Hardin County
KY-251
Spot Subgrade Stabilization

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Project Highlights

- Karst, faulting and slumped sandstone
- Slope stability
- Subgrade stabilization
Project Setting
Karst

- Caves
- Sinkholes
- Karst ponds
- Slumped sandstone
Fault

- Slumped sandstone
- Deep overburden
- Fractured rock
- Seismic potential
Slope Stability

- Typical soil strength parameters
  - NAVFAC 7.02
  - Long-term (effective)
  - Intermediate-term (effective)
  - Short-term (undrained)
Slope Stability
Slope Stability

- Triaxial Test
  - Shear and saturation
  - Pore pressure dissipation
  - Predisposed failure plane (chert nodules)
  - Lake Barkley
Slope Stability

- Future projects
- Reduce slopes
- Limit shear strength parameters
Subgrade Stabilization

- Chemical
- Stone
- Geogrid
Subgrade Stabilization

- Chemical
- Cement
- Lime

https://www.youtube.com/watch?v=V5B5dv9B3KE
Subgrade Stabilization

- Selecting the appropriate method
- Fines content
- Silts and sands vs. clays
Subgrade Stabilization

- Lime
- Calcium cation exchange
- Flocculation-agglomeration
- Pozzolanic reaction
- $\text{pH} \geq 12.4$
Subgrade Stabilization

- Cement
- Soil-cement
- Cement modified soil
- Hydration
Special Note

- Selection during bidding
- Multiple stabilization options
- Station limits indicated in report
Questions

Thanks for participating!

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