



# EMILY C. DAVIS

## **Career Summary:**

Emily is a lighting designer at Wi-Skies, LLC, where she is strengthening her knowledge and expertise in all Department of Transportation and public lighting applications. She earned her Bachelor of Science in Architectural Engineering from the Oregon State University College of Civil and Construction Engineering, complemented by a minor in Renewable Materials from the College of Forestry in 2024. During her time in school, she began applying her focus on lighting at industrial facilities as a Student Engineer. Emily started her professional career as an architectural lighting designer and pivoted to roadway lighting design briefly thereafter to apply her technical skills and education. She has participated in a wide range of lighting designs early in her career, including commercial, industrial, office, hospitality, entertainment, government, and roadway projects. Additionally, she serves as a voting member and Secretary for the Illuminating Engineering Society's Security Lighting Technical Committee.

Emily is committed to positively contributing to society and the lighting industry by prioritizing safety and sustainability practices in each project she works on.

## **Project Summary:**

**Lighting Designer for Interstate Lighting Retrofit using Carbon Reduction Program Funding for Georgia DOT.** GDOT Management wanted to retrofit and repair approximately fifty miles of existing lighting along the interstate system within the I-285 Atlanta metro perimeter ahead of the World Cup arrival in the summer of 2026. The Department identified and utilized available funding from the federal carbon reduction program (CRP) initiative to deliver this seemingly impossible task in less than a year and a half. This timeframe included the development of full plans, specifications, and estimates for fourteen total projects, which were competitively bid and awarded to comply with federal funding requirements. Starting in October of 2024, each of the fourteen projects had to be developed in extremely short order to ensure they were competitively bid, awarded, procured, installed, and operational before May 2026 to meet the World Cup deadline. This required an incredible amount of effort and coordination with over a dozen GDOT Offices to ensure the delivery schedule was met. All plan development was done in accordance with all GDOT and FHWA requirements, including coordination and approval from all parties, including environmental, right-of-way, structural, railroad, utility, and state construction offices. Despite the consolidated schedule, all construction delivery requirements had to be fulfilled, including final field plan review (FFPR), approval from all offices, including FHWA, Construction Bidding Administration (CBA), and the Let date timelines.

All fourteen projects required a full electrical survey to determine the condition and power source of each individual luminaire and circuit along each corridor. The survey results were used to establish accurate quantities and to ensure adequate funding was within each of the individual projects' budgets without exceeding the overall available CRP allocation. As much of the system was in disrepair, this required a lot of cable replacement as well as replacement of each of the service points to ensure all lights were metered. Each project was designed to meet current IES/ANSI lighting requirements whenever possible without creating environmental, ROW, or constructability issues with variances granted when necessary.

Wi-Skies is also responsible for construction oversight of all projects to address the myriad of RFI's and construction issues with all fourteen projects. These projects are concurrent to many other large-scale projects, such as repaving all fifty miles of the same stretches of the same interstate system and a fiber installation project, all with competing lane closures. We are also responsible for providing as-built drawings for all work completed, including final wiring schematics for each service point throughout the interstate system, as this information did not previously exist, but is necessary for any future maintenance or proposed project.

Wi-Skies was placed in charge of delivering this daunting task from conception to construction. We worked with all design offices as necessary to ensure all minimum GDOT and FHWA compliance and standards were met while also ensuring all design and construction factors were considered and properly mitigated. All aspects of design for both internal staff as well as sub-consultants were managed to aggressively deliver the fourteen projects to GDOT's Construction Bidding Administration so they could be bid as quickly as possible. During construction, our team worked with the contractors and project managers for all projects concurrently to address the many construction questions that arose. Wi-Skies is also responsible for delivering final as-built drawings to the City of Atlanta, which will ultimately maintain the final lighting system.

## **Contact Information:**

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## **Education:**

- ◆ B.S. Architectural Engineering, Renewable Materials Minor – Oregon State University, 2024

## **Software Proficiencies:**

- ◆ AGi32
- ◆ Microsoft Office
- ◆ AutoCAD
- ◆ Rhinoceros 3D
- ◆ SAP2000

## **Professional Societies:**

- ◆ Secretary of IES Security Lighting Committee



# EMILY C. DAVIS

**(PI0020767) I-75 from Musket Ridge to I-85.** This six-mile-long segment included all lighting infrastructure along the mainlines, ramps, and under bridge locations along I-75 south of the I-75/85 Connector split. This project included one interchange that was lit by high mast light towers, which needed extensive repair in addition to being retrofitted. Additionally, some light poles were relocated from behind sound barriers to in front to alleviate accessibility and maintenance concerns. Emily served as the lead lighting designer responsible for developing and optimizing the entire corridor lighting system under an expedited schedule. She performed comprehensive photometric modeling in AGI32, specified luminaires, and coordinated with the field and design teams to address environmental constraints and infrastructure limitations. Emily independently identified discrepancies between existing conditions and plan data—verifying and resolving issues through field coordination, remote imagery and mapping tools, and detailed analysis to ensure design accuracy and client satisfaction.

**(PI0020955) I-75/85 from I-20 North to I-85 Split.** This segment was 4.5 miles long and included all lighting infrastructure along the mainlines, ramps, and under bridge locations along the I-75/85 Connector through downtown Atlanta. This segment was designed in conjunction with three other tunnel lighting projects: the Capitol and Memorial Tunnel, the Piedmont and Baker Tunnel, and the Courtland and Ralph McGill Tunnel projects. While this will pose a challenge with conflicting lane closures, it presents the opportunity for multiple Contractors to work together in an area with a lot of lighting work to be completed in a short amount of time. Field analysis was conducted to ensure all existing, damaged, or removed lighting infrastructure was accounted for, which is critical to ensure final quantities correlated with actual service point loads across the several design and construction plans. There was a stretch in this project where existing high mast towers, which were up to 200' in height, were lighting the mainline from each side. There were also several frontage roads adjacent to the interstate mainline that had ramps that tied into the interstate that were continuously lit. Emily served as the lead lighting designer responsible for developing and optimizing the entire corridor lighting system under an expedited schedule. She performed comprehensive photometric modeling in AGI32, specified luminaires, and coordinated with the field and design teams to address environmental constraints and infrastructure limitations. Emily independently identified discrepancies between existing conditions and plan data—verifying and resolving issues through field coordination, remote imagery and mapping tools, and detailed analysis to ensure design accuracy and client satisfaction.

**(PI0020954) I-75/85 from Merge to I-20.** This four-mile-long segment includes all lighting infrastructure along the mainlines, ramps, and under bridge locations along the I-75/85 Connector through downtown Atlanta from the I-75/85 merge north to I-20. This segment includes a large interchange between I-75/I-85 and I-20, which utilizes a combination of high mast towers, underpass luminaires mounted on short poles, and conventional poles, all of which need to be retrofitted to LED luminaires. There were also several frontage roads adjacent to the interstate mainline that had ramps that tied into the interstate that were continuously lit. Field analysis was conducted to ensure all existing service points, high mast tower light poles, underpass luminaires, roadway luminaire light poles, and any damaged or removed lighting infrastructure were accounted for. Field analysis was especially critical for this segment to ensure the overall design was improved to meet current ANSI/IES standards, and new design layouts were implemented where the team discovered the opportunity to without interfering with existing infrastructure. Emily served as the lead lighting designer responsible for developing and optimizing the entire corridor lighting system under an expedited schedule. She performed comprehensive photometric modeling in AGI32, specified luminaires, and coordinated with the field and design teams to address environmental constraints and infrastructure limitations. Emily independently identified discrepancies between existing conditions and plan data—verifying and resolving issues through field coordination, remote imagery and mapping tools, and detailed analysis to ensure design accuracy and client satisfaction.

**(PI0020766) I-75 from Frontage Rd to I-85.** This four-mile-long segment includes all lighting infrastructure along the mainline, ramps, and under bridge locations along I-75 south of the I-75/85 Connector near the Atlanta airport. This segment includes a center-splitting freeway exit and entrance ramps illuminated by cobra heads mounted on existing light poles with tilted arms, which were retrofitted to horizontal mount fixtures and arms as part of this retrofit project. In addition to the mainline lanes, there was also a separate HOV lane that was part of this project, which exited directly onto an overpass bridge. As this project was adjacent to the Atlanta airport, shorter high mast towers (60' MH) were used at the I-285/I-75 Interchange, which were retrofitted as part of this project. Due to the proximity to the runway, additional analysis was done to minimize any uplight that may be detrimental to incoming and outgoing pilots. Two existing towers, which were located in an area known to be predominantly underwater, were removed as part of this project and replaced with conventional light poles. Emily served as the lead lighting designer responsible for developing and optimizing the entire corridor lighting system under an expedited schedule. She performed comprehensive photometric modeling in AGI32, specified luminaires, and coordinated with the field and design teams to address environmental constraints and infrastructure limitations. Emily independently identified discrepancies between existing conditions and plan data—verifying and resolving issues through field coordination, remote imagery and mapping tools, and detailed analysis to ensure design accuracy and client satisfaction.

**(P#0020951) I-85 from Riverdale Rd to I-75.** This 5.5-mile-long segment includes all lighting infrastructure along the mainlines, ramps, and under bridge locations along I-85 near the Atlanta airport. This segment had a very large number of poles, which were knocked down or subject to copper thievery. This presented the opportunity to shift the new poles back from the mainline and ramps to minimize the risk of future knockdowns. Several other locations, which were subject to frequent knockdowns, had guardrails added to help prevent future knockdowns. Many trees that were located within the clear zone were removed as part of this project, and all trees were trimmed at all light pole locations. Special attention was given to the photometric distribution of new LED luminaires, and short mast arms were recommended for use on existing poles located

# EMILY C. DAVIS

close to the roadway to optimize the uniformity of the new lighting design. Field analysis was especially critical for this segment to ensure all existing, damaged, or removed lighting infrastructure was accounted for. The overall design was improved to meet current ANSI/IES standards, and new design layouts were implemented where the team discovered the opportunity to without interfering with existing infrastructure. Careful consideration was also provided to ensure there was minimal uplight for the incoming and outgoing pilots near the Atlanta airport. Emily served as the lead lighting designer responsible for developing and optimizing the entire corridor lighting system under an expedited schedule. She performed comprehensive photometric modeling in AGi32, specified luminaires, and coordinated with the field and design teams to address environmental constraints and infrastructure limitations. Emily independently identified discrepancies between existing conditions and plan data—verifying and resolving issues through field coordination, remote imagery and mapping tools, and detailed analysis to ensure design accuracy and client satisfaction.

**(PI0021309) I-20 from Linkwood Rd to I-85.** This six-mile segment includes the mainlines, ramps, and under-bridge locations along I-20 west of downtown. A large section of I-20 within this segment did not have center median light poles; instead placed conventional poles were placed on the outside of the freeway. Therefore, additional attention was given to which poles required new fixtures with a higher-lumen output or lower-lumen output to ensure all lanes were properly illuminated while optimizing the performance of the existing lighting infrastructure. This project also had high mast tower lighting at the I-75/85 interchange, which needed to be repaired and retrofitted. Field analysis was especially critical on this segment to ensure all existing, damaged, or removed lighting infrastructure was accounted for. The overall design was improved to meet current ANSI/IES standards, and new design layouts were implemented where the team discovered the opportunity to without interfering with existing infrastructure. Emily served as the lead lighting designer responsible for developing and optimizing the entire corridor lighting system under an expedited schedule. She performed comprehensive photometric modeling in AGi32, specified luminaires, and coordinated with the field and design teams to address environmental constraints and infrastructure limitations. Emily independently identified discrepancies between existing conditions and plan data—verifying and resolving issues through field coordination, remote imagery and mapping tools, and detailed analysis to ensure design accuracy and client satisfaction.

**(PI0021310) I-20 from Capitol Ave to Flat Shoals Road.** This five-mile segment includes the mainlines, ramps, and under-bridge locations along I-20 immediately east of the I-75/85 Connector. This section of I-20 includes both center median light poles and single conventional light poles on the outer lanes as well as high mast towers at the interchange of I-75/I-85. Special attention was given to which poles required new fixtures with a higher-lumen output or lower-lumen output to ensure the existing infrastructure is optimized to ensure all lanes are properly lit. Field analysis was especially critical to ensure all existing, damaged, or removed lighting infrastructure was accounted for. Several of the service points were moved from their existing location to a more accessible location for maintenance and operational considerations. The overall design was improved to meet current ANSI/IES standards, and new design layouts were implemented where the team discovered the opportunity to without interfering with existing infrastructure. Emily served as the lead lighting designer responsible for developing and optimizing the entire corridor lighting system under an expedited schedule. She performed comprehensive photometric modeling in AGi32, specified luminaires, and coordinated with the field and design teams to address environmental constraints and infrastructure limitations. Emily independently identified discrepancies between existing conditions and plan data—verifying and resolving issues through field coordination, remote imagery and mapping tools, and detailed analysis to ensure design accuracy and client satisfaction.

**(PI0021311) I-20 from Flat Shoals Rd to Columbia Dr.** This four-mile-long segment included lighting along the median of the mainlines, lighting along ramps, and under bridge lighting along I-20, all of which was retrofitted to LED. Field analysis was conducted to ensure all existing, damaged, or removed lighting infrastructure was accounted for. The overall design was improved to meet current ANSI/IES standards, and new design layouts were implemented where the team discovered the opportunity to without interfering with existing infrastructure. Emily served as the lead lighting designer responsible for developing and optimizing the entire corridor lighting system under an expedited schedule. She performed comprehensive photometric modeling in AGi32, specified luminaires, and coordinated with the field and design teams to address environmental constraints and infrastructure limitations. Emily independently identified discrepancies between existing conditions and plan data—verifying and resolving issues through field coordination, remote imagery and mapping tools, and detailed analysis to ensure design accuracy and client satisfaction.

**(PI0020953) I-75/85 at Baker St and Piedmont Ave, and I-75/85 at McGill Blvd and Courtland St Tunnel Lighting Retrofit.** These two independently unique partially divided tunnels cover 0.209 miles of some of the busiest sections of roadway in Atlanta. The Baker and Piedmont tunnel includes six northbound lanes, six southbound lanes, two merging northbound on-ramp lanes, and two southbound off-ramp lanes. The Courtland and McGill tunnel covers seven northbound lanes and seven southbound lanes. Due to the tunnel's overall width, length and relatively short height, and only outside wall-mounted luminaires, rear-end accidents and traffic backups are common in this area. A 3D model of the entire tunnel was generated using actual tunnel entrance and exit portal height measurements and aerial imagery. A daytime analysis was done within AGi32 to determine how much natural daylight penetrated within the tunnel. From this information, Wi-Skies developed an experimental solution to provide minimal lighting only where necessary, rather than the current IES/ANSI recommendations. The lighting design took into consideration a variety of budgetary and constructability concerns and developed custom overhead installation assemblies braced between existing concrete beams directly over traffic without drilling the existing concrete beams anywhere. Because a maximum of three lanes of traffic could only be shut down at any time for either construction or maintenance, Wi-Skies had to limit the design to place lights only over the three inside and outside lanes.

# EMILY C. DAVIS

Despite the many design challenges, the proposed design delivered a much more effective lighting solution within the tunnel while greatly reducing the overall luminaire count. Emily developed a detailed 3D model of the tunnel structures and integrated them into AGi32 to perform daylighting and photometric analyses. Her work ensured accurate simulation of lighting performance, optimized luminaire placement, and compliance with project visibility and safety standards.

**(PI0021192) The Buford Spring Connector Tunnel.** This 435' long tunnel is a braided ramp from the SR13 Buford Connector SB ramp passing under the I-85 mainline to the I-85 SB. A 3D model of the entire tunnel was generated using actual tunnel entrance and exit portal height measurements and aerial imagery. AGi32 was used to perform daylighting analysis to determine the amount of natural daylight penetration within the tunnel. It was not surprising that this box culvert tunnel required supplemental daytime lighting and nighttime lighting within it due to the overall poor natural daylight that penetrates within it. A minimalistic approach was taken to provide new lighting within the tunnel by placing new lights along each of the wall sides to light the single lane. Given the nature of the tunnel and limitations of the scope, the existing embedded conduit and junction boxes were reused in the retrofit, but everything surface-mounted was removed. As the existing system was operational and the tunnel was so dark, Wi-Skies worked diligently with the contractor to ensure a hybrid of the existing and proposed lighting system remained operational throughout the construction process. Emily developed a detailed 3D model of the tunnel structure and integrated it into AGi32 to apply a lighting design based on comprehensive daylighting and photometric analyses. Her work ensured accurate simulation of lighting performance, optimized luminaire placement, and compliance with project visibility and safety standards.

**(PI0020000) I-75 at Windy Hill Tunnel.** The I-75 northbound exit ramp to Windy Hill Rd creates a 615' culvert-style tunnel as it passes under a number of ramps, including four entrance ramps from I-285. A 3D model of the entire tunnel was generated using real tunnel entrance and exit portal height measurements and an aerial imager to create an AGi32 daytime model. Being a long culvert tunnel, it requires both daytime and nighttime lighting. However, due to the existing infrastructure, placement of the new luminaires had to remain on both walls of the culvert tunnel so as not to reduce the overhead clearance within the tunnel. Despite these challenges, there was an increase in overall photometric performance while reducing the overall luminaire count within the tunnel. Emily developed a detailed 3D model of the tunnel structure and integrated it into AGi32 to apply a lighting design based on comprehensive daylighting and photometric analyses. Her work ensured accurate simulation of lighting performance, optimized luminaire placement, and compliance with project visibility and safety standards.

**Assistant Lighting Designer for I-285 at I-20 West Phase 1 Lighting Study for GDOT** As part of GDOT's Major Mobility Investment Program (MMIP), the existing I-285 interchange with I-20 on the west side of the loop is being reconstructed to improve traffic flow throughout the interchange as well as adjacent interchanges. These improvements include increased entrance and exit ramps for all interchanges as well as the main interchange itself, some of which include eliminating weaving areas and replacing them with dedicated throughway tunnels. This work will be accomplished through a design-build effort, which will be awarded at a later date. Wi-Skies' role in this project is to provide the Phase 1 engineering study and oversee and approve the lighting aspects of the final design and construction of the project. The Phase 1 study includes developing a conceptual lighting layout for the entire project, which consists mostly of high mast lighting throughout the interchange, as well as other areas that have conventional lighting and delving into whether expanding the lighting limits is warranted, based on sub-standard conditions, crash data or other conditions. There are also twenty-four underpass structures that need to be evaluated for potential daytime lighting. Emily is responsible for developing 3D models and evaluating several short tunnels. She also assisted in the evaluation of adjacent small intersection lighting layouts.

**Lighting Designer for City of Leesburg, GA, Downtown Lighting Improvements.** The town is focusing on revitalizing the historic downtown core of Leesburg by enhancing walkability, economic vitality, and the town's role as a regional destination. The city infrastructure and streetscape upgrades include improved sidewalks, crosswalks, decorative lighting, ADA-compliant infrastructure, street furniture, and tree planting. Wayfinding and branding will be improved with refreshed signage and pavement markings. The courthouse lawn is also being transformed into an attractive "town-square" type of space for community gatherings, events, and everyday use. Wi-Skies is tasked with developing a cohesive lighting design that not only elevates the downtown charm, but also the safety for drivers navigating one-way traffic and crossing the existing active railroad. The same goes for pedestrian travel, where lighting is strategically placed to improve crosswalk visibility so the community can safely navigate the town after dark. Our team worked closely with the City to avoid existing utility conflicts, highlight areas that were key to the project initiative, and generate a design that considers constructability around environmental features such as drainage ditches and foliage. Emily is responsible for generating the AGi32 model with photometric calculation grids for accurate analysis of the proposed layout.

**Lighting Designer for Southwest Connector and Corinth Rd Roundabout for Coweta County, GA.** The Southwest Connector is a new roadway segment connecting the County Fairgrounds to Millard Farmer Rd with a four-legged roundabout. Wi-Skies is responsible for providing lighting at this new roundabout and the approaches to meet IES and AASHTO standards. Emily is responsible for developing the preliminary lighting design and photometric calculations in AGi32.