

# EXTERIOR CONCRETE FLATWORK GUIDELINES



## CONCRETE

- Minimum strength 4,500 psi in 28 days
- Maximum water/cementitious ratio 0.45
- Air content 6.5%  $\pm$  1.5%

Fine and coarse aggregates shall conform to ASTM C33. Concrete shall be produced and delivered in accordance with ASTM C94.

## FINISHING

The finishing process can have a dramatic impact on the overall durability of exterior concrete. It is recommended that the concrete be:

- Struck off
- Bull floated
- Jointed
- Broomed

The use of steel trowels may damage the concrete air void system and may also lead to delamination of the concrete surface.

Finishing operations which occur while bleed water still remains on the surface of the concrete, or any addition of water to the surface of the concrete, will result in loss of strength and durability on the wear surface.

## CURING

Curing provides for the retention of moisture within the concrete, which enables the concrete to achieve its designed strength. Proper curing is critical to the surface's freeze/thaw durability. Curing should commence immediately after the finishing process is completed. The selected curing method needs to be compatible with the selected penetrating sealer.

## SEALING

While curing is intended to keep moisture in the concrete, sealing the surface is intended to inhibit the ingress of moisture and deicing chemicals into the concrete.

Due to the increased frequency of use and the more aggressive deicing chemicals used by municipalities, exterior concrete should be treated with a breathable, penetrating sealer prior to the first winter.

Several breathable and penetrating sealers are available including those that contain silanes, siloxanes or soy methyl ester. An integral sealer that is added at the batch plant is available as an option also. Consult your Smith Ready Mix sales representative for more information.



## LATE SEASON PLACEMENT

Concrete placed later in the year faces challenges that earlier placement concrete does not. Cooler temperatures inhibit strength gain, which will impact the concrete's durability during the early freeze/thaw cycles. It is imperative to maintain an adequate concrete temperature during the first 7 days after placement. Your Smith Ready Mix sales representative can provide you with options for late season placements.

## DEICING CHEMICALS

Do not apply chemicals to exterior concrete. Keep the surface cleared of snow and ice as much as possible to minimize freeze/thaw damage.