Kai Waechter

PE

Senior Consultant

Mr. Kai Waechter is a Civil Engineer with over ten years of diverse experience in project management, design, and forensic engineering. He brings a strong background in construction oversight, transportation engineering, roadway and construction safety review, ADA compliance reviews, non-destructive testing, overhead crane inspections, and civil site design, complemented by expertise in personnel management and technical proposal development.

Prior to ESi, Mr. Waechter served as an associate overseeing Federal Railroad Administration (FRA) projects across the Midwest. He has managed federally funded initiatives, including disaster reconstruction and Build Back Better EDA grants, leading projects from proposal and audit stages to final execution and review. He has also managed and designed several roadway and transportation projects within NJ with a thorough understanding of engineering standards and construction practices, Mr. Waechter continues to deliver reliable, technically sound solutions across a broad range of civil and structural engineering challenges.

Education

M.S., Civil Engineering, Structural Concentration, Drexel University, 2017

BS, Civil Engineering, Drexel University, 2017

Licenses & Certifications

Registered Professional Engineer (PE)

- State of New Jersey PE License No. 24GE05996400
- State of Connecticut PE License No. PEN.0038849
- State of Massachusetts PE License No. 60424
- State of Pennsylvania License No. PE098541
- State of Maryland PE License No. 67054
- State of Michigan PE License No. 6201316860
- State of Tennessee PE License No. 134798

Certifications

- NASP Certification for ADA Compliance

Contact Information

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ESi Lincoln Park

6 Frassetto Way, Suite E

Lincoln Park, NJ 07035

Areas of Specialization

- Construction Safety
- OSHA Compliance
- ADA Compliance
- Federal Code Regulations
- Damage Evaluation
- Repair Design
- Transportation Engineering
- Railroad Engineering
- Non-Destructive Testing Practices
- Project Management
- Grants Management
- Bridge Structure Evaluations
- Infrastructure Asset Assessments
- Overhead Crane Inspections
- Hoist and Rigging Inspections
- 3D Scanning & Evaluation of Structures

- NW University Certification for Accident Reconstruction
- CICB Overhead Crane / Hoist and Rigging Inspection Certification

Positions Held

Engineering Systems Inc., Lincoln Park, NJ

- Senior Consultant, 2025 – Present

Booz Allen-Hamilton, North Haven, CT

- Associate, 2023-2025

H&L Environmental Services, LLC, Philadelphia, PA

- Civil Engineer, 2020-2023

Advanced Infrastructure Design, Inc., Hamilton, NJ

- Civil Engineer, 2017 - 2020

Bohler Engineering, Philadelphia, PA

- Engineering Intern, 2015-2016

Continuing Education

- ADA Compliance for Commercial Properties – National Association of Safety Professionals, 2026
- Traffic Crash Reconstruction for Engineers – Northwestern University, 2026
- Overhead Crane, Hoist and Rigging Inspector Training – Crane Inspection & Certification Bureau, 2025

Professional Affiliations/Honors

American Society of Highway Engineers

- Member

American Society of Civil Engineers

- Member

Chi Epsilon Civil Engineering Honors Society

- Member

Project Experience

Slip, Trips & Falls

- Performed a forensic investigation for a matter involving public use means of egress which lead to a fall outside of a storefront.

- Performed a forensic investigation for a fall that occurred on a staircase within a private property.
- Performed a forensic investigation for a fall that occurred in a shared use space of a residential complex.
- Assessed compliance with local building codes and ADA regulations for means of egress.

Cranes, Hoists & Riggins

- Performed a forensic investigation to determine the cause of a failure in an overhead warehouse crane.

Structural Evaluations

- Performed a forensic investigation to assess the structural viability of pipeline supports and provide a plan for repair.
- Performed a forensic investigation of a partially collapsed residential structure to determine probably cause.
- Performed a forensic investigation on a warehouse to determine if it was in compliance with requirements for storing food products.
- Performed a forensic investigation of an elevator pit that was experiencing significant water infiltration to determine the cause.

Roadway Safety

- Researched rail crossing safety and signage requirements that may have contributed to a train collision at a crossing.
- Provided engineering insight on roadway design requirements for various matters involving claims of design failure.

Miscellaneous

- Reviewed permit submissions for solar farms to ensure compliance with local ordinances.
- Developed details for a retention basin for a residential complex.
- Conducted a forensic investigation of a property to determine the source of water ponding, resulting in property damage.
- Conducted a forensic investigation of a failed sprinkler system which resulted in significant water damage throughout a commercial property.

Design and Operational Experience

Pavement Design

- Designed pavement systems for state and federal clients throughout the NJ region. These systems included flexible, rigid, and composite pavement. Visual inspections were performed to determine the existing conditions of the pavement to be select key locations to extract materials samples for lab testing. Non-destructive testing was conducted on pavement samples collected to determine rehabilitation options

for existing roadways. Tested and identified underlying soils to assess subbase conditions. Traffic data was collected to facilitate design and transportation growth models were used to assess future transportation asset use.

Transportation Design

- Performed geometric design for roadway and highway networks using AASHTO, FHWA and MUTCD standards. Developed curvature, elevation and grade calculations for roadways and ramp structures. Modeled truck turning radii in relation to curved roadway elements and parking lots to ensure compliance.

Railroad Design

- Designed, reviewed and approved designs for engineering deliverables submitted to the FRA under the RCE and CRISI grant programs. Design specifications, track charts, typical details/sections were reviewed for rail rehabilitation and new track installation. For projects involving the closure of a railroad crossing, proper design and implementation of diverting traffic through the use of over/underpasses, rail bridges, or parallel roadways systems was ensured.

Construction Inspection

- Oversaw construction tasks related to transportation, pavement and rail projects as well of building rehabilitation and maintenance, and materials testing conducted by technicians in active construction zones. Inspected newly laid asphalt pavement and tested their compacted density using a nuclear proctor gauge to confirm compliance with the design. Used a High-Rail to inspect track systems that were rehabilitated or newly constructed. Assessed the condition of the Ben Franklin bridge anchorage and deck to determine proper rehabilitation plans.

Civil Site Design

- Utilized drafting software such as AutoCAD and MicroStation to develop civil site plans. Conducted drainage and slope calculations and implemented them on site plans per the proposed design. Created aerial image overlays mapping underlying utilities, existing conditions and proposed work. Developed layouts for structural footprints of proposed buildings and parking layouts.

Publications

“How to Better Navigate Claims and Litigation in Roadside Work Zones,” **Kai Waechter**, Texas Association of Defense Counsel, Spring 2026.

“The Role of Visual Perception in Slips, Trips & Falls,” **Kai Waechter**, New Jersey Defense Association, Fall 2026.

Presentations

“American Short Line and Railroad Association,” **Kai Waechter**, Grade Crossing Collision Investigation: Crash to Court, Fall 2026.