Self Consolidating Concrete
The NY Experience

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Earth First.

We’ll strip mine the other planets later.
What is SCC:
- Workable
- Passable
- Stable

Benefits of use:
- Improved quality
- Aesthetics
- Reduced labor
- Safety
SCC

**Measures of quality / consistency:**
- Spread
- Visual Stability Index
- J-ring, L or U-box, V-funnel
- Column segregation

**NY Goals:**
- **Keep it simple!!!**
SCC uses in NY

- Materials precast
  - Box culverts, drainage, walls, barriers
- Structural precast
  - 3 sided arches, beams
- Cast-In-Place construction
  - Substructure repairs, re-facing, aesthetics
- Future considerations
  - Drilled shafts, new construction, others???
Materials Precast

- Consideration began w/ Industry request
  - Experience with commercial production

- DOT trials:
  - Spread / VSI
  - F/T
  - Air content
Materials Precast

- Routine uses:
Materials Precast

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Materials Precast

- **Current usage**
  - SCC used for 70% of all the Materials precast produced for NY DOT
  - Totals > 18,000 cubic yards of product

- **Performance**
  - Air content – plastic vs. hardened < 1.5%
  - F/T – 50 cycles < 0.5% loss
Structural Precast

- More recent consideration of use
- Frequently tied to HPC (10,000+ psi)
  - Quality measures:
    - Spread
    - J-ring
    - Air content
    - Strength gain
    - Shrinkage
    - Permeability
- Trials ongoing
Structural Precast

- **SCC uses**
  - Most notable project: Roslyn Ave Viaduct
    - Segmental construction, HPC, >10,000 psi
    - Substructure and Segmental beams
Structural Precast

Other notable uses:
Structural Precast

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Structural Precast

- Other notable uses:
Cast-In-Place Construction

- Trials ongoing in many locations
- Progressing via:
  - Special Note
  - Performance specification
  - Partnering process
- Require pre-placement trials
  - Contractor / Producer to supply:
    - Strength and strength gain rate, spread targets, action points, proposed VSI rating, target air
Cast-In-Place Construction

- Most prominent applications
  - Substructure repairs

- Notable projects:
  - Rte 198, Buffalo
  - FDR Drive, Manhattan
Considerations for use:
- Solid / secure forming necessary
- Shorter loads
- Water content susceptible – wash out!
- Continuous flow of material needed
  - Consider pumping
- Reduced labor / no vibration
- Aesthetic considerations
Cast-In-Place Construction

- Mirror-like finish
- Replicates forms
Cast-In-Place Construction
Cast-In-Place Construction
Cast-In-Place Construction
Drilled Shafts

- SCC yet to be used...
- Concerns with:
  - Compatibility w/ bentonite & polymer slurries
  - Tremie / underwater applications
  - Mixture stability for the application
- Proceeding cautiously
  - Following FHWA lead / guidance
SCC

SCC is good tool
- Limitations related to raw materials, mixture, and specific application
- Following others research activities
  - VA trials w/ fibers
  - FHWA drilled shaft study
- Expect further uses
Thank You!!!

YOU'LL NEVER GET TO WORK ON TIME HAHA!!!