



MARK SEPPELT, P.E.

Career Summary:

Prior to joining Wi-Skies LLC, Mark served as the Electrical and Mechanical Unit Chief in the Bureau of Design and Environment at the Illinois Department of Transportation (IDOT) for 21 years. In this position, Mark oversaw the design of hundreds of lighting projects on state, federal, and local highway systems. His daily responsibilities included creating, updating, coordinating, interpreting and maintaining the Department's policy on roadway lighting. Mark was responsible for providing responses for the Secretary of Transportation's office on roadway lighting related questions from the general public. He also provided position statements for the Secretary's office on legislative bills passing through the state legislature impacting IDOT policies on lighting. He was responsible for the design and review of all roadway lighting projects in Illinois with the exception of District 1 in the Chicago area. His duties also included addressing all RFI's and approving shop drawings during construction and ultimately inspected all roadway lighting projects for final acceptance.

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Education:

- ◆ B.S. Civil Engineering
Missouri University of
Science & Technology,
1978
- ◆ MBA University of Illinois
– Springfield, 1992

Professional Engineering Licenses:

- ◆ Illinois #062-041504
- ◆ Missouri #025872
- ◆ Louisiana #45203
- ◆ Florida #90620
- ◆ Minnesota #59258

Professional Affiliations:

- ◆ IESNA Roadway Lighting
Executive Committee,
Vice Chair
- ◆ AASHTO Joint Technical
Committee on Roadway
Lighting, Member
- ◆ NCHRP research project
panel member, Project 05-
22, 05-22A, & 05-25.
- ◆ Illinois Center for
Transportation, Technical
Review Panel Chair

Mark oversaw the design and upgrade of roadway dewatering pump stations, designed and reviewed electrical and lighting projects for other agencies upon request (i.e., DNR), and offered input on various IDOT projects when electrical work was involved. Mark managed a design team consisting of multiple consulting firms and sub-consulting firms over the span of his tenure in addition to an internal staff of electrical engineers and lighting designers and was in charge of reviewing all consultant submissions requiring prequalification in roadway lighting for the Department.

During his tenure, Mark corrected, updated, and helped guide the department's Standard Specifications for Road and Bridge Construction, Highway Standards Manual, Bureau of Design and Environment Manual, and other manuals and guides on roadway lighting matters to be in line with the latest design standards and recommended practice. He routinely monitored international, national, state, and local codes to keep department standards updated and technically accurate. Mark co-hosted an annual meeting with personnel from all of the operating districts to discuss roadway lighting and traffic signal topics. He also worked with the operating districts on roadway lighting related projects for new construction, maintenance, and facility relocations including supplying electrical and lighting designs and plan sheets, project cost estimates, manhour estimates, policy interpretation, detail drawings, maintenance recommendations, construction questions, and coordination issues. He assisted with the development and approval of pay items for all roadway lighting items and managed roadway lighting and electrical project design files for the Department.

Mr. Seppelt is active within the industry serving in leadership positions for the Illuminating Engineering Society's Roadway Lighting Committee (RLC) where he now serves as Vice Chair. He also serves on various RLC task groups. Mark served on the National Cooperative Highway Research Program (NCHRP), through the Transportation Research Board as well as other agency panels for IDOT promoting research projects on roadway lighting. He also currently serves on the American Association of State Highway and Transportation Officials (AASHTO) Joint Technical Committee on Roadway Lighting along with individuals from other DOTs around the country to improve the practice of lighting design for roadways.

As the lighting industry has evolved, Mark has been instrumental in guiding research regarding roadway lighting matters. He served on the NCHRP research panel for project 05-22 and currently serves on the 05-22A panel and the 05-25 panel engaged in cutting edge research on critical issues related to solid state roadway lighting. Mark has sponsored research initiatives and served as technical review panel chair for several roadway research studies funded by IDOT through the Illinois Center for Transportation. These projects have researched topics such as lighting for enhanced pedestrian safety at intersections, investigating technological advancements in LED roadway lighting, as well as an ongoing study to improve high mast light tower efficiency with reduced cost. He led a study to determine roadway lighting's impact on altering soybean growth which led to more stringent spill lighting design criteria in rural areas. Mark submitted a research request through the National Academy of Science to study roadway lighting's effect on the environment and wildlife. He initiated and guided two pilot projects to install and monitor adaptive lighting control systems at IDOT.

Project Summary:

Senior Electrical Engineer for Georgia DOT Lighting Design-on-Request Services. Mark's years of managing DOT lighting initiatives have been invaluable to many of GDOT's initiatives. He has been assisting GDOT with a myriad of high-level tasks including specification revisions and standard drawing development. Mark has also provided guidance on research initiatives the Department has taken on, including daytime lighting in tunnels and roundabout lighting application and policy.



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Senior Engineer for Tennessee DOT Roadway Lighting Design Services. Mark held a key role with Tennessee DOT, where he assisted in the process of overhauling the Department's lighting policy manual, specifications, and standard drawings. His many years of experience in this role in Illinois assisted tremendously in developing and updating key documents.

Senior Engineer for Illinois DOT Roadway Lighting Design Services. Mark works closely with Illinois DOT, where he is assisting the Department with lighting policy matters including; manual, specifications, and standard drawing updates, design issues, and day-to-day decision making on engineering related matters as requested. His role as the Electrical and Mechanical Unit Chief, prior to his retirement from Illinois DOT, has made him an valuable resource to the current Unit Chief and leadership team.

Senior Engineer for Carolina Crossroads Phase 1 Design-Build for South Carolina DOT SCDOT is designing improvements along the interstate corridor of I-20/26/126 which includes system interchanges at I-20/I-26 and I-26-I/126 in Lexington and Richland Counties in five phases, of which this is the first. These improvements are proposed to increase mobility and enhance traffic operations by reducing existing traffic congestion within the I-20/26/126 corridor, while accommodating future traffic needs. The corridor's approximately 14 miles of mainline interstate include I-26 from Exit 101 - Broad River Road (US 176) to east of the Saluda River, I-20 from the west of the Saluda River to west of the Broad River, and I-126 from I-26 to east of the interchange with Colonial Life Blvd. Mark is overseeing the full continuous lighting design along the interstates, the interchanges and includes lighting for Colonial Life Blvd and Greystone Blvd both north and south of the interchanges, primarily the photometric review. The design includes both high mast towers along the interstate and interchanges as well as conventional roadway lighting along the ramps and side streets. Every effort has been made to minimize spill lighting to the residential areas on the side streets.

Senior Engineer for Carolina Crossroads Phase 2 Design-Build for South Carolina DOT SCDOT is designing improvements along the interstate corridor of I-20/26/126 which includes system interchanges at I-20/I-26 and I-26-I/126 in Lexington and Richland Counties in five phases. These improvements are proposed to increase mobility and enhance traffic operations by reducing existing traffic congestion within the I-20/26/126 corridor, while accommodating future traffic needs. The corridor's approximately 14 miles of mainline interstate include I-26 from Exit 101 - Broad River Road (US 176) to east of the Saluda River, I-20 from the west of the Saluda River to west of the Broad River, and I-126 from I-26 to east of the interchange with Colonial Life Boulevard. Phase 2 of the design includes the design of I-20 as well as a new Diverging Diamond Interchange at Broad River Road (US 176). The lighting design includes both high mast towers along the interstate and interchange as well as conventional roadway lighting along the side streets, with an effort to minimize spill lighting to the residential areas on the side streets.

Senior Engineer for Langford Parkway (SR 166) Lighting Replacement. Langford Parkway is a major thoroughfare which connects I-285 to I-85 north of the Atlanta airport in the southwest side of the city. The corridor was originally built as an urban collector, but over time has become an access control freeway with entrance and exit ramps. However, urban curb still exists in portions of the roadway and the lighting was installed based on the original urban collector setting and subsequent setbacks. Because of this, most of the lighting installed on the outside of the roadway is within unprotected clear zone and subject to frequent knock-downs. As the entire 6.5 mile corridor is continuously lit, this results in a lot of maintenance. To properly address this situation, coupled with inadequate lighting, the recommendation was made to provide a new lighting system through the corridor which will increase pole setbacks coupled with barrier protection as warranted. This new lighting system will also replace and upgrade the existing lighting along the median wall, where applicable. Mark is also responsible for the QCQA for the entire stand-alone lighting plan set.

Project Manager for Lighting the New Mississippi River Bridge at US 52/ IL 64, Contract 64G59. The project consisted of the removal of the truss bridge built in 1932 which carried US 52/IL 64 over the Mississippi River, the construction of a new tied-arch bridge over 2,400 ft long, and the reconstruction of 1,400 feet of US 52 causeway in Iowa. Also included in this project was the reconstruction of the IL 84 intersection in Illinois. IL 84 reconstruction included removing and replacing sidewalk and driveway entrances and adding lighting in advance of the IL 84 intersection located directly adjacent to the Illinois approach to the bridge. Mark was responsible for roadway lighting on the new bridge, the river navigation warning lighting system on the bridge, and the intersection lighting of US52 and IL 64 in Illinois at the east bridge approach. Roadway lighting included an ITS technology pilot using adaptive lighting controls with data being streamed back to the district headquarters at Dixon, IL. Lighting is dimmed after 10PM and motion sensors bring lighting up to full brightness as sensors detect approaching vehicles. Another unique challenge to the lighting design of this project was getting US Coast Guard approved navigation lighting circuits and conduit for the bridge roadway lighting through the tie beam of the tied arch structure for this major river bridge.

Senior Engineer for Revising National Tunnel Lighting Guidelines. Mark has been a key player in working towards change to revise existing tunnel lighting policies and design standards. Based on the design requirements of *RP-22, Tunnel Lighting* which resulted in what he believed to be an excessive number of required tunnel fixtures in a short tunnel in Bloomington, IL, Mr. Seppelt actively pursued reform of this important guidance document. He has served on the Illuminating Engineering Society's Roadway Lighting Committee and worked with the committee's Tunnel Lighting Task Group to bring about reforms. Mr. Seppelt supported a change to eliminate the need for luminaires at the tunnel's entrance and exit portals and he has served since its inception on the Short Tunnel Task Group to further reduce the required number of luminaires in short tunnels.

Project Manager for the I-57/I-64 Tri-level Interchange Lighting Replacement at Mt. Vernon, IL, Contract 78507. This project was a complete interchange lighting replacement. It involved replacing all existing lighting facilities with new LED lighting. One of the challenges of this project, besides being a tri-level interchange, was the sheer size of the interchange. It required multiple lighting controllers and the south controller is separated from the interchange by a railroad bridge crossing. This challenge was complicated by the difficulty in obtaining a crossing permit from the railroad, which ultimately led to a resolution where the District Office required

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different voltage controllers be installed to serve branch lighting circuits. The railroad bridge became the dividing line between 480 and 240-volt circuits on the project.

Project Manager for Lighting the I-70/I-57 Add-A-Lane Project through Effingham, Contract 74295. This 2.7-mile-long interstate construction project addressed a significant bottle neck problem with very heavy truck traffic where two major interstates (I-57 & I-70) join in Effingham, IL. The installation of an additional interstate lane in each direction and resurfacing on Interstate 57 and 70 from west of 4th street to east of TR 258 also included the reconstruction of the U.S. Route 45 interchange and required; 31,549 ft of unit duct, 30,278 ft of electric cable in conduit, 182 luminaires, and 142 light poles. This was the last phase of a 4-phase project to rebuild I-57/I-70 through Effingham and Mr. Seppelt was in charge of the lighting design for all 4 phases of the project. As with most projects, this included his involvement in all aspects of the roadway lighting design process over a multi-year timeframe; from planning, to design, to engineering assistance during construction, then completing the final inspection for the project once construction was completed.

Project Manager for Lighting the New Illinois River Bridge on IL 104 at Meredosia from 385th Ave to US 67, Contract 72B58. Mark was responsible for all electrical and lighting design for the IL 104 corridor, which spanned the new river bridge and continued along IL 104 through Meredosia and consisted of decorative street lighting for a portion of the downtown area. Along with roadway lighting for the bridge and the river navigation warning lighting system on the bridge, lighting design for the project also included the following structures: IL 104 over McGee Creek Drainage Ditch, IL 104 over Washington Street, and retaining walls in Meredosia. Mark also reviewed the design for the new pump station and electrical system which was built for the village.

Project Manager for Lighting the New I-57 Interchange at 6000N, Contract 66982. A new diamond interchange was constructed at the interchange of I-57 with 6000N in Bourbonnais. The lighting design for this project consisted of underpass lighting for the new 6000N bridge over I-57, intersection lighting for major intersection upgrades on either side of the new interchange on 6000N at US 45/52 and IL 50, lighting for a shared use path and sidewalks along 6000N, as well as lighting of the new interchange. Mark oversaw a lighting design that used 18 high mast towers within the I-57 interchange and 56 conventional poles along 6000N including the US 45/52 and IL 50 intersections, along with pier mounted underpass lighting.

Project Manager for the New I-55 Single Point Urban Interchange at IL 162, Contract 76709. A new single point urban interchange was built at IL Route 162 with FAI 55 just south of the FAI 70/270 with FAI 55 interchange in Madison County to relieve congestion and improve traffic flow. Mark was responsible for the roadway lighting design for what was at the time an innovative new interchange geometry in Illinois. The challenge was met with a combination of high mast light towers and conventional pole lighting to meet the needs of all roadway users including pedestrians.

Project Manager for I-74 Bridge Deck Replacement Lighting over Market St and Illinois Central RR and Oak St, Contract 70C64. This project is located on a congested section of I-74 through Champaign with continuous lighting and consists of the replacement of an interstate bridge over the ICRR. The lighting design started near the busy interchange at Neil Street and extended approximately a mile to the east along I-74 with a bridge replacement which spans Market St, multiple railroad tracks, and urban roadways below. The lighting design not only included lighting photometrics, voltage drop calculations, cost estimate, plans and specifications for both bridge and underpass lighting but also required careful analysis for the preparation of temporary lighting for the maintenance of traffic (MOT) plans.

Project Manager for Lighting the I-55 Add-A-Lane Project, Contract 70757. Mark was responsible for all electrical and lighting design for the I-55/I-74 corridor expansion project through Bloomington and Normal, IL which converted a 4-lane interstate to 6-lane with a median barrier wall, where lighting was installed. Due to the size and scope of the project, it was completed in 3 phases from south to north over several years. The north and final phase of the project replaced 2 existing bridge structures over US Route 51 business loop making one single structure and creating a tunnel. This became the Department's first daytime lighting project for a tunnel outside of Chicago. Mr. Seppelt was in charge of all aspects of the tunnel lighting project just as he was for the roadway lighting portion of the project including design, controls, electrical from planning through completion.

Project Manager for I-57 at I-74 Interchange Lighting in Champaign, IL, Contract 70B99. This project consisted of completely rebuilding this major urban interchange complete with all new bridges, overpasses, and fly-over ramps. The lighting design was overseen by Mark and involves continuous freeway lighting, complete interchange lighting, and underpass lighting on both interstates and all connecting roads. He oversaw all aspects of the design up to the time of his retirement including preparation of lighting plans, photometric calculations, cost estimate and specifications.

Project Manager for I-74 Murray Baker Bridge lighting over the Illinois River, Contract 68C89. The project included concrete deck removal and replacement, structural steel repairs, painting, roadway lighting, river navigation lighting, and decorative lighting. This project is located in Peoria on Interstate 74/IL Route 29 over the Illinois River in Peoria and Tazewell Counties. Mark was responsible for the design of all electrical and lighting systems for the roadway lighting on the bridge and river navigation warning lighting. The Department originally was not involved in the decorative lighting on the bridge and had assigned that aspect of the project to the City. Several features of this project became design challenges as the work progressed. One was the electric service for the bridge which was previously located in a flood prone area. Another was the coordination of the abundance of circuits on the bridge and routing of the various conduit systems. Yet another was designing the roadway lighting on this truss style bridge so that the horizontal members of the bridge truss did not impact the light distribution on the pavement from the luminaires which had to be mounted on the vertical truss members.

Project Manager for Lighting US 150 from Wright St to Cunningham Ave in Urbana, IL, Contract 70B53. This project improved both pedestrian and vehicular safety on US 150 from Wright Street to Cunningham Avenue in Urbana as well as the service life extension of

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the pavement structure. These safety improvements consisted of construction of ADA compliant sidewalks and pedestrian ramps, improved pavement markings with continental style crosswalks, traffic signal modernization, and roadway street lighting in a high traffic area of the University of Illinois Champaign/Urbana campus. Mark incorporated appropriate measures during the lighting design to provide good visibility for motorists as well as a pedestrian friendly environment along this corridor with high vehicle/pedestrian interactions and multiple intersections. Photometrics had to be carefully evaluated and re-evaluated along US 150 due to the many trees, entrances, and obstacles that made pole placement difficult. In addition, numerous intersections of various configurations along this stretch of US 150 required detailed coordination and analysis to provide consistent and adequate lighting throughout the project.

Project Manager for the Replacement of High Mast Light Towers at Various Locations, Contract 66H99. Mark was responsible for the lighting design after statewide inspections had identified the need to replace several high mast light towers at various interchanges throughout the State. The project involved designing replacement light towers (and conventional light poles as needed), replacement wiring, new controllers as needed, and new foundations for the towers. Affected interchanges included; I-55 at IL 23 interchange, I-55 at IL 116 interchange, and I-55 at IL 17 interchange, all in Livingston County and the I-57 at IL 50 interchange in Kankakee County.

Project Manager for Lighting the I-270 Mississippi River Bridge and Chain of Rocks Canal Bridges, Contract 76A88. The poor condition of the concrete at various locations on the Mississippi River Bridge made this a challenging project which required some sections of bridge parapet wall to be removed and new bridge light pole foundations to be re-poured from partial to full depth depending on the degree of deterioration. Mark was responsible for the design of the replacement lighting system along this portion of I-270 from the border with Missouri to the IL 3 interchange which included major bridges over both the Mississippi River and the Chain of Rocks Canal. Mark also designed a creative conduit system for the branch lighting circuit on the Mississippi River Bridge, the river navigation warning lighting system for the Chain of Rocks Canal Bridges, and replacement of its aviation warning lighting system.

Project Manager for Lighting along IL 29 from North Grand Ave to Hackmore Dr, Contract 72H40. This roadway lighting project was very important to the City of Springfield because this is the major State route (IL 29, J. David Jones Expressway) from Abraham Lincoln Capital Airport 2 miles into Springfield. The existing roadway lighting system was old and difficult to repair. In order to appease the City a low-profile LED luminaire was selected along with aluminum poles to provide low installation and maintenance costs and long service life.

Aesthetics was extremely important to the City along this 2-mile project and they decided the pole with all attachments should be painted black. Mr. Seppelt was concerned about the longevity of powder coated paint on aluminum, the aesthetic disaster a paint failure would cause, and the high cost of repainting. He investigated the cost differential of anodizing versus powder coating and found the value exceeded the cost premium. An added concern was the relative color change both initially and over time of the black finish between the spun aluminum pole, pipe arm, and cast aluminum base. Mark concluded presented his findings and the decision was made to supply all aluminum poles, arms and bases with a black anodized finish. All parties were very pleased with the project's aesthetics and the color match on the various aluminum components turned out very well.

This project was also very significant because it was the very first pilot project for IDOT to test an adaptive lighting control system. Multiple roadway lighting design challenges were successfully addressed including limiting pole height under the FAA restricted glide path for one of the airport's main runways.

Project Engineer for Revising IDOT High Mast Lighting Standards and Design Guidelines. Mr. Seppelt initiated an update of IDOT's Standards Specifications for Road and Bridge Construction, Highway Standards, and Bureau of Design and Environment Manual in regards to high mast light tower design and construction to bring all of these documents up to present day standards. This effort included Mark approaching the IDOT Bridge Office for both structural engineering support as well as geotechnical support. He made significant improvements to Section 835 and Article 1069.08 in the Standard Specs to improve the reliability and serviceability of IDOT high mast light towers. In addition, under his direction Highway Standards 835001 and 837001 were created to streamline high mast tower design and simplify maintenance. Furthermore, he updated Sections 56-5.05 and 56-5.06 of the BDE Manual to standardize high mast light tower design and configuration. Mr. Seppelt's design experience and field experience with high mast lowering systems, luminaires, and towers facilitated these changes which have been implemented in dozens of high mast lighting projects statewide. He also initiated a research project to study ways to reduce the cost of high mast light towers as well as pioneer a method to reevaluate required light levels for high mast lighting and potentially reduce the number of towers needed on projects. Mark also was responsible for the first high mast lighting project in Illinois using LED high mast luminaires.