

A detailed illustration of a steam locomotive crossing a narrow, rickety wooden bridge. The bridge is built over a deep, rocky chasm. The locomotive is emitting a large plume of dark smoke from its smokestack. The bridge consists of several wooden planks supported by a simple wooden frame, which appears to be precariously balanced on the rocky ledge. The scene is set against a plain white background.

Reacting to a “Runaway” Concrete Placement

Philip Kresge
Sr. Vice President - Local Paving

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Understand Concrete's Properties and Behavior



A green sticky note is pinned to the center of a dartboard. The text on the note is written in a bold, red, sans-serif font. The dartboard has alternating white and dark grey segments, with a blue and orange ring visible at the edges. A green pen is visible at the top, having just pinned the note.

**WHAT'S
IMPORTANT
TO YOU?**

What's important to the engineer/specifier?

- Compressive Strength
- Slump
- Air Content
- W/C Ratio



What's important to the contractor?

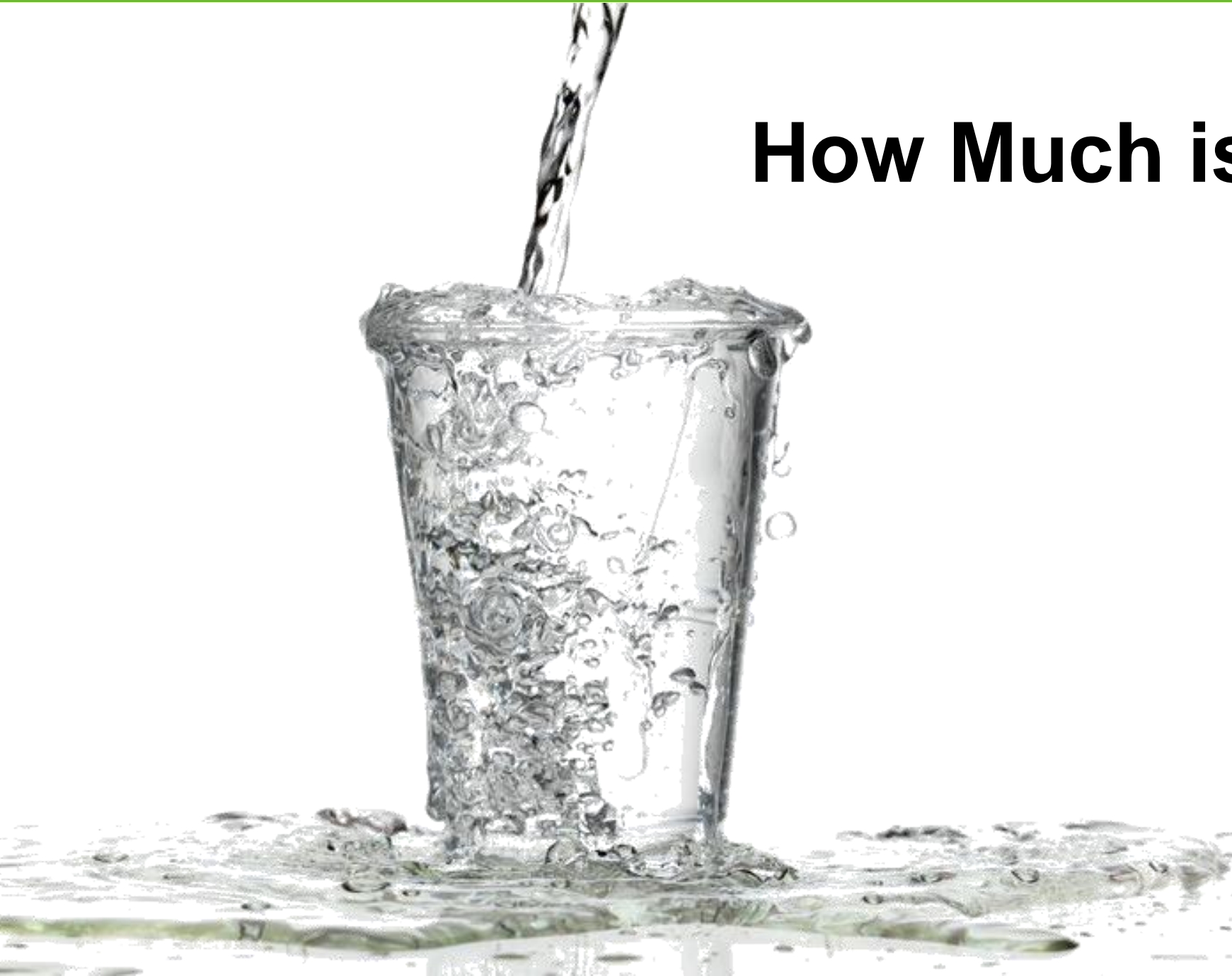
Workability!



Factors Affecting Workability

- Method and duration of transportation
- Quantity and characteristics of cementing materials
- Concrete consistency (slump)
- Aggregate grading, shape & surface texture
- % entrained air
- Concrete & ambient air temperature
- Admixtures
- Water content

How Much is Too Much?

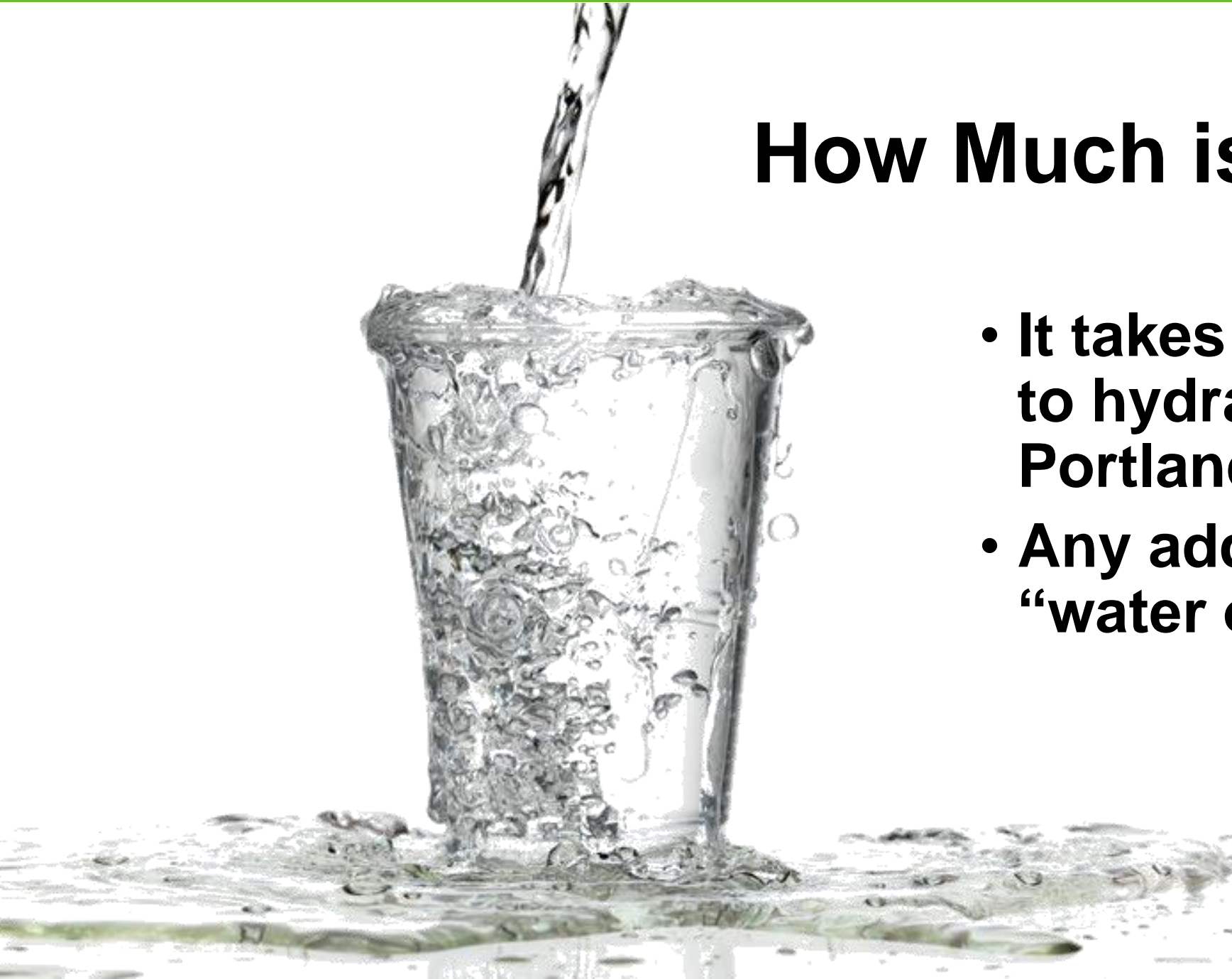


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How Much is Too Much?

- It takes 25 lbs. of water to hydrate 100 lbs. of Portland cement
- Any additional water is “water of convenience”





Concrete Mix Rules of Thumb

**Adding 1 gallon of water to
a cubic yard of concrete will:**

- **Increase the slump about 1”**



Concrete Mix Rules of Thumb

Adding 1 gallon of water to a cubic yard of concrete will:

- **Increase the slump about 1”**
- **Decrease compressive strength about 200 to 300 psi**
- **Increase shrinkage potential by as much as 10%**

Contractor's Function on the Job

- Placement



Contractor's Function on the Job



- Placement
- Consolidation

Contractor's Function on the Job



- Placement
- Consolidation
- Screeding/Leveling

Contractor's Function on the Job



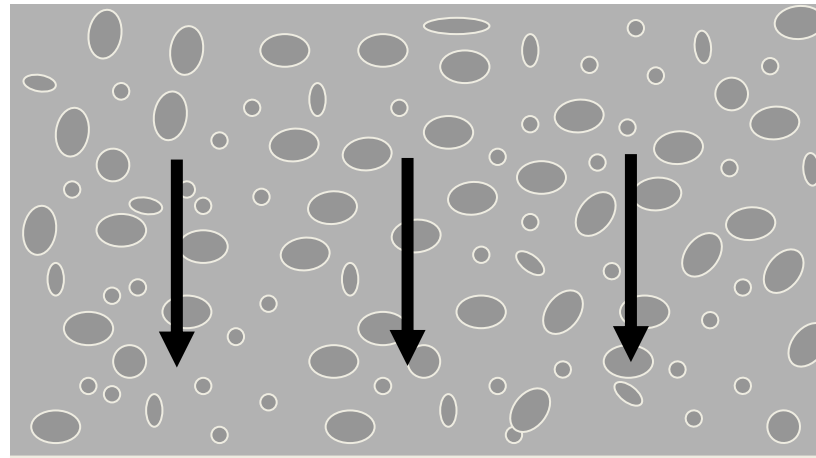
- Placement
- Consolidation
- Screeding/Leveling
- Finishing



What Happens to the Concrete at this Point?

Sedimentation: The effect of gravity that results in bleeding

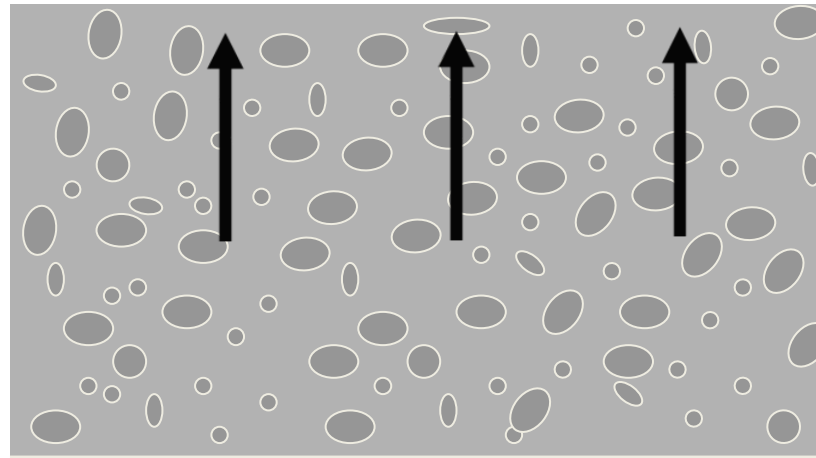
Aggregates settle



Sedimentation:

The effect of gravity that results in bleeding

Water & entrapped
air rise

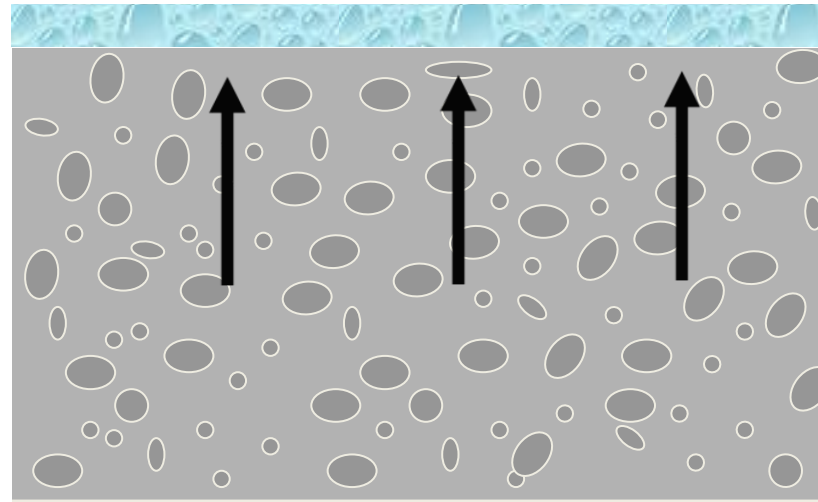


Sedimentation:

The effect of gravity that results in bleeding

Water & entrapped
air rise

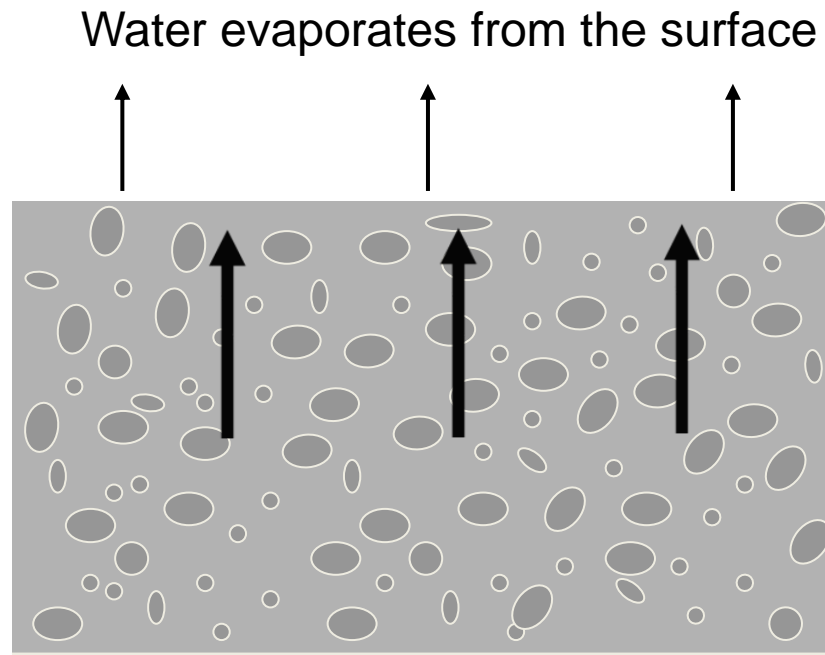
Bleed Water



Sedimentation:

The effect of gravity that results in bleeding

Water & entrapped
air rise



Factors critical to bleeding

- Cementitious Content
 - Type
 - Amount
- Water/Cement Ratio
- Aggregate Proportions
- Air Content
- Placed on polyethylene

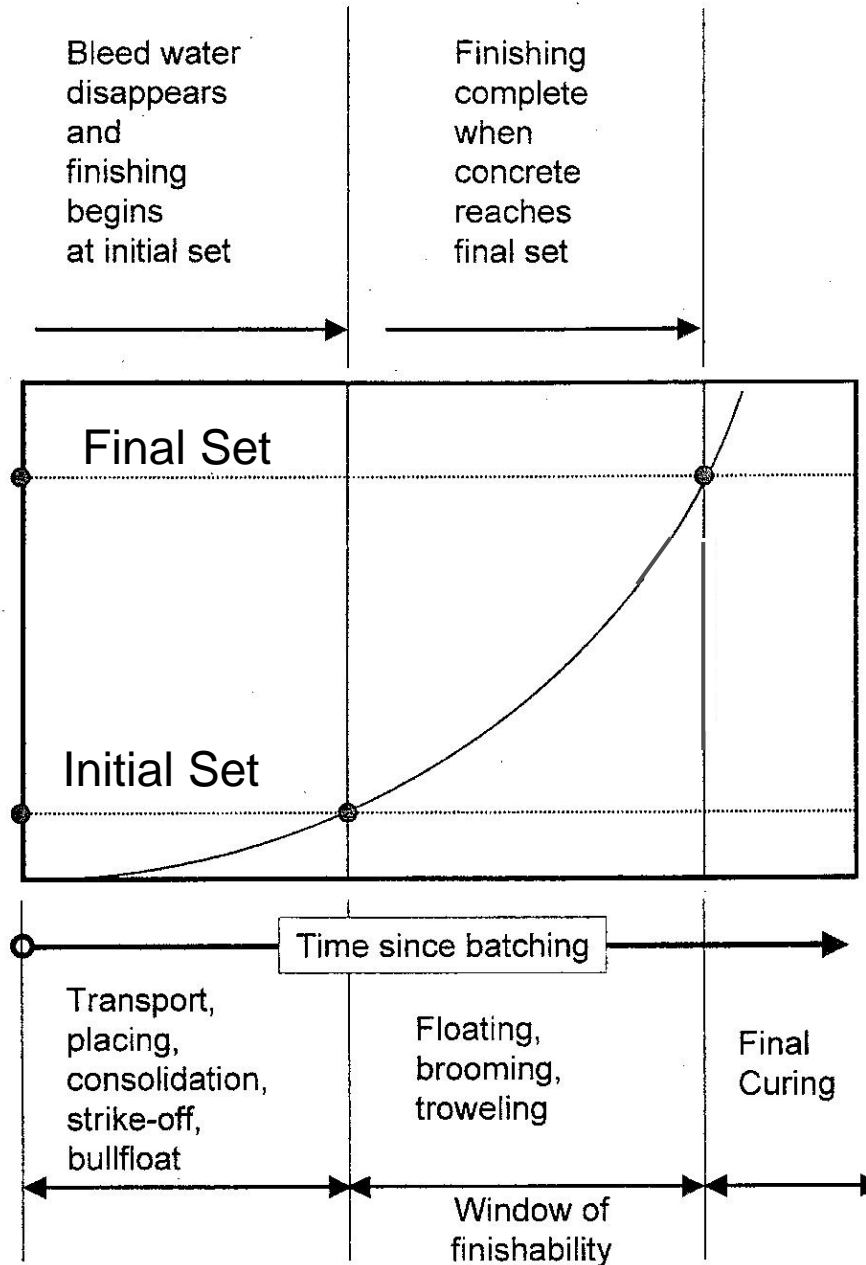


When Do You Start Finishing?

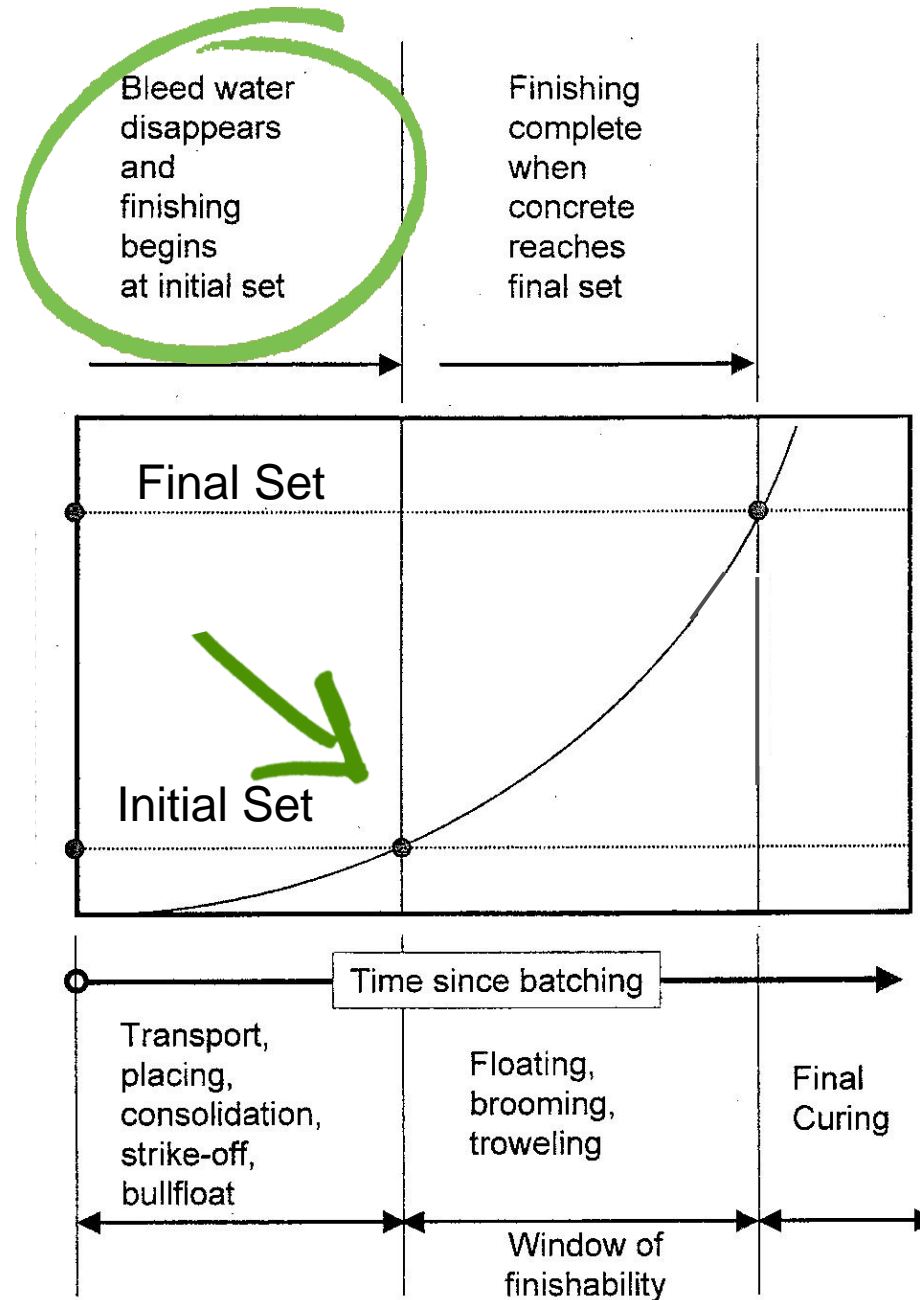


- After bleed water has evaporated
- After Initial Set has occurred
- Before Final Set occurs

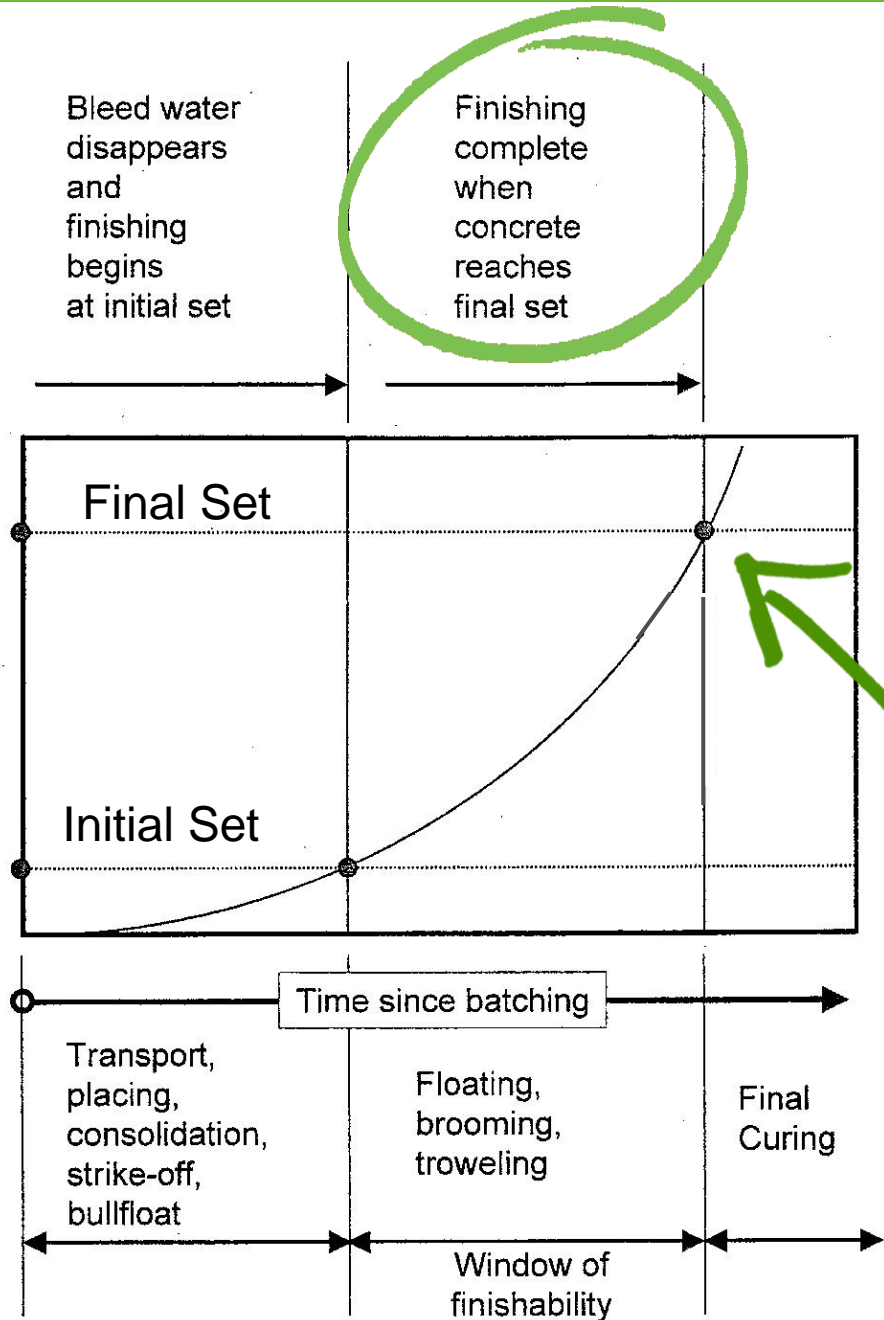
In an Ideal World Evaporation equals Initial Set



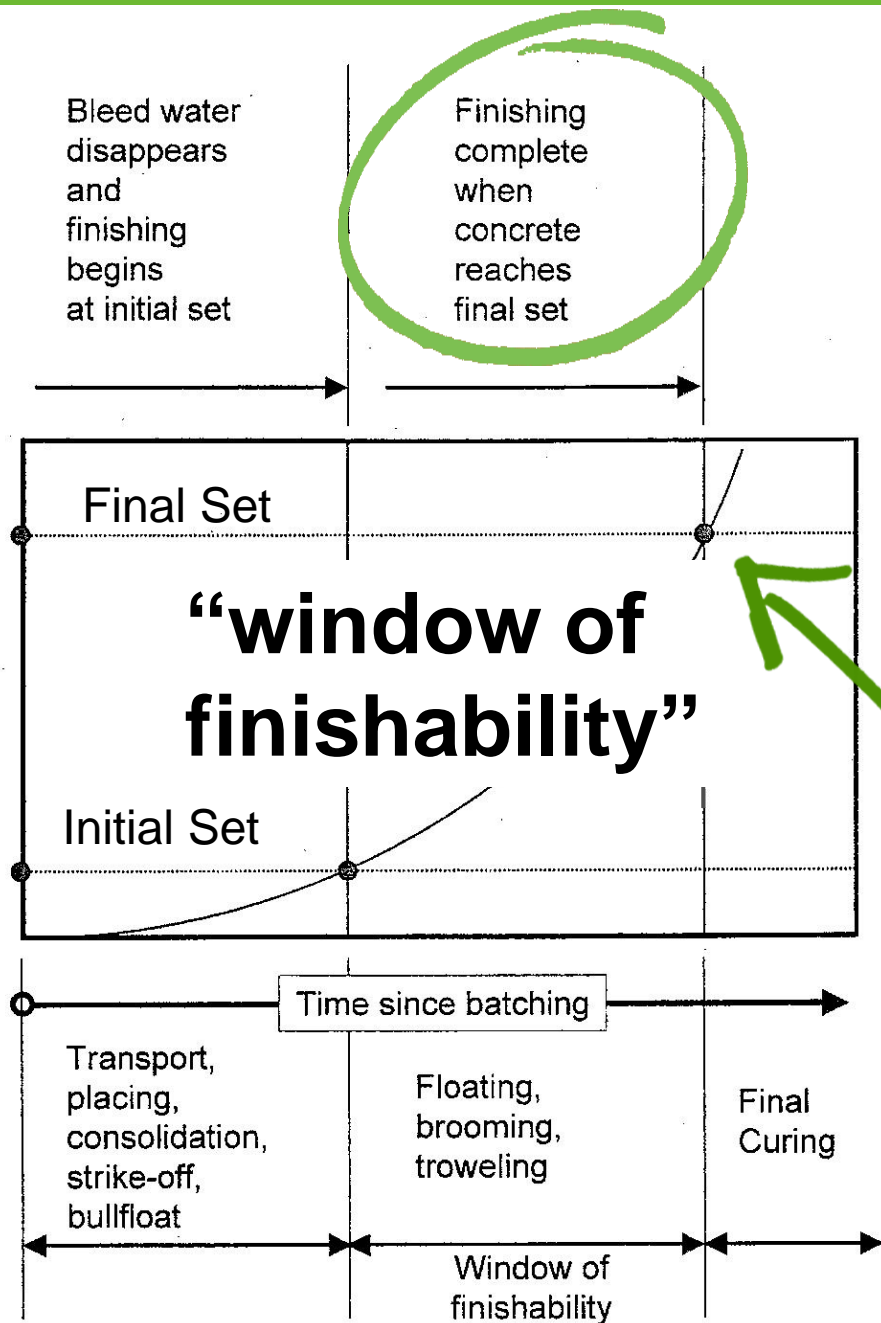
In an Ideal World
Evaporation
equals Initial Set



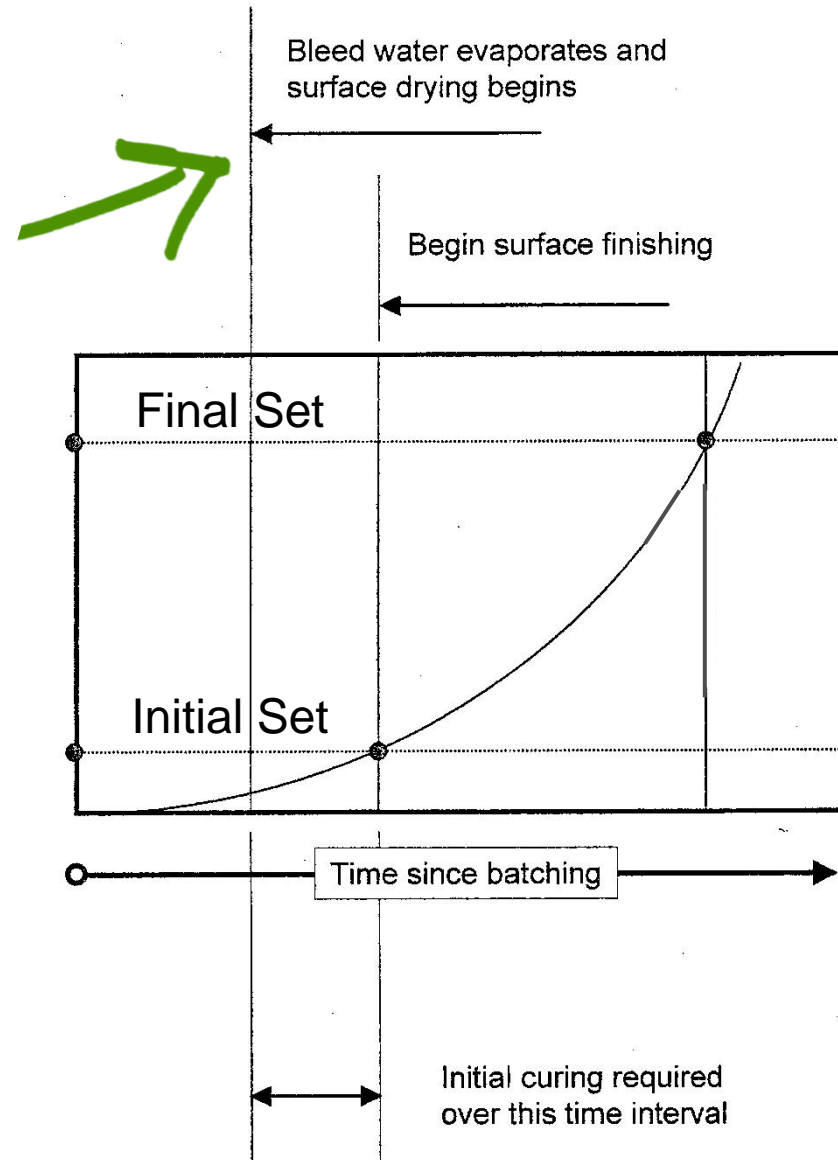
In an Ideal World Evaporation equals Initial Set



In an Ideal World
Evaporation
equals Initial Set

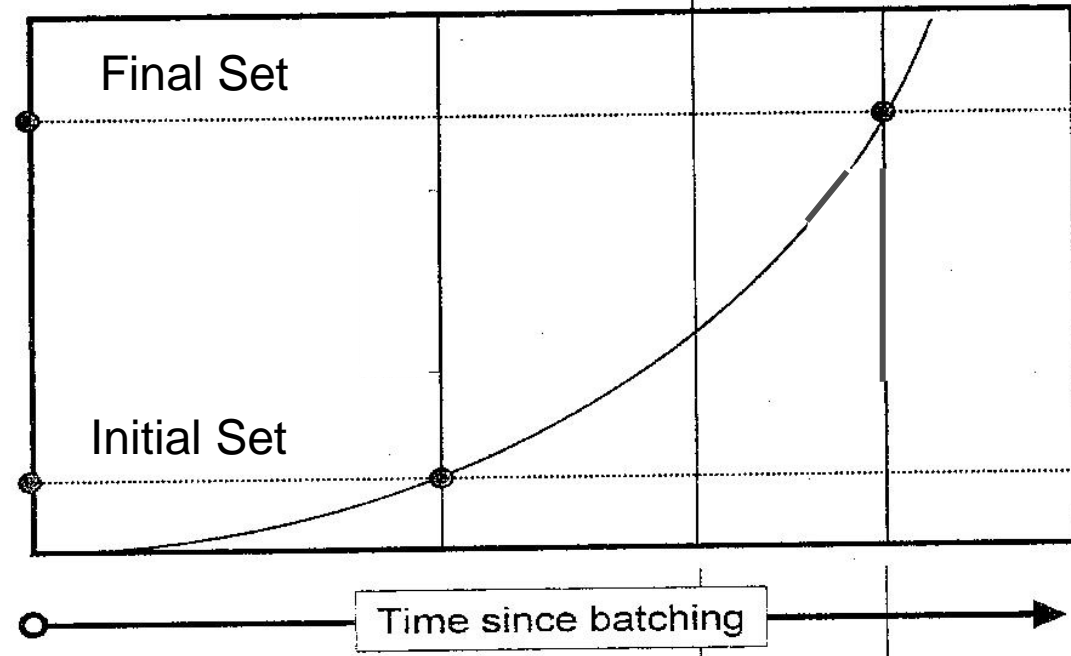


In the Real World . . .



Bleed water does not
evaporate before initial set

In the Real World . . .



Common Slab Surface Defects

- Dusting
- Cracking
- Cracking
- Blisters
- Scaling
- Delamination
- Discoloration





How Do You Avoid These Problems?

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Control the Rate of Evaporation

Slow down rate of evaporation by...

- Dampen the subgrade
- Create a fog environment
- Erect windbreaks
- Shield from direct sunlight
- ***Apply surface evaporation retardant***



Increase rate of evaporation by...

- Not placing on wet subgrade
- Not placing on polyethylene
- Remove excess bleed water
 - Drag hose across surface
 - *DO NOT APPLY PORTLAND CEMENT*



For Best Results. . .

NEVER!

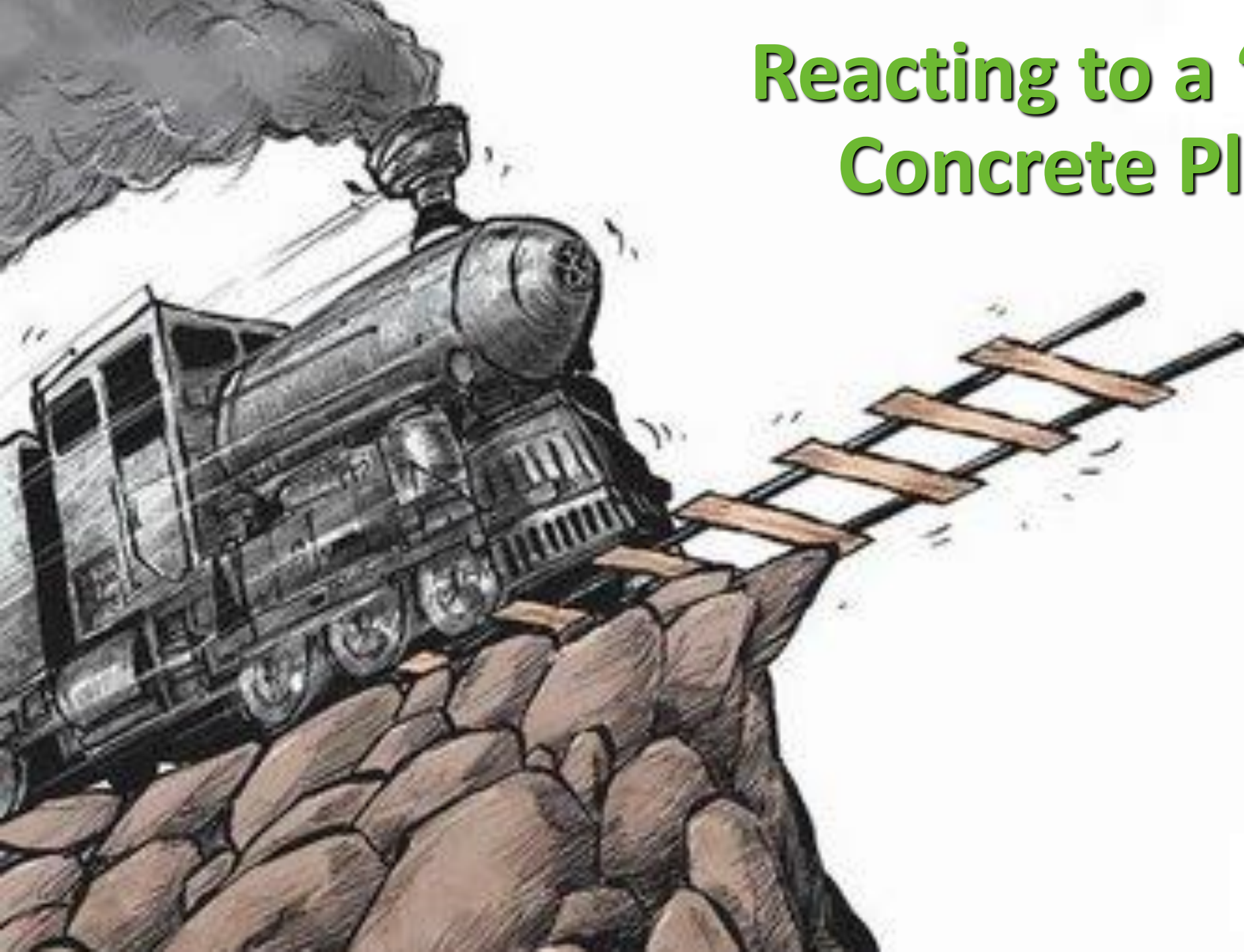
Add water beyond design W/C

Delay placement/finishing

Re-temper

“Bless the surface”

Reacting to a “Runaway” Concrete Placement



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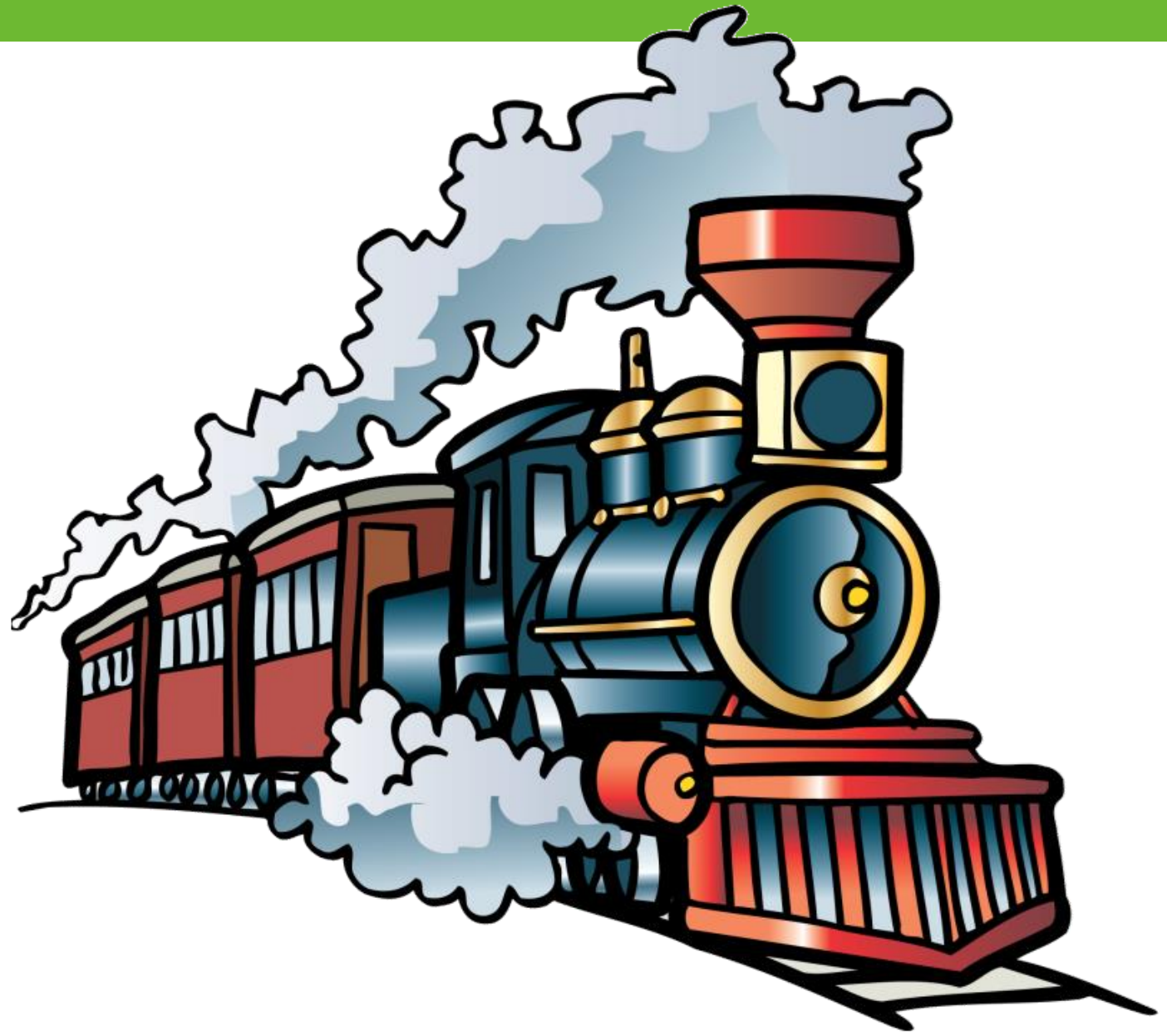






In Summary . . .

- Concrete is going to do what it's going to do
- Plan your work & work your plan
- Understanding concrete can help troubleshoot and prevent problems and keep you on track!



Resources



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THE OHIO CONCRETE
CONSTRUCTION INDUSTRY

OHIO CONCRETE COVID-19
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Ohio Concrete is dedicated to assisting each member company with a variety of resources unique to the concrete industry – ranging from education, technical support, troubleshooting, to marketing exposure, promotion and legislative support.



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NRMCA's 2021 Annual Convention | March 2 - 3, 2021

Some board activities and meetings take place in the days before and after the event.

[REGISTER NOW!](#)

[Questions?](#)

Concrete in Practice Series

44 Different Titles, including:

- Dusting
- Scaling
- Cracking
- Jointing
- Hot Weather
- Cold Weather
- Slab Moisture
- Pre-Construction Conference
- Acceptance Testing






Mission: Enhancing the Capabilities of Those Who Build with Concrete

The ASCC is a non-profit trade association of cast-in-place concrete contractors dedicated to enhancing the capabilities of those who build with concrete. As the world's premier cast-in-place contractor association, ASCC is committed to providing concrete contractors a unified voice in the construction industry.

Members of the association include concrete contractors, self-performing general contractors, manufacturers, suppliers, architects, engineers and educators. ASCC has approximately 760 member companies in the United States and abroad.

Concrete contracting requires tough **technical** and business decisions. Membership provides concrete contractors the tools to ensure those decisions are the right ones. Being part of a concrete contractors' association connects you to a nationwide network of peers, professionals and experts who will support you every step of the way.

The ASCC is the
only association
by and for all
concrete contractors.

Learn about becoming
an ASCC member today 

Sustaining Members

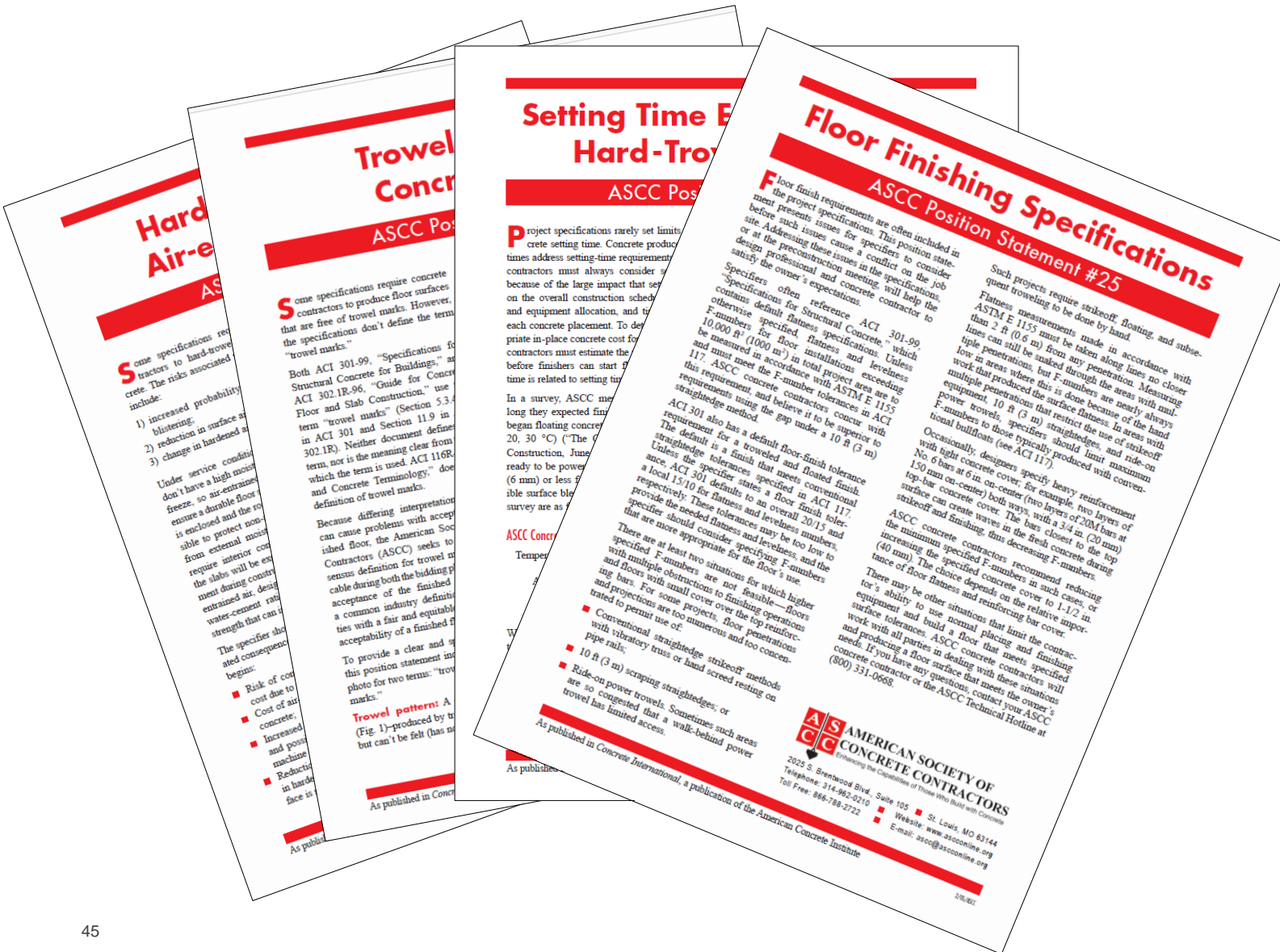


*** QUICK LINKS ***

ASCC Position Statements

42 Topics, including:

- Air Entrained Concrete
- Trowel Marks
- Crack Repair
- Floor Flatness
- Appearance Requirements
- Setting Time Expectations
- Floor Finishing Specifications





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