

*Building a Safer, More Sustainable World ...
One Project at a Time*



The Rehabilitation and Preservation Of the Thornburg Bridge

Chris Davis
Engineering Sales Manager
cdavis@ctscement.com
973-568-3134



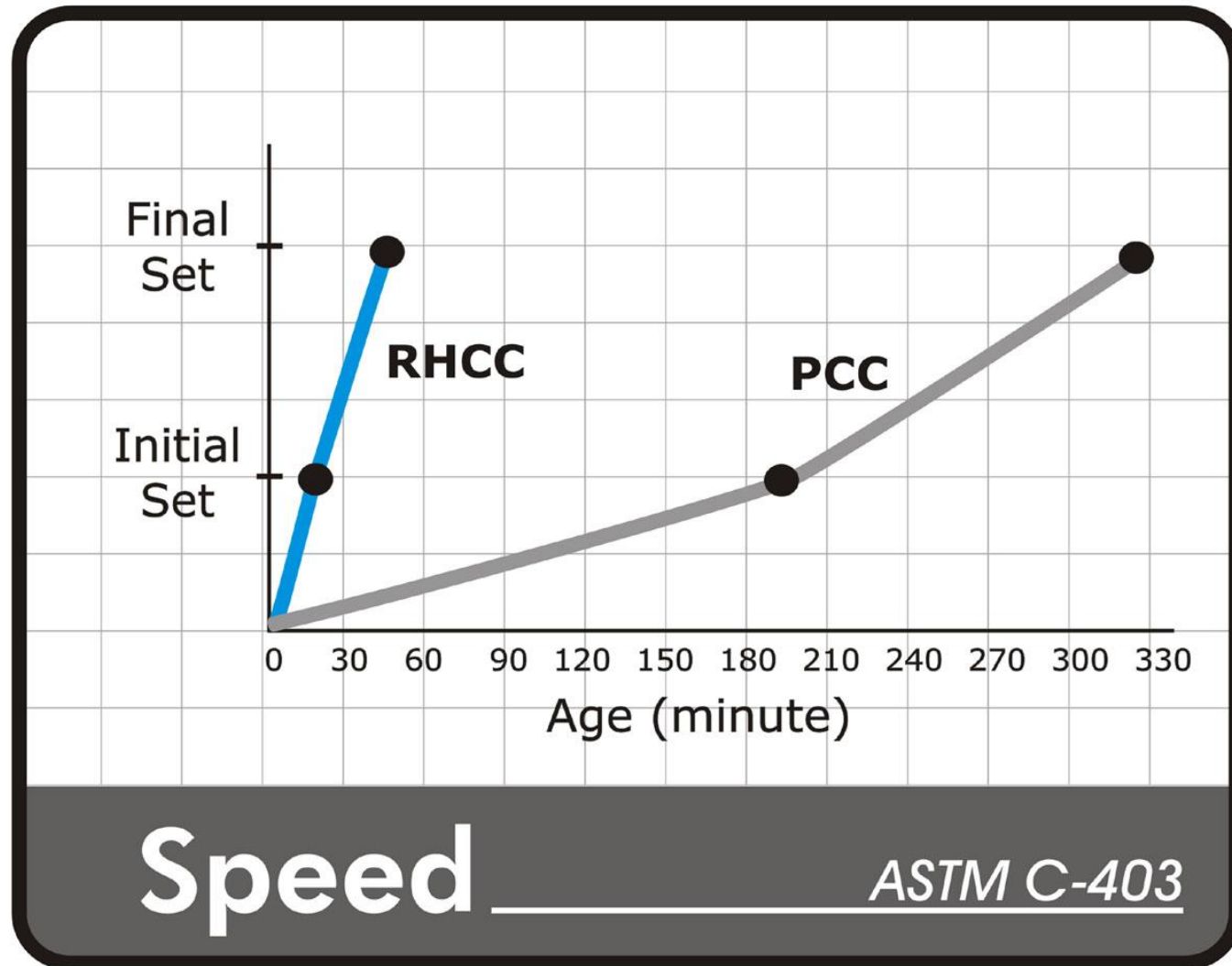
What is VESLMC?

- Cement (ASTM C1600) 658 lbs/cy
- Sand / Stone (ASTM C33)
- Fine aggregate should be 55 to 70% of total aggregate weight
- Latex 24.5 gallons per cy
- Water .40 w/c ratio.
- Strength 2500 psi in 3 hrs. and 3500 psi in 24 hrs.

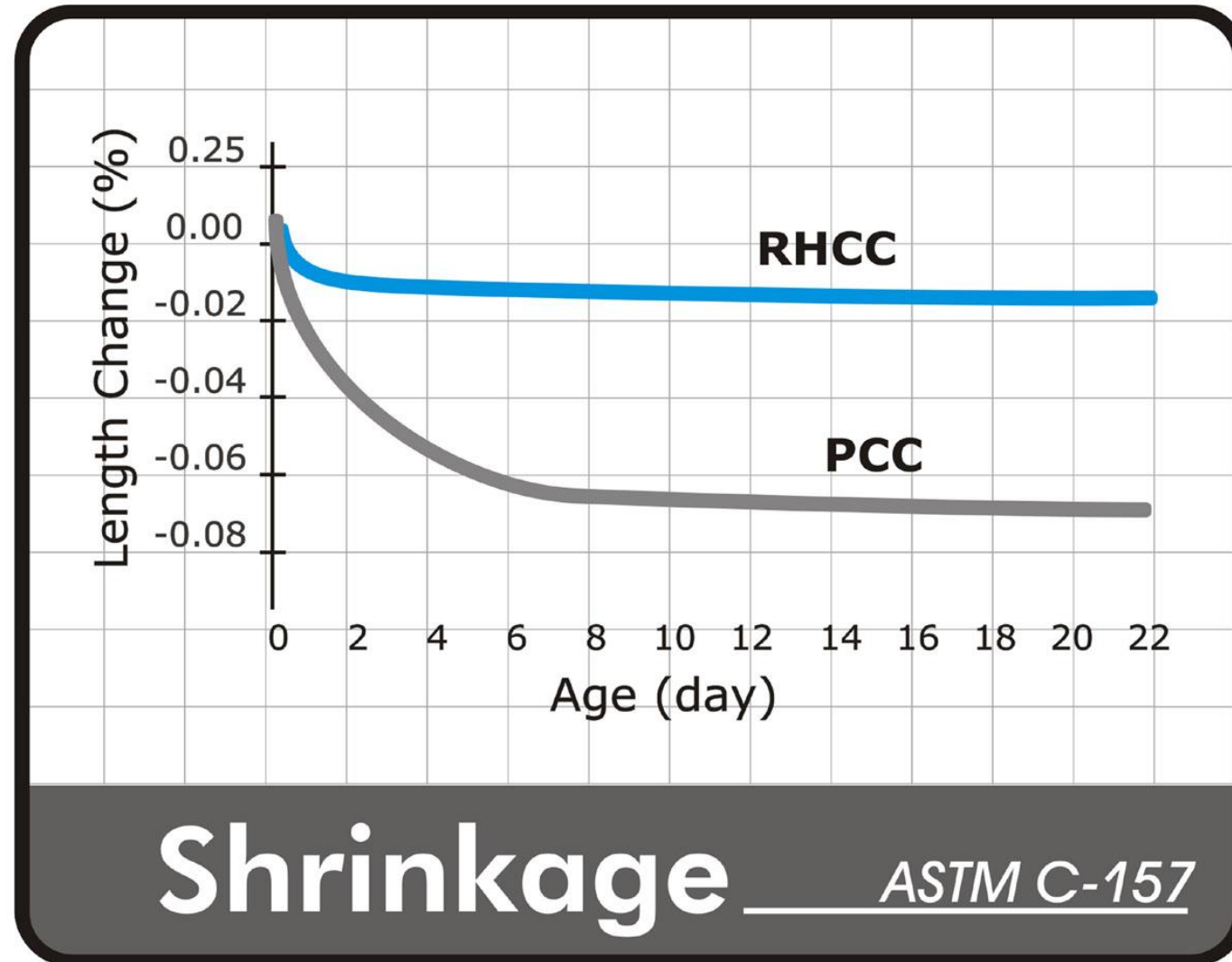
WHAT CSA CEMENT?

- ✓ A calcium sulfoaluminate cement
- ✓ Has little or no C_3A , which increases sulfate resistance
- ✓ Gains strength of 2,500 to 3,000 psi in 1.5 hours
- ✓ Has very low shrinkage

SPEED COMPARISON

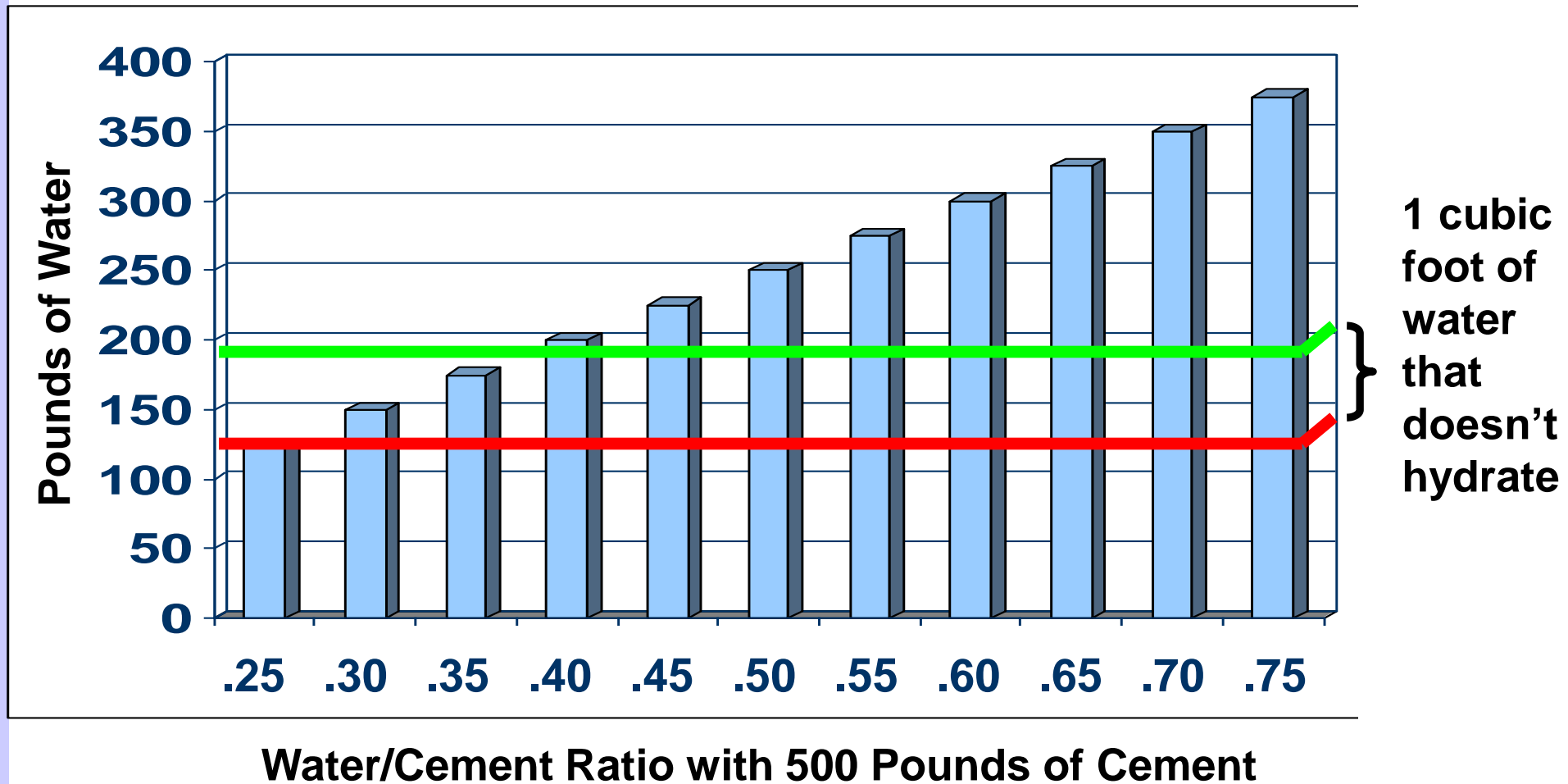


SHRINKAGE COMPARISON

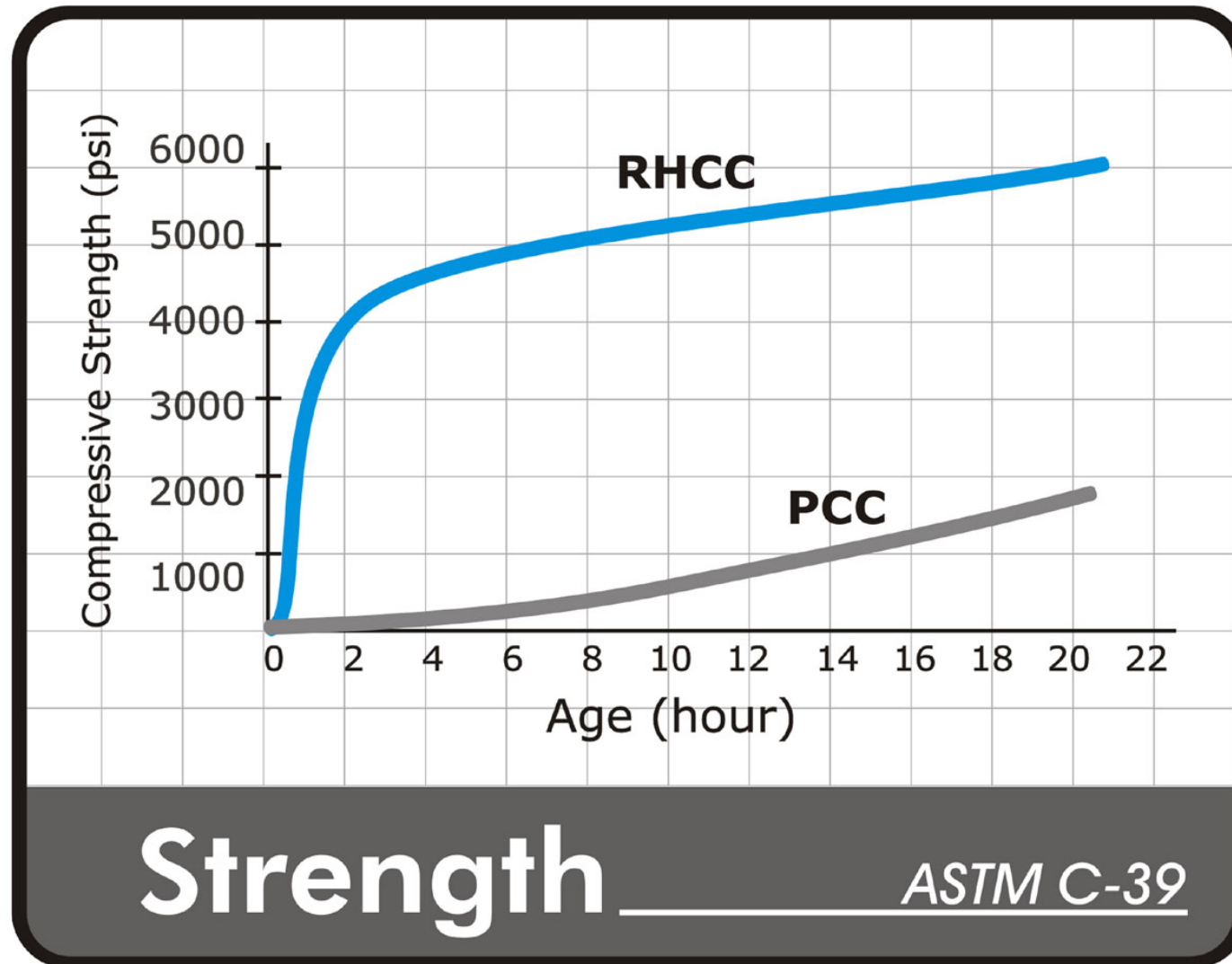


Water/Cement Ratio for Hydration

- **Portland .25**
- **C₄A₃S Cement .38**
- **Excess water used up**
- **Little excess to form bleed channels**



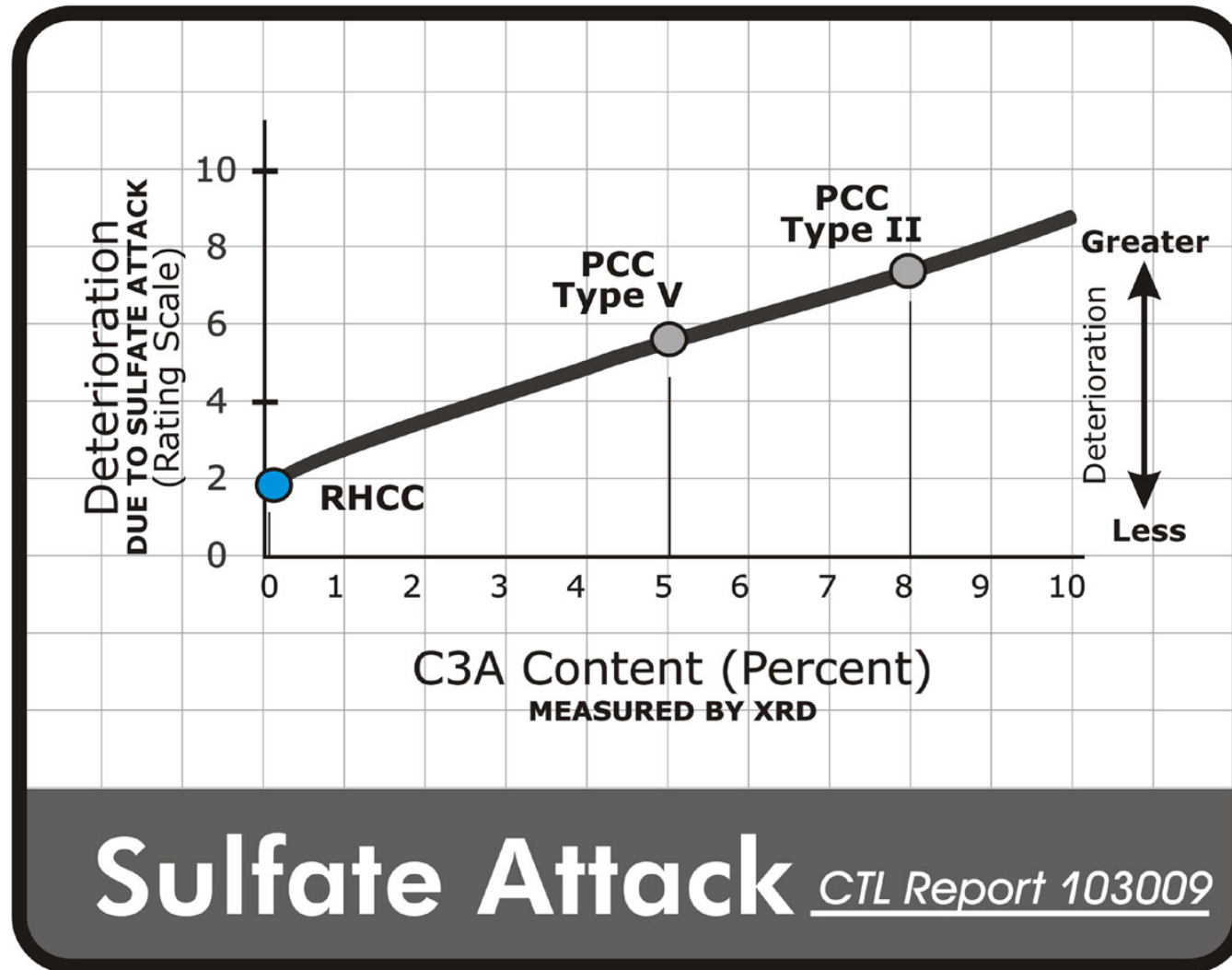
STRENGTH COMPARISON



ACI 365.1R-00 SERVICE LIFE PREDICTION

“Because it is the C_3A that is attacked by sulfates, the concrete vulnerability can be reduced by using cements low in C_3A ...”

SULFATE ATTACK COMPARISON



Sulfate Attack



Type II Portland 8% C3A



Rapid Set Cement 0% C3A

GWP of CSA Cement

Global Warming Potential (GWP)

- Type CSA673 kg of CO₂-eq/metric ton cement
- Portland cement*1,040 kg of CO₂-e/metric ton cement
- Type IL* (portland limestone cement).....846 kg of CO₂-e/metric ton cement

*Industry-standard EPDs, not plant-specific

TYPICAL MOBILE VOLUMETRIC MIXER

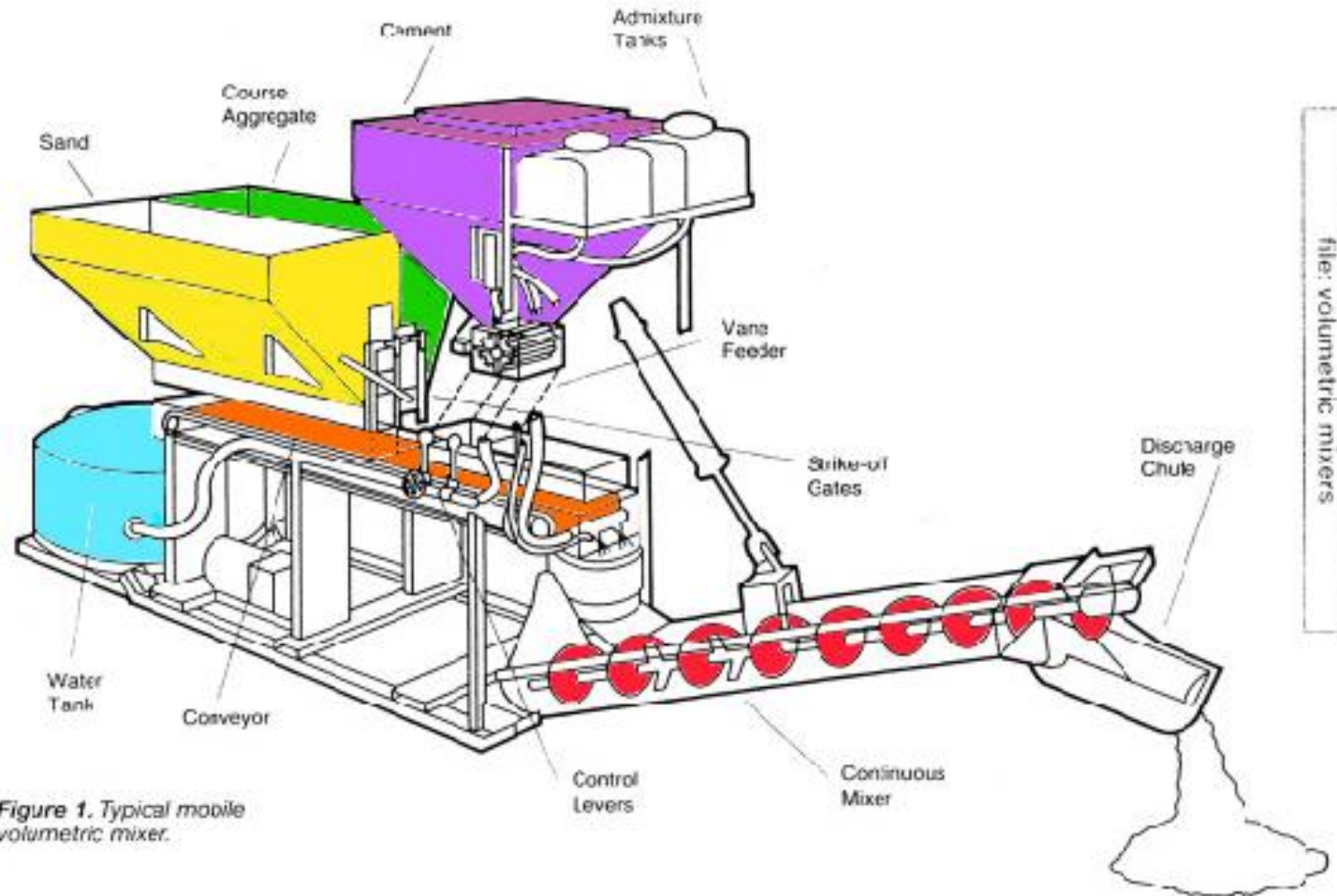


Figure 1. Typical mobile volumetric mixer.

Thornburg Bridge































































Date	Strength at 3 HRS PSI	
05/06/2023	3,740	
05/06/2023	3,360	
05/06/2023	4,420	
05/06/2023	3,295	
05/07/2023	3,050	
05/07/2023	3,105	
05/07/2023	3,263	
05/07/2023	3,677	
05/07/2023	3,083	









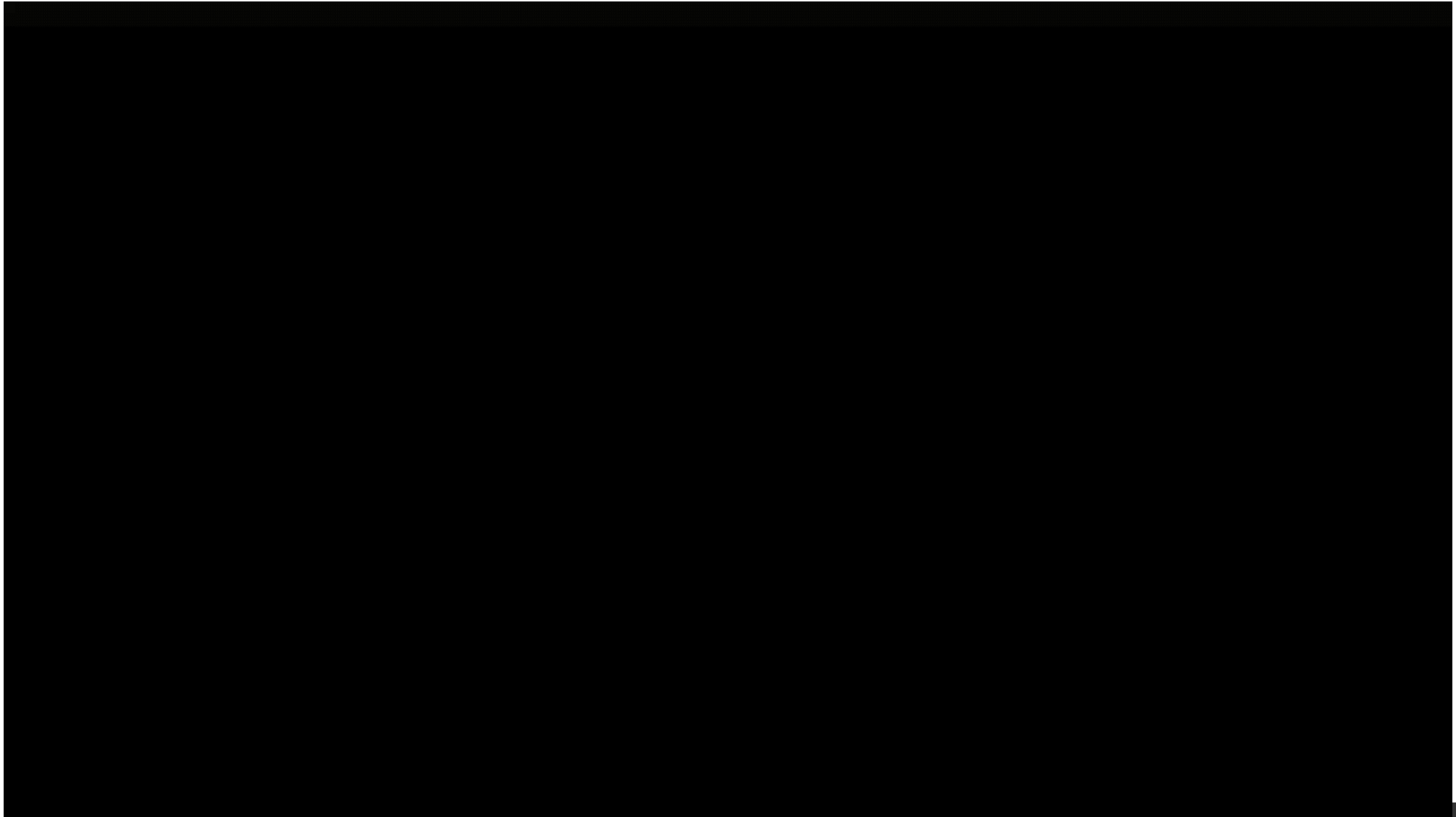












Thank You!

For more information, visit CTScement.com.
For support, contact your local CTS Representative.

Chris Davis

Engineering Sales Manager

cdavis@ctscement.com

(973) 568-3134

