advanced sensing and monitoring technology that enables our clients to optimize the design, construction and operation of the nation’s transportation infrastructure.
Introducing Dynamic Testing 2.0

Design  Research

Technology

Partner  Save

Ideas  Results

Reduce

Faster  Teamwork

Innovation

Think  Mandate

New  Improve

The New Normal
The Core - Embedded Data Collector Device

- Embedded
- Wireless
- Real-Time
Typical SmartPile® EDC System Configuration (2 Gauges)

- SmartPile® Wireless DataPort
- SmartPile® Sensor Pack – Pile Top
  (with combined accelerometer, temp. and strain sensing)
- SmartPile® Sensor Pack – Pile Tip

500 foot range...

configurable up to 3 Sensor Packs total/system

SmartPile® Engineering Workstation
SmartPile® EDC - Engineered Installation Process (Pre-Cast)
EDC Installation: Simple and Easy
EDC & Dynamic Testing 2.0

Technology that enables new design, construction and quality control approaches.

But what does that really mean?

✔ NO TEST PILE PROGRAM
✔ NO PILE DRIVING CRITERIA
✔ EVEN HIGHER RESISTANCE FACTORS
Integrated & Collaborative Environment

- Focuses engineers on data analysis, not making assumptions.
- Easy data sharing for collaborative engineering.
- Long-term data storage for historical and time-series analytics.
- Gives engineers the data and environment to provide value-added services for their projects.
Comprehending Composite Capacity... (EOD/BOR)
The Method – A Complete Workflow Solution

[Diagram with workflow stages: Acquire Data, Analyze Data, Review, Match, Confirm Models, Store & Manage Data, Simulate, Simulate Soils, Sense & Measure, Slice & Measure, SmartStructures]
SmartPile® Simulate Overlay

Capacity

Capacity versus Depth
SmartPile® Simulate Overlay

Energy versus Depth
- SSI Energy
- Estimated Energy

Blows Per Displacement
- SSI Blows Per Displacement
- Estimated Blows Per Displacement

Hammer Energy
Blow Count
Validated Match at pile tip using EDC data overlay.....

Highest soil model confidence (without assumptions)
Test Pile - Data/Analysis Components

- Tip Stresses
- Tip Integrity
- Soil Modeling
- Signal Matching
- Soil Freeze Contribution

or
Eliminating Over Driving Piles

- Driving piles well beyond the point where they meet resistance and elevation requirements simply to meet a blow count
- Over driven piles = broken piles = COST
- Over driven piles = unnecessary time & cost
Improving Safety

- Climbing leads **creates** liability for contractors
- Dangerous work environments **create** personal safety risks resulting in higher project insurance costs
Dynamic Testing 2.0 = Testing Every Driven Pile

- Utilize higher resistance factors – options to save money!
  - Fewer piles, Shorter piles, Thinner piles
- Driving rate governed by MEASURED stresses
- Minimizes pile cushion changes
- Eliminates hammer operation related production delays
- No wasted blows or time driving to displacement/refusal criteria
- Higher quality foundation using tip data, much more data
- Separate Tip and Skin Capacity in real-time
- Set Checks and Re- Strikes/Drives are faster and easier
  - No need to add/remove gages, ever! (they’re embedded)
  - Accounts for unrealized capacity using Top only gauges
  - Saves on unnecessary driving, pile lengths, and splices
- Eliminates layers of estimations and assumptions by measuring data and applying a Closed Loop Analysis approach
- Safe – by staying out of the way
- Efficient – time is money
Expanding Universe of Applications

Concrete Pipes

Cylinder Piles

Caissons

Toxic Waste Vessels

Drilled Shafts

Retaining Walls
We are ready to help you improve project efficiency, competitive edge, construction quality, and save money......

Thank you for your time today.