



James Shilstone (Jay) is the 3rd generation of Shilstones to be involved in concrete quality control and follows after his father, Jim, in working with architectural concrete. Jay has been involved in architectural concrete projects worldwide with an accumulated value of over \$4,000,000,000. His most recent efforts involve the development of performance specifications for architectural concrete. Jay is a member of ACI 303, Architectural Concrete, as well as multiple ACI, NRMCA, ASTM and TRB committees dealing with concrete and quality control.

Command Alkon

ACI Spring 2012 Convention "The Art of Concrete"

Next Generation Water Meter Systems

- James M. Shilstone, Jr., FACI

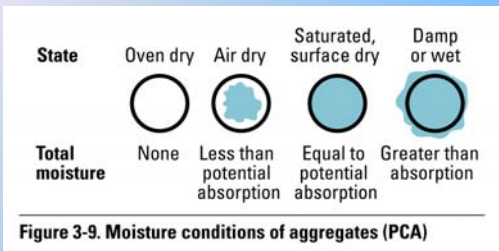
Material	Target	Actual	Status
FLZSAND	7476 Lb	3368	Fast
FLZSTONE	6513 Lb	0	
FLZTYPEI	2335 Lb	888	Fast
FLZFLY #	258 Lb	0	

Yards: 10.00 Yd
Batch: 1 of 2
Mix ID: 400415
Probe: 0.0 x

Moisture probes



Aggregate moisture



Why use moisture probes?

Concrete mix contains 1300 lbs sand /cyd
6% moisture in the sand
Need to batch $1300 \times 1.06 = 1378$ lbs sand
Batch contains 1300 lbs of sand & 78 lbs water
78 lbs of water will change slump by 8"
78 lbs of water will change w/c by about 0.15

Types of Moisture Probes

- Resistance
- Microwave
- Nuclear
- Part of a system

Why are moisture probes often not used?

Because slumps are still variable!

Causes of Slump Variation

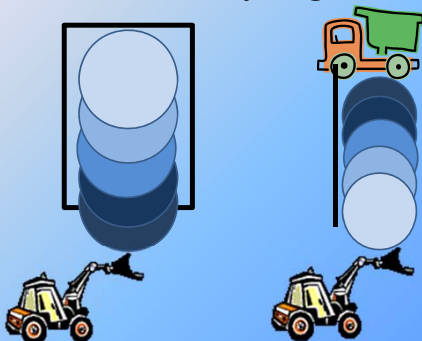
- Changes in water content
 - Aggregate moisture
 - Wash water
 - “Trim” water
- Changes in air content
- Changes in temperature
- Changes in particle grading and texture
- Moisture meters may not be set up correctly
- Coarse aggregate moisture ignored

Factors affecting moisture meters

- Material
 - Variations in aggregate source (absorption, grading)
 - Calibration
 - Excessive moisture
 - Steam in bin (heat)
 - FILO – first in/ last out



Material Stockpiling



Factors affecting moisture meters

- Plant Configuration
 - Probe placement (active flow)
 - Bin size and shape
 - Timing of readings
 - Timing of adjustment
 - Durability & Maintenance (abrasion)

What to look for in moisture system

- Accuracy (calibration)
 - Ease of calibration
 - Multiple profiles
- Continuous measurement
- Ease of maintenance
- Proper design & installation
- User friendly interface

Thank you for your attention.

