

Formed Surface Requirements for Waterproofed Walls

ASCC Position Statement #27

For many years, a *rough-form finish* was the default finish for concrete foundations not exposed to public view. Instructions for producing this finish, found in ACI 301-05, “Specification for Structural Concrete”, were to patch tie holes and defects, chip or rub off fins exceeding 1/2 in. in height, and leave surfaces with the texture imparted by the forms.”

When liquid-applied waterproofing coatings were to be applied, some specifications required the *smooth-form finish* defined in ACI 301-05, which directs contractors to patch tie holes and defects and remove fins exceeding 1/8 in. in height.”

As demonstrated in ASCC’s Position Statement 8, “Bugholes in Formed Concrete,” and “Guide for Surface Finish of Formed Concrete,” most bugholes are not surface defects. But two publications dealing with concrete waterproofing and coating products require substrates with a surface smoother than that defined for a *smooth-form finish*.

- The “Below-Grade Waterproofing Manual,” published by the Sealant Waterproofing & Restoration Institute, requires substrates for cold and hot liquid-applied waterproofing systems to have all projections ground flush with the surface and all honeycombs and bugholes opened up and treated according to the manufacturer’s specifications.
- “The Fundamentals of Cleaning and Coating Concrete,” published by the Society for Protective Coatings, indicates that voids and depressions in concrete surfaces are usually filled prior to coating to form a continuous, relatively smooth coatable surface. Patching materials include mortars, plasters, grouts, putties, fillers, and surfacers and are usually applied with hand tools such as spatulas, putty knives, or trowels, depending upon the sizes of the voids. Products that meet these needs may be cementitious polymer-modified (usually with acrylic or water-borne epoxy resins), cementitious, or polymeric (usually epoxy). The publication notes, however, that cement slurries seldom provide enough strength for topcoating with high-performance coatings. It also notes that bugholes sometimes have thin, eggshell-like layers of hydrated cement paste over them that hide their actual dimensions. Such eggshell layers must be removed and the surface opened up to permit proper filling. Any sharp edges should be smoothed as well before filling.

The Society for Protective Coatings acknowledges that the coating applicator must usually correct surface irregularities in new concrete to obtain a surface suitable for coating. Contract documents, however, don’t always clearly state which subcontractor—the concrete contractor or the waterproofing/coating applicator—is responsible for preparing the substrate prior to coating.

ASCC contractors will provide formed surfaces as designated in the contract documents, with the understanding that a *smooth-form surface* permits fins up to 1/8 in. in height and *does not* require a surface free of bugholes. When bugholes aren’t acceptable, ASCC concrete contractors recommend that the specifier select a *rubbed finish* as defined in ACI 301-05 or state an allowance for surface preparation by the waterproofing/coating applicator. The concrete contractor’s cost for a rubbed surface should be treated as a separate bid item, and is not included in the bid for a smooth-form finish.

If you have any questions, contact your ASCC concrete contractor or the ASCC Technical Hotline at (800) 331-0668.

Update: ACI 301-10 no longer uses the terms *rough-* and *smooth-form finish*. The document instead describes three surface finish classes. SF-1.0 requires patching voids larger than 1½ in. wide or ½ in. deep and removing projections larger than 1 in. SF-2.0 and SF-3.0 both require patching tie holes and voids larger than ¾ in. wide or ½ in. deep. SF-2.0 requires removing projections larger than ¼ in. and SF-3.0 requires removing projections larger than ⅛ in. When the allowable void size is larger than that stated in either ACI 301-05 or ACI 301-10, ASCC concrete contractors recommend that the specifier select a *rubbed finish* as defined in ACI 301 and treat the contractor’s cost for the *rubbed finish* as a separate bid item, not included in the bid for any of the surface classes. Alternatively, the specifier can state an allowance for surface preparation by the waterproofing/coating applicator.

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