

Innovation in Highway Construction

DANIEL J. FILER, PE

Who are we?

- **Design-Builder for our group**
 - We also work for other clients
- **\$11.7B awarded in construction in North America**
- **\$6.7B of that has been completed, with a current backlog of about \$5B**
- **Globally, over the life of the company: 3,100 miles of rail, 320 miles of tunnels, 17,700 miles of highways**

Challenges

- Separating the “cool” from the beneficial
- Low margin business, yields little room for robust R&D
- Price competition awards
- Industry is not conducive to “product” innovation
 - Technical specifications
 - Public record bids

Opportunities

- **Health and Safety**
- **Sustainability**
- **O&M and life-cycle considerations**
- **Productivity in small chunks**
 - Often project specific
- **Improvement in materials**
 - Through testing technology
- **Monitoring of assets-also a challenge due to rapidly evolving technologies**

How We R&D

- Robust R&D not feasible
- Farm the ideas at the ground level
- Incentivize Innovation
- Provide a forum for nurturing the ideas
- Support with additional resources to develop the idea

How to Improve

- P3's, by nature, encourage innovation
 - Every other contracting structure suppresses it
- Public sector must open its mind
- Develop a way to protect IP

Ideas Being Explored/Implemented

- Drones
- Jobsite safety technology
- Electronic Information Collection & Distribution
 - Truck tickets, Plan updates, etc
- BIM
 - Highways provide different benefits than buildings
 - More beneficial to construction.....for now
 - Clash detection, virtual phasing
- Harnessing traffic forces for energy
- Robotics