MEASUREMENT AND USE OF SET-UP IN PILE DESIGN

Alexander B.C. Dettloff, P.E.
State Foundations Engineer
ODOT Office of Geotechnical Engineering
SOME STATISTICS:

- Existing bridges Built from 1970 to 1975
- Bridges are 4157’ long, up to 190’ tall
- Bridges used 277,652’ of driven piling
  - Design assumed 14” CIP Pipe Piles
  - Construction used Step-Tapered Piles
- R.A. and P1 through P12 on Friction Piles
- P13 and P14 on Spread Footings on rock
- F.A. on HP 12x53 Piles driven to rock
○ Existing Bridge Piles:
  ○ Existing twin bridges typically have:
    118 piles per each pier, each about 92 feet long.
  ○ This is 10,856 feet of pile per pier (x2).

Typical Pile

Top

14” Diameter, 35’ Long

12.5” Diameter, 19’ Long

11” Diameter, 38’ Long

Tip
Walsh and ch2m proposed by Alternative Technical Concept (ATC) to drive fewer, larger piles per pier, and make use of pile setup in design:

- Typically, about 45 piles per pier, each around 120 feet long on average.
- This is 5,400 feet of pile per pier.
- About half the amount of pile per pier!
Cross Section of the Valley:

"Green" soil is the 30+ bpf that we typically look for.
Just get to the “Green”...

Looks easy, right?
CUY-IR480-1842, VALLEY VIEW BRIDGE
CUY-IR480-1842, VALLEY VIEW BRIDGE
PLEASE HOLD YOUR QUESTIONS...