

Happy St. Patrick's
Day +1

Best Practices for Placing and Finishing Durable Concrete



MARCH 17-18, 2025

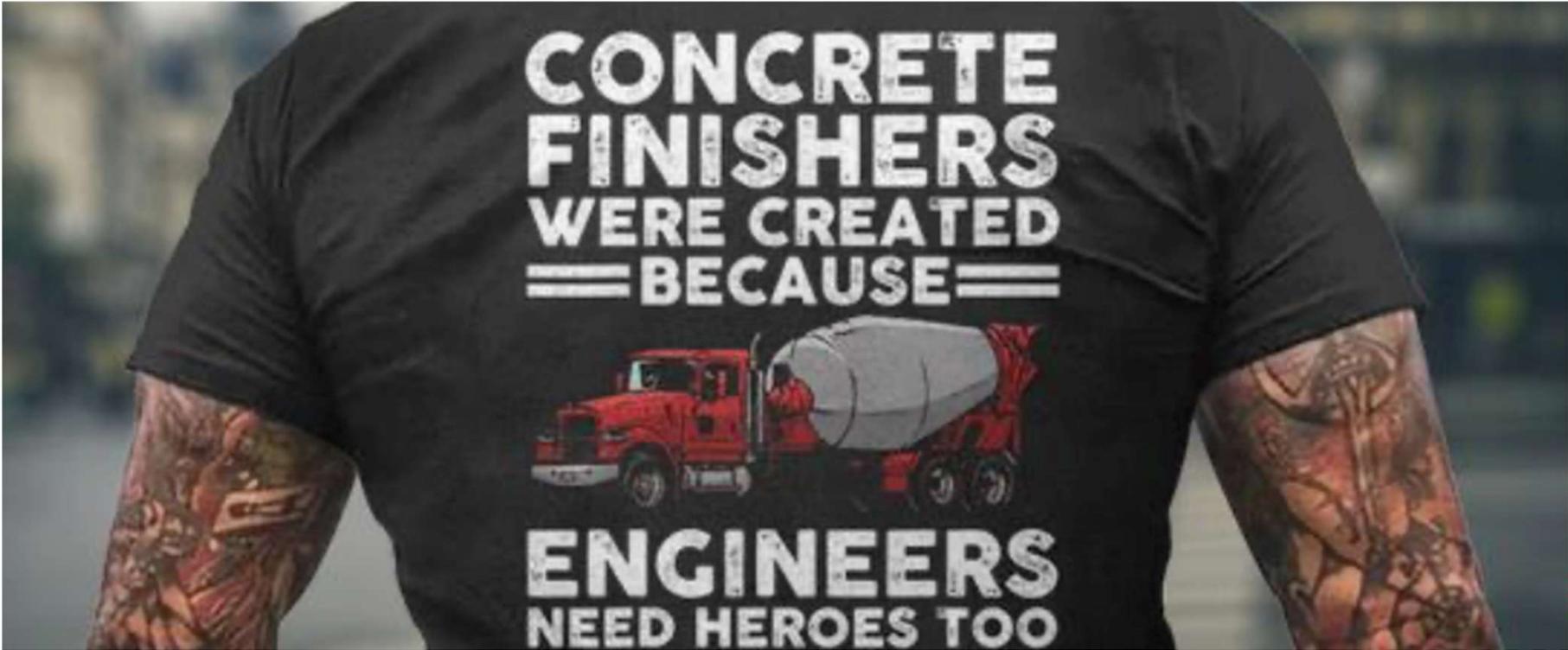
25th ANNUAL MARYLAND CONCRETE CONFERENCE

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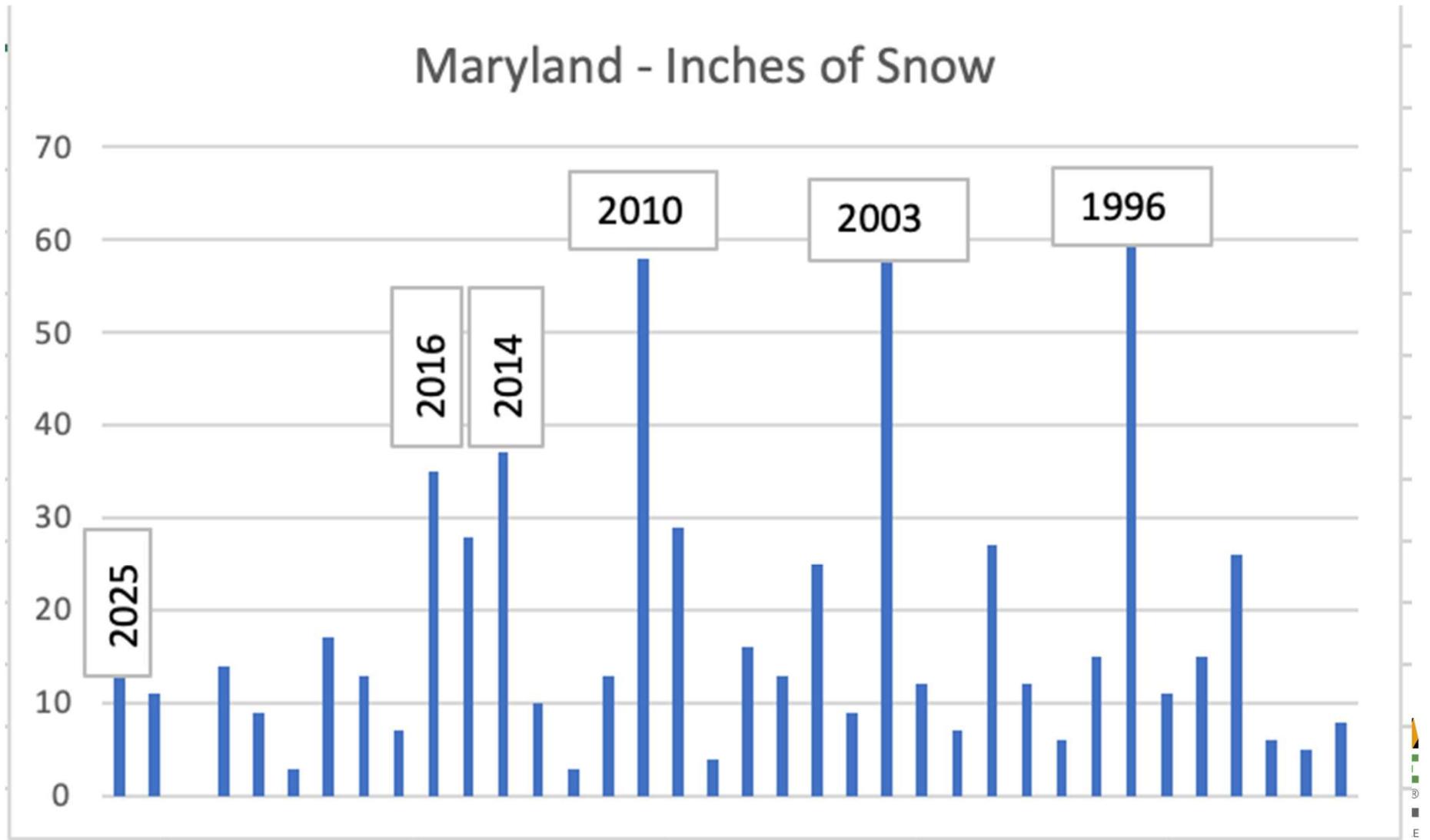
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The dying breed of craftsmen



Maryland - Inches of Snow





How we handle snow today

De-icing salts

- Increase cycles of freezing and thawing
- Keeps concrete critically saturated with water
- Can chemically react with concrete causing it to deteriorate
- Magnesium Chloride

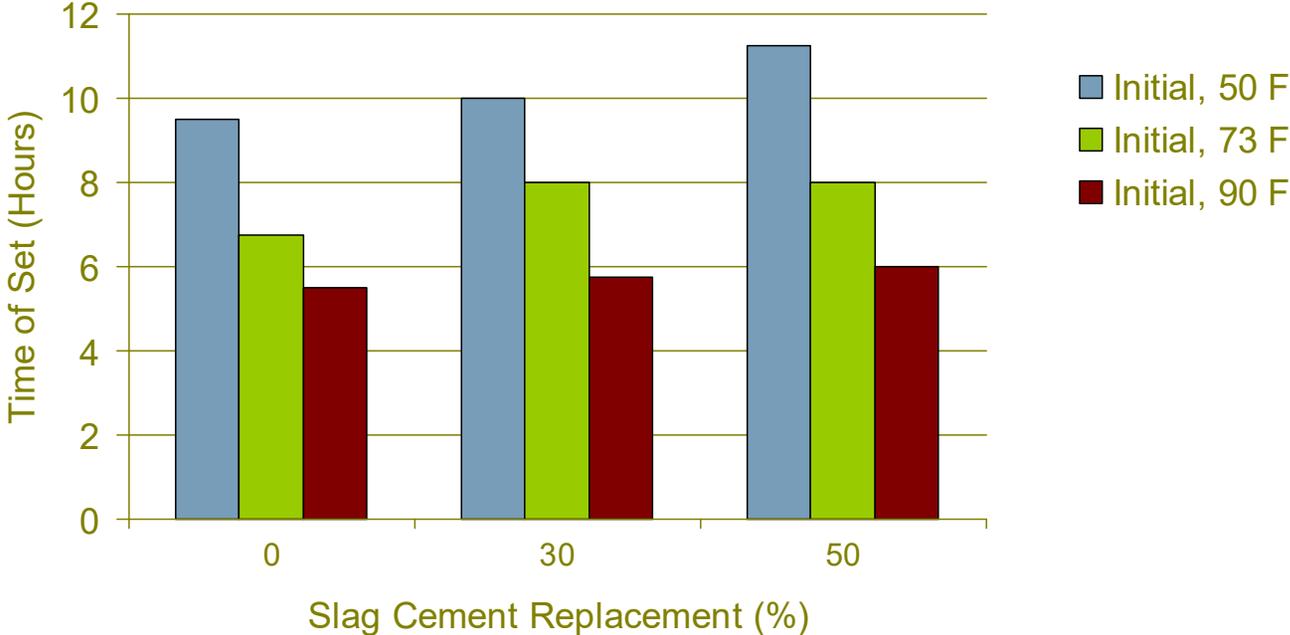


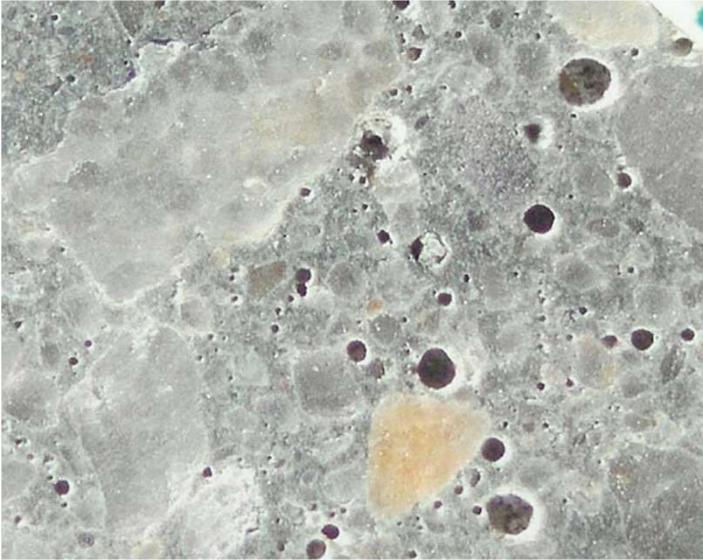
Ordering Concrete

Concrete Property	Requirement
Minimum Strength	4000 psi
Coarse Aggregate Size	No. 57
Max Water/Cementitious Ratio	0.45
Air Content	5-8%
Max Slump (Normal Water Reducer)	5 inches
Max Slump (HRWR)	8 inches
Concrete Temperature	50-95 °F
Slag Cement	25-50%*
Fly Ash	15-25%*

*Slag cement and fly ash is used as a percent by weight of total cementitious material. Use lower end of range in cold weather (or straight cement) unless otherwise required by specification.

Time of Set Characteristics





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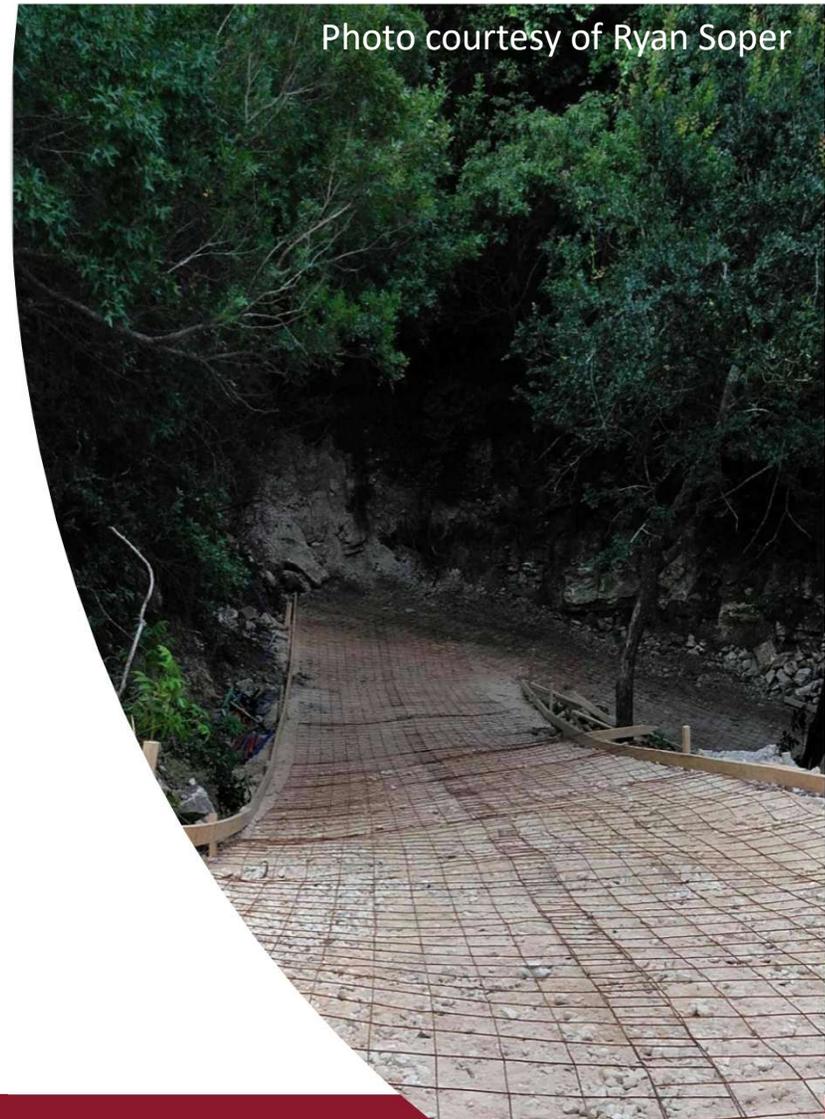
Cold Weather Mixtures

Subgrade and Compaction



Setting the Forms

- Establish grades
- Make sure that forms are secure, straight and level
- Place any required reinforcement
- Mark joint locations
- Place joint material or have it ready to be inserted
- Moisten subgrade if it is dry
- Avoid placing concrete on vapor barriers



Placing and Screeding

- Place concrete as close to final location as possible
- If pumping, avoid allowing concrete to free fall
- Use flat headed shovels or come-alongs to move concrete
- Use screeds that are flat and free of bows or twists



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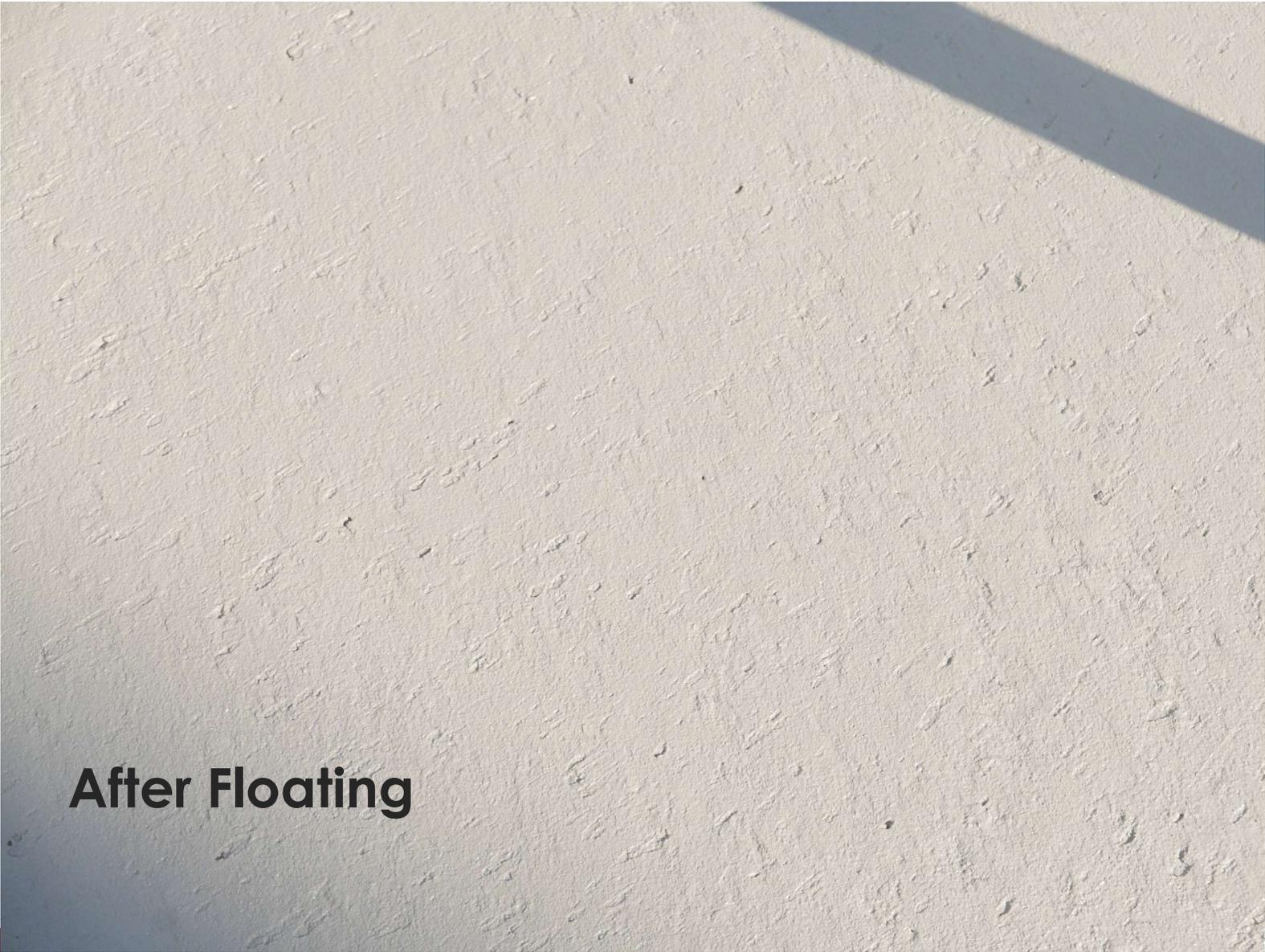


After Screeding



Floating Concrete

- Floating concrete pushes the coarse aggregate particles below the surface of the concrete
- Use magnesium floats
- Keep float as flat as possible to keep from sealing the concrete



After Floating

No Blessing



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Blessing will cause scaling!



Rest

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Bleed Water



On dry windy days, there will be little bleed water on the surface and evaporation retarders should be used.

Test the Concrete to make sure it has Set Sufficiently to begin Final Finishing



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Final Finishing



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**Fill low spots and
cut high spots**

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DO NOT
BLESS THE
CONCRETE
It will make
it scale



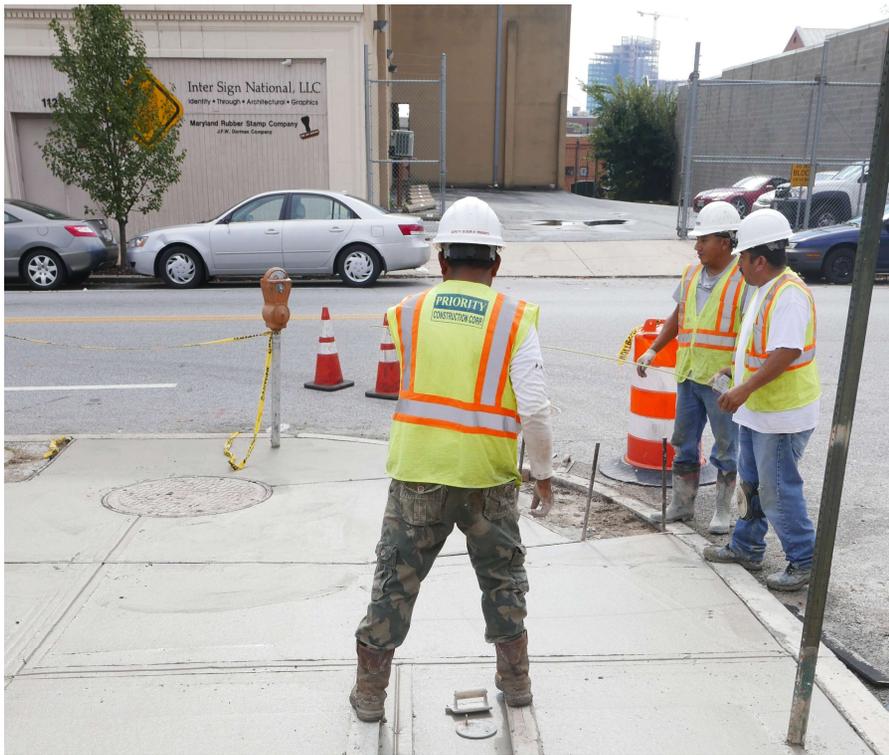
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Have enough workers to finish before the concrete sets.




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Cut joints and perform edging



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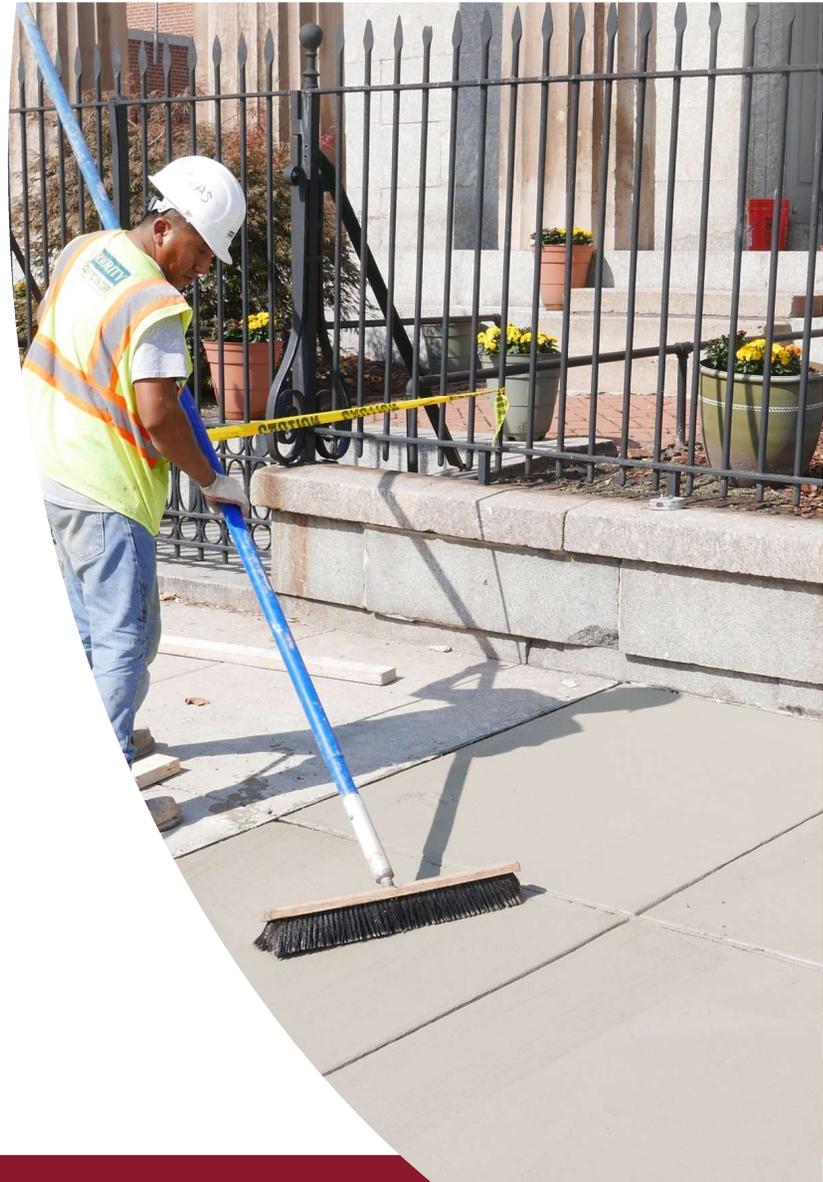
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Brooming

If the broom leaves deep grooves in the concrete and a lot of mortar adheres to the broom, it is a sign you are brooming to soon.





DO NOT LOAD UP THE BROOM WITH WATER. IT WILL CAUSE THE CONCRETE TO SCALE.

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Field Trial / Concrete Placed and Finished Properly

- Sidewalk in Montgomery County, MD
- 15 and 25% fly ash
- 25 / 35 / 50% slag cement
- Straight portland cement



The Seven Deadly Sins

- Poor Mix Design
- Inadequate air
- Adding excessive water at the jobsite
- Blessing the concrete
- “Wet” finishing while concrete is still bleeding
- Finishing with steel trowels
- Poor or non-existent curing







**Finishing Bleed Water into the Surface
of the Concrete Will Cause the
Concrete to Scale**

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Steel Fresno

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Cold Weather Concrete



Poor Cold Weather Curing



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IMPROPER CURING WILL CAUSE THE CONCRETE TO SCALE



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