th/Indiana, 31st/Indiana, 43rd/Main, 55th/ Rockhill, and Independence/ Norton. MoDOT LPA guidelines were followed.

103rd Street/Hauser Street Traffic Study, Lenexa, KS. HDR performed a traffic study including vehicle/pedestrian counts, signal warrant analysis, gap analysis, and crash analysis. Residents had voiced concern regarding pedestrians crossing at this three-legged, one-way STOP-controlled intersection. Signal warrants were found not to be met, and no pedestrian-related crash pattern was discovered. HDR recommended updated pedestrian signage, and conducted follow-up studies determining that no further improvements were recommended.

Parking Studies, Washington University in St. Louis, St. Louis, MO. HDR completed a series of parking studies for Washington University in St. Louis. The first was in 2008, followed by studies in 2010, 2012 (spring), and 2012 (fall). These projects included field data collection, data compilation, analysis, conclusions, and documentation. The most recent project involved a review of existing parking utilization for approximately 950 parking spaces. The latest technical report also included a parking policy/zoning review of similar institutions across the country.

Signal Removals, 96th Terrace/Monrovia Street and 94th Street/Pflumm Road, Lenexa, KS. HDR conducted signal removal studies for two intersections in the City of Lenexa. The studies included analysis of existing geometry /volumes, extensive field review of sight distance and general conditions, future forecasts with a school closure (in one case), analysis of the nine MUTCD signal warrants, level of service analysis, and final recommendations.

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Taney County Transportation Priority Matrix, Taney County, MO. HDR evaluated and prioritized over 40 transportation projects of various types and sizes throughout Taney County. This evaluation took into account 30 different factors including traffic operations and safety (safety index, accident index, severity index, etc.). The evaluation factors were directly related to MoDOT's project scoring criteria in the Engineering Policy Guide (EPG). The analysis and prioritized project list was presented to the Taney County Transportation Advisory Board. The project was very successful and HDR is now preparing updates to add new projects to the priority list.

On-Call Traffic Engineering Services, Clayton, MO. HDR provided on-call traffic services on a renewable annual basis for several years. Projects included downtown parking inventories, review of traffic studies for several developments, speed studies, traffic count studies, and local arterial analysis related to long term major interstate reconstruction closures

Long-Range Transportation Plan, Franklin County, MO. This plan was designed to provide a blueprint for future transportation system improvements in the County. The initial work involved baseline data collection and analysis as well as stakeholder involvement to evaluate the existing system and identify key issues. Subsequently, the project used East-West Gateway Council of Governments' Travel Demand Models to determine future growth trends and develop potential roadway improvement projects. The potential projects were examined based on factors including population growth, development, and safety.

On-Call Traffic Engineering Services, City of Gardner, KS. HDR is currently providing on-call traffic engineering review services for the City of Gardner, and we have done so for over five years. Tasks have included traffic study scoping and reviews for several proposed developments (including residential, retail, fast food, and warehouse proposals), site plan reviews, roadway plan reviews (striping, signals, roadway layouts), speed studies, school studies, and assistance with applications for federal funds.

CAMPO Transportation Model Development, Jefferson City, MO. HDR developed an all-new TransCAD travel demand model for CAMPO, involving calibration of a 2010 base-year model scenario and development of 2020 and 2035 forecasts. The models were used to evaluate traffic operations at critical intersections and on planned long-range improvements. The project included a high degree of coordination, collaboration, and cooperation with a very engaged MPO staff. *In Missouri, HDR has also developed models for Joplin, Columbia, and Kansas City.*

Railroad Grade Crossing Evaluation for BNSF, West Plains, MO. HDR evaluated a potential railroad grade crossing closure in West Plains, taking into account the impact the closure would have on other crossings in the area as well as at several key intersections. *HDR's Missouri transportation practice staff has also performed detailed grade crossing analyses in Kansas and Texas.*

Past Performance

Our repeat business is a testament to our past performance. This includes large agencies such as Kansas City, MO, and smaller ones such as Gardner, KS and Washington University in St. Louis. In fact, 80% of our business is from repeat clients. Our reference letters highlight why we have such a high percentage of repeat clients.

For example, our complex CAMPO (Jefferson City area) traffic forecasting and intersection evaluation project, which required a high level of ongoing communication and coordination, was ranked as excellent for work quality, timeliness, and overall. The client stated, "HDR communicated wonderfully … HDR managed the transfer, assembly, and management of the data in a very professional manner … project deliverables were very well documented … It was a pleasure working with HDR."

The Taney County Prioritization project, which included traffic operations and safety evaluations, also was rated excellent in all three categories with the overall comment that "HDR has done a great job …" To confirm this, the County awarded HDR a follow-on contract to continue to keep the project up to date. Similarly, Franklin County rated HDR excellent in all three categories, for our work on their LRTP.

HDR has done many traffic projects in Kansas City, MO. Near the end of one of our largest and most complex projects (a new Major Street Plan for KCMO) the client project manager praised HDR's project manager stating, "[His] innovation, his knowledge, and his abilities are fantastic." The City staff was very pleased with the outcome of the project and subsequently selected HDR for other challenging traffic engineering projects in the City.

Our City of Gardner on-call traffic engineering contract provides a final example of our quality past performance. HDR has been providing traffic engineering services to Gardner continuously since 2008. One of the main client contacts, a local project engineer, recently stated, "[I] have enjoyed working with you and your company." He also gave us all excellent marks for the project he was rating.

We value what our clients value - excellent work completed on time and on budget. We are satisfied with nothing less. Our experienced traffic engineering and transportation planning staff know that this requires focus and dedication. The next section describes the staff that has completed the wide variety of projects discussed in this letter.

Qualifications of Personnel

HDR has local staff across the state with knowledge and experience in the types of traffic engineering services needed to serve local agencies. The following section presents HDR's staff for traffic related LPA assignments.

Christopher Kinzel, P.E., Contract Manager – Christopher is the traffic engineering and transportation planning Section Manager for HDR's Missouri-Kansas operations, and has over 22 years of experience in all facets of the profession. He has

led traffic studies, operational analyses, traffic signal design, corridor studies, safety analyses, signing and striping plans, traffic forecasting and model development projects, ped/bike studies, parking studies, roundabout designs, traffic software development, multimodal studies, and transportation research. He has been the project manager for many of the projects included in this letter.

Robert Frazier, P.E., AICP, Senior Transportation Engineer/ Planner – Robert is part of HDR's Missouri-Kansas transportation practice. He has 20 years of professional experience in the field and has completed projects and studies addressing all major transportation modes and facility types. This includes traffic data collection, intersection analyses, safety studies, traffic forecasts, roadway planning, signal timing, parking layouts, signage and striping, railroad crossing studies, and many others. He has been a primary contact for the Gardner on-call contract, and was the technical lead for both the CAMPO and Taney County projects.

Kyle Evans, P.E., PTOE, Traffic Engineer – Kyle is a traffic engineer with 15 years of experience in the areas of traffic operations, transportation planning, roadway and traffic signal design, ITS, lighting, and Pavement Management Programs. He has served as a project engineer for corridor studies, traffic impact studies, parking studies, and other projects. He has experience with transportation modeling and traffic simulation of signalized arterials and freeway corridors. Mr. Evans has extensive computer experience with several operations and design programs, including SYNCHRO, SimTRAFFIC, CORSIM, VISSIM, AGi32, and MicroPAVER.

Dustin Elliot, P.E., PTOE, Traffic Engineer – Dustin has 12 years of experience on a wide variety transportation projects. His experience includes the preparation of traffic impact studies, traffic circulation studies, traffic signal warrant studies, access management studies, traffic signal timing plans, crash analyses, access justification reports, cost/benefit analyses, pedestrian crossing studies, and school-area analysis studies.

Molly Nick, Transportation Planner – Molly is a transportation/environmental planner with 11 years of experience. Areas of expertise include safety analysis, operational analysis, planning studies, traffic forecasting, and traffic design. In addition, she has experience using GIS for both safety analysis and travel-demand forecasting.

Familiarity/Capability

HDR is a large, national firm with offices across the United States and abroad. We are constantly working on federal and federally funded projects, and are thus remain current in our knowledge of federal processes and requirements. Staff listed in this letter have recently worked on AJRs reviewed by FHWA, a streetcar project receiving federal funds (including TIGER), and a local intersection project financed in part by Federal stimulus funds. HDR's Missouri traffic practice group is also very involved in federally funded research, including a recent NCHRP report on rural high-speed to low-speed transition zones, which led to an award winning TRB paper. We are also very familiar with state requirements. For example, our Taney County project modified MoDOT's project ranking guidelines for use at the County level. We have the expertise needed to solve transportation problems within federal, state, and local parameters.

Accessibility

HDR has over 140 employees in the state of Missouri, with offices in Kansas City, St. Louis, Springfield, Columbia, Lee's Summit, St. Charles, Forsyth, and Osage Beach. Although our Missouri transportation staff is focused primarily in Kansas City and St. Louis, we have worked on projects in all MoDOT districts and have proven our responsiveness and availability to local agency clients on numerous projects. A few specific examples (described previously) include work in Jefferson City, Taney County, DeSoto, and West Plains. We have also worked on several statewide projects. Our traffic engineering and transportation planning staff works anywhere in the state, while keeping costs to a minimum.

One way we do keep costs down is to use technology to stay connected throughout the stages of a project. For key meetings we will meet face-to-face, but for ongoing check-in or update meetings we use teleconferencing, video conferencing, screen-sharing, and various websites (such as SharePoint). On a Jefferson City project we effectively used these tools for weekly meetings at no extra cost to the project. These technologies even allow HDR to mobilize staff from around the country when necessary.

Our project history and past performance show that we can effectively provide the full range of traffic engineering and planning services to local agencies statewide.

The sections above demonstrate our experience, past performance, staff qualifications, state and Federal knowledge, and statewide accessibility. Let us add that we are eager to continue to serve the communities of Missouri by providing high quality traffic engineering and planning services where and when needed. We look forward to the opportunity to partner with local agencies to do just that.

Sincerely,
HDR ENGINEERING, Inc.

Christopher Kinzel, P.E.
Contract Manager

KANSAS CITY | ST. LOUIS | LEE'S SUMMIT | COLUMBIA | ST. CHARLES | OSAGE BEACH | FORSYTH | SPRINGFIELD

BRIEF OVERVIEW OF
LPA SERVICE CAPABILITIES

HDR first opened for business in 1917 under the name of Henningson, Durham, and Richardson. Since those early beginnings, we have grown in to one of the largest and most respected architectural-engineering companies with nearly 8,000 employees worldwide.

HDR has been providing engineering, planning, architectural, and environmental services in Missouri since 1993 when our first office opened in Kansas City. Subsequently, offices opened in Overland Park, Kansas, in 1994 and St. Louis, Missouri, in 1999. In 2008, HDR acquired Archers Engineers, resulting in a base of over 200 employees statewide and additional offices in Springfield, Osage Beach, Lee's Summit, St. Charles, and Forsyth. In March of 2013 we added another office in Columbia. The employee-owners of HDR are proud to be partners with all of the transportation professionals throughout the state of Missouri and we look forward to providing solutions to future transportation challenges.

WORK CATEGORIES

A. Roadway Design
B. Trails & Sidewalks
C. Construction Inspection
D. Traffic Engineering & TEAP
E. Structures

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KCMO 72ND & WAUKOMIS, KANSAS CITY, MO

The Line Creek Valley area of Kansas City, Missouri, has a rich and storied history with untouched natural resources. Real estate speculators discovered the area in the early 1900s and created the town of Miltonwood in 1922.

The NW 72nd Street extension followed the "Barry to Parkville Road," which as its name mentions, connected the Barry settlement at the County Line to the river settlement in Parkville.

The City of Kansas City desired to improve the safety of the road and reduce traffic congestion resulting from continued development. The design team led by HDR provided the design which included nearly two miles of arterial street improvement, a sustainable roundabout, a mile of 36-inch water transmission main serving KCI Airport, and a detailed construction phasing plan to minimize construction cost overruns and traveler heartburn. This project won the Kansas City, Missouri 2013 American Public Works Association Project of the Year Award. **[01]** **A, D**

TUCKER BOULEVARD, ST. LOUIS, MO

Tucker Boulevard was planned as one of the "Image Streets" for downtown St. Louis, Missouri, defining the western edge of the central business district. HDR was hired to transform this important, yet dilapidated, roadway into a pedestrian-oriented streetscape. Plans call for installing curb bumpouts, decorative paving, sidewalks, rain gardens, tree planting, gateway monuments, medians, street and pedestrian lighting, and traffic signalization. The resulting streetscape is a pleasant and safe environment for pedestrians. Aesthetic and effective stormwater management was a key part of this project. Roadway bumpouts include micro rain gardens filled with native plants that clean and infiltrate the "first flush" of stormwater events. Larger rain gardens at the northern end of the project provide more capacity for larger rain events. The project involved the elimination of an existing subway tunnel and rehabilitation of a 72-inch-diameter brick, horseshoe-shaped sanitary sewer.
The rehabilitation involved grouting the corners of the horseshoe conduit and installing a round 72-inch-diameter CIPP liner. **[02]** **A, B, C, D, E**

GRAND AVENUE VIADUCT REPLACEMENT, ST. LOUIS, MO

HDR served as the lead designer for the detailed analysis of an existing 1,200-foot-long Grand Avenue Viaduct over Mill Creek Valley to determine the most cost-effective solution to rehabilitate or replace and seismically upgrade existing bridge components to meet current design criteria. Full replacement was warranted to meet current design standards and the post-seismic event level of service desired by the City. The current viaduct was split into two single-span pre-stressed concrete I-girder bridges (63') and a three-span (175'-220'-175') variable depth steel plate girder bridge supported on cast-in-place concrete substructure units founded on both steel H-piling and large diameter drilled shafts. The proposed structure accommodates separate bus turnout lanes, bike lanes, increased sidewalk widths, decorative fencing, lighting, landscaped barriers and medians, and decorative towers and pedestrian overlooks. The bridge approaches are constructed of standard MSE walls utilizing geopier foundation improvement techniques and lightweight EPS geofoam protected by precast fascia panels to limit excessive settlements. **[03]** **A, B, C, D, E**

CHESTERFIELD CENTRAL PARK, CHESTERFIELD, MO

Central Park is a 38-acre passive park site surrounded by an existing YMCA, County Library and a mixture of proposed office/residential developments. HDR was hired to create a $16 million park that physically connects various land uses, provides recreational opportunities to diverse user groups and demonstrates how stormwater management can be developed as a functional amenity. A proposed roadway with streetscape elements was designed to interface with the adjacent office/retail development, providing a formal edge to the park. A lawn area adjacent to the streetscape creates space for informal play and relaxation.

HDR worked with the adjacent property owner to encourage the development of retail and residential space that will interact with the park. Additional amenities include a sculpture garden, gazebo bridge, picnic pavilions, and a 2,000-seat amphitheater that overlooks a flood-control lake. Shared-use of adjacent parking decks will serve the amphitheater, preserving valuable open space. The park includes a variety of trails, including a stream walk which meanders between two re-circulating water channels through an old-growth forest with native understory planting. **[04]** **A, B, C, E**

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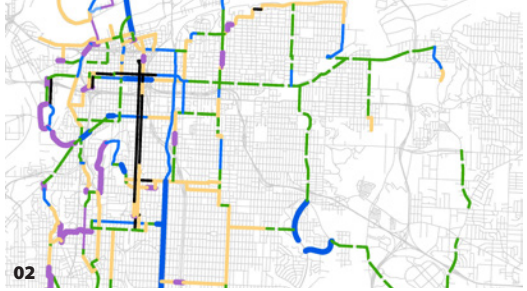
01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03

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NORTH PROVIDENCE PEDWAY, COLUMBIA, MO

HDR provided engineering services for the preliminary plans, and final design for the Providence Pedway project in Columbia, Missouri, from Business Loop 70 to Vandiver Drive along Providence Road. This project consisted of new pedway/sidewalk improvements, traffic signal modifications, retaining walls, intersection geometry improvements, traffic control plans, and pavement widening. HDR modified an existing sidewalk from 4 feet to 8 feet within existing right-of-way along Providence Road. Pedestrian crossings were improved for mobility and sight distance by providing a better angle of crossing and enhancing the pavement marking and signing. **[01]** **B, D, E**

BIKE KC PLAN, KANSAS CITY, MO

HDR provided technical support to KCMO staff in the creation of the Bike KC plan. HDR conducted engineering analyses, developed an automated facility type selection process, developed facility recommendation maps, and created typical section drawings. HDR's products included a memo summarizing the current state of the practice regarding bicycle facility types – features, pros/cons, experimental status, selection/implementation criteria, etc. – and recommending the facility types to be considered moving forward. HDR identified gaps in the City's existing databases – items such as paved width, median presence, parking presence, curb presence, and traffic counts – and developed a data-collection plan to fill those gaps. HDR worked with the City to determine level of service (LOS) standards by facility type, and developed a unique selection flowchart underlying an Excel/GIS-based facility selection process. The final product is a decision-support tool that allows the City to identify and prioritize facilities going forward, including scenario testing. **[02]** **B, D**

WESTPORT TRAFFIC STUDY, KANSAS CITY, MO

HDR analyzed potential improvements to the intersection complex at Westport Road, Southwest Trafficway, and 43rd Street. This intersection complex serves multiple functions: a major north-south commute route to downtown, a western gateway to the historic Westport area and its merchants, and access to St. Luke's Hospital, among other things. The study took a larger-picture view of traffic circulation and needs in the surrounding historical Westport area that is an important part of the City. The intersection has been studied before, and HDR developed and implemented a thorough stakeholder involvement program to build on the work that has been done. This program included numerous personal meetings with local business owners, neighborhood representatives, hospital staff, school staff, emergency services personnel, and other community leaders. These meetings allowed a very refined view of the multitude of issues in the immediate area, including walkability/bikeability, parking, safety, congestion, the need for a gateway, the desire to preserve green space but also private right-of-way, historical considerations, and many others. HDR built a complex multi-modal simulation model of the intersections to analyze operations and also to present alternatives visually to stakeholders. Alternatives developed included roundabouts, traffic circles, grade-separations, and several unconventional layouts (including an at-grade layout based on DDI principles). **[03]** **D**

ROCK HOLLOW TRAIL, WILDWOOD, MO

HDR designed two parallel trails for the City of Wildwood. One of the alignments is a multi-use asphalt paved trail and the other is designed for equestrian and mountain biking use.

Since the basic alignment of the trails had previously been established, HDR identified key issues within the project limits that would be crucial to the overall construction plan development, including ensuring provisions for opportunities of river viewing and/or access, providing opportunities to enhance or encourage wetland, historical, interpretive, or viewing areas, locating logical trailheads that combine existing and/or future uses, recognizing opportunities for aesthetic features of proposed pedestrian bridge crossings to complement the surroundings, working within the context of the overall Meramec Greenway Trail System.

The design process included an initial data collection phase, gathering of stakeholder input, development of construction plan documents including plans, specifications and engineer's opinion of probable construction cost, and an overall project manual. HDR coordinated with a number of stakeholders, including The Great Rivers Greenway District, MoDNR, St. Louis County's Municipal Park Grant Commission and the U.S. Army Corps of Engineers. HDR also assisted the City of Wildwood during the letting and construction phases. These services included facilitating pre-bid, pre-construction and contractor progress meetings, reviewing and responding to shop drawings, monitoring the contractor's schedule, coordinating material testing services, reviewing contractor's applications for payment, conducting field observation during construction and maintaining associated field reports. **[04]** **B, C, E**

HDR

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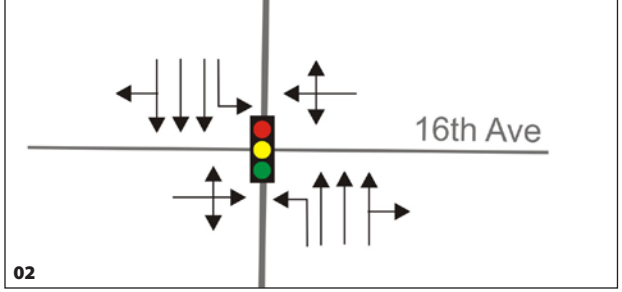

02

WHISKEY CREEK AND SAPSUCKER BRIDGES,
FRANKLIN COUNTY, MO

This project involved the demolition and replacement of the existing deficient Whiskey Creek Road Bridge over Whiskey Creek as well as the replacement of the Sapsucker Road Bridge over a branch of Boone Creek. The existing multi-cell box culvert and single span bridge were each replaced with single 20-foot span, three-sided precast concrete structures. The precast units are founded on cast-in-place concrete spread footings and flanked on each corner by concrete cantilevered retaining walls. LiDAR was utilized to complete the topographic survey which provided very detailed ground profile information at an expedited schedule. The project also included minimal roadway work to tie the new structure into the existing roadway alignment and involved construction oversight. Project included the full complement of construction inspection and administration services. The projects were federally funded and designed per MoDOT LPA guidelines. **[01]** **A, C, E**

BURLINGTON CORRIDOR STUDY,
KANSAS CITY, MO

HDR provided transportation analysis for the Burlington Corridor (MO Route 9) from the Heart of America Bridge to North Oak Trafficway, including assistance with concept development, multimodal and parking analysis, and consideration of land-use alternatives. The project included a long-term look at the potential for redevelopment to transform the corridor, which serves a dual function as a major commute route and a gateway to North Kansas City. The melding of transportation and land-use considerations was at the heart of the project. **[02]** **D**

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