

## Materials Engineering



- Structural evaluation
- Durability evaluation
- Service life modeling
- Weathering studies
- Corrosion assessments
- Failure analysis
- Product development and testing
- Mass concrete consulting

Design versus function. Laboratory data versus real-world application. With each new project, our materials engineers seek to balance and align these considerations. Time, weather, exposure, and use all affect the performance and durability of construction materials. The goal is to mitigate those factors, guard against failure mechanisms, and improve the quality of materials we use in the built world. Since 1956, clients have relied on our experience and laboratory capabilities to develop innovative solutions to materials challenges.

Our professionals have significant experience assessing the strength, durability, and behavior of materials, including concrete, steel, other metals, stone, glass, and polymers. Using extensive in-house chemical and physical testing and field assessment capabilities, our materials engineers can evaluate a wide variety of construction materials integrated into virtually any structure type or environment.

As part of repair, rehabilitation, or structural asset management projects, we can project the likely rate of material deterioration over time using analytical models developed from data collected through visual inspections, sampling, and laboratory testing in our Janney Technical Center. Service life modeling allows clients to plan and prioritize for future repair and maintenance needs.

Starting from a first principles understanding of materials science, we have long been a pioneer in improving materials performance and developing innovative solutions for project-specific applications and the construction industry overall.



## Materials Engineering

### REPRESENTATIVE PROJECTS

- Alcatraz Cellhouse - San Francisco, CA: Corrosion and laboratory testing of reinforced concrete as part of structural stabilization and seismic upgrade
- Concrete Reinforcing Steel Institute: Development of durability model
- Evaluation of glass powder for use in concrete
- Federal Highway Administration: Evaluation of treatments for mitigating alkali-silica reaction in concrete pavements; Project 00027, testing of corrosion resistant reinforcement for concrete components
- Kennedy Space Center, Vehicle Assembly Building - Titusville, FL: Corrosion service life modeling and repair development for thirty-year service life extension
- Montana Department of Transportation: Development of high-performance concrete mixtures using locally available materials
- National Cooperative Highway Research Program: Project 244, testing of concrete sealers for protection of bridge structures; Project 566, development of guidelines for concrete mixtures containing supplementary cementitious materials to enhance durability of bridge decks
- Soldier Field - Chicago, IL: Evaluation of corrosion mitigation methods for historic concrete
- Stone Panels, Inc.: Evaluation of stone-faced honeycomb facade panels

