

**Project Description:** Amendment of Bloomington City Zoning Code 19.63.08 to change in part existing code language as it relates to portland cement plaster (stucco) and to ask the City Council to specifically approve acrylic finish coating as part of developmental approval process; as an acceptable alternative to portland cement plaster finish coat for the installation of stucco in zoning districts 19.24(a).

**Author/ requestor:** Steven Pedracine, Executive Director

**Qualifications:** <https://www.linkedin.com/in/stevenpedracine>

**Email address:** [steve@mnlath-plaster.com](mailto:steve@mnlath-plaster.com)

**Telephone number:** 763-757-6572

**Firm/ Associations:** Minnesota Lath and Plaster Bureau, Minnesota Drywall and Plaster Association

### **Proposed Code Change – Language (underline added)**

The following modification is proposed for the identical paragraphs at Sections 19.63.08(c)(1), 19.68.08(d)(1)(A), and 19.68(e)(1):

“Exterior wall finish. Exterior wall surfaces of all buildings, excluding those portions of foundation walls extending normally above finished grade, shall be faced with glass, exterior cement plaster (stucco), natural stone, brick, architectural concrete, metal in accordance with adopted policies and procedures set forth in the adopted resolution, or an equivalent or better. A trowel or spray applied acrylic finish coat is recognized by this provision as an integrated part of an exterior portland cement plaster (stucco) exterior wall finish. Except for glass or metal, all color shall be integral to the exterior wall finish material unless a colored and opaque coating for all or some part of the exterior wall finish material is specifically approved by the City Council as part of a development approval process and where the application has included:...”

### **Proposed Code Change – Narrative**

Current Bloomington City Zoning Code expressly prohibits the use of subsequent “colored or opaque coatings” on uncoated exterior wall finish materials [brick, natural stone, architectural concrete, exterior cement plaster (stucco)] unless specifically approved by the City Council. Stucco in and of itself is installed in three coatings and the color is not integral throughout.

#### **These three coatings include the application of:**

Scratch Coat – The typical compositional mix includes: 1 ft<sup>3</sup> masonry cement, 1 ft<sup>3</sup> of grey portland cement, 5-8 ft<sup>3</sup> of sand aggregate, water and chopped inorganic fiber strands. The scratch coat is installed 3/8” thick and mechanically scarified (scratched) to provide a mechanical key for the subsequent brown coat.

Brown Coat – The typical compositional mix includes: 1 ft<sup>3</sup> masonry cement, 1 ft<sup>3</sup> of grey portland cement, 6-10 ft<sup>3</sup> of sand aggregate, water and optional chopped inorganic fiber strands. The brown coat is installed 3/8” thick over the scratch coat. The scratch and the brown coats cumulatively together constitute what is called “the base coat,” for a total thickness of 3/4.”

Finish Coat – A typical compositional mix includes: 1 ft<sup>3</sup> of white portland cement, ¾ - 2 ft<sup>3</sup> lime, 3-6 ft<sup>3</sup> of silica sand, water and colorant. An aggregated acrylic finish material is frequently substituted for a portland cement based mix due to the material's desirable characteristics. Whether portland cement or acrylic based, the finish coat is typically installed 1/8" thick minimum. The total thickness of the three-coat process is 7/8" thick minimum.

Color in a three-coat stucco application is not integral through the entire 7/8" thickness of the cumulative three-coat stucco, but only in the outer 1/8" thickness.

Finish coats comprised of portland cement have their own inherent difficulties in achieving the desired aesthetic. Pigments used to color stucco are naturally mined oxides that can have some variation. The same level of pigment used one day may prove to be shades different the next day. Drying conditions, humidity, sunlight, wind and temperature can all have a bearing on color consistency. This is why cement stucco finishes are mostly relegated to light pastel colors. Darker colors come with considerably more expense and hasten the drying conditions yet further, often resulting in blotchiness that in most cases would be deemed unacceptable by the owner. Another concern is the final texture of the cement finish. Smoother textures are difficult to achieve with a field mixed cement finishes. Stucco also goes through a volumetric change which results in what has been identified as "shrinkage cracks" as it cures. Aesthetically these shrinkage cracks could be identifiable in a smooth cement finish coat. So for these reasons heavier spray dash or hand textures are preferred.

According to the International Association of Certified Home Inspectors, the service life of stucco is 50-100 years. During those years of service the stucco may have to otherwise be maintained by fog-coating with cement paint or re-dashing the cement finish coat to re-constitute the surface.

### **Acrylic Finish Coat Alternative**

Acrylic finish coats were integrated with portland cement plaster applications beginning in the 1970's. Acrylic finish materials are VOC compliant, more resistant to soiling, with more of a vibrant and consistent color palette. Additionally it was realized that acrylic finish provides elastomeric qualities that control minor (hairline) cracking in stucco.

Acrylic finish is not the same as paint. The dry film thickness of two coats of latex paint over a smooth surface is approximately 15 mils (15/1000 inch). Textured acrylic finish is typically applied 3/32 to ¼ inch based upon the desired effect. Acrylic finish top coats are in place at the Mall of America where the materials have demonstrated a service life of nearly 25 years. If it is desired to update the façade it may be as simple as applying the manufacturer's compatible acrylic coating to the exterior for it to last another 25 years or more. Because of the existing texture of the acrylic finish material, it will require and hold more acrylic coating than if it were a smoother surface. Re-dashing entails a bit more work: The façade would be skimmed with polymer modified cement coating, then re-finished with similar acrylic finish materials. Given the existing state of the building, exceeding a 100 year service life does not seem out of the question with this routine maintenance. For your review, please see enclosed synopsis of Acrylic Finish Durability Standards.

## **Compatibility of Acrylic Finish with the International Building Code**

### Section 2512 Exterior Plaster

2512.1 General. Plastering with cement plaster shall be not less than three coats when applied over metal lath or wire fabric lath or gypsum board backing as specified in Section 2510.5 and shall be not less than two coats when applied over masonry or concrete. *If the plaster surface is to be completely covered by veneer or other facing material, or is completely concealed by another wall, plaster application need only be two coats, provided the total thickness is as set forth in ASTM C 926.*(emphasis added)

Note the reference to “veneer or other facing material” which specifically accommodates an acrylic finish coat over two coats, the scratch and brown coats, of portland cement plaster.

### **Other Factors to Consider Related to Proposed Code Change**

Corporate entities such as Marriott, Hilton, Radisson, Caribou, Dairy Queen, Perkins, Buffalo Wild Wings et. al., insist upon a standard of appearance in corporate identity and brand image to distinguish themselves from their competition. Corporate identity is often reflected in a specific color scheme. Acrylic coatings have become strategic to the aesthetics of brand imaging by providing color retention and distinctiveness that cannot be matched by traditional portland cement finish. There are hundreds of buildings in the Bloomington area and in the city itself that employ an acrylic finish and literally billions of square feet of acrylic finish installed throughout the United States.

It is our understanding from the Planning Division Staff that the code rule limiting the use of coatings over existing uncoated finishes has been in effect for over twenty years. Moreover, submitted plans are typically redlined to convey that acrylic finish is not acceptable. This information is obviously not being effectively disseminated to the general contractor and the plastering subcontractor, because many acrylic finish exteriors have been installed over that same period; moreover the City of Bloomington building inspectors have not enforced this restriction in use of acrylic finish top coats.

### **Proposed Code Change – Cost Analysis**

There is no prospective cost associated with this change. Indeed, the change would accommodate and recognize current building practices.

If the City chooses to enforce the existing Zoning Code language as it has been recently interpreted by the City’s planning division, the City would be rejecting a standard building practice that building owners and contractors have come to rely on. Current accepted building practices, including projects in process, would be significantly disrupted.

If the City chooses to enforce the existing language retroactively by pursuing removal and replacement of existing acrylic finish top coats, the potential disruption to the community would be especially severe. The removal and replacement of existing acrylic finish top coats in the City of Bloomington would prove extremely expensive in manpower, equipment, material and inconvenience for building owners. Moreover, it is challenging to remove any finish top coat

from a stucco wall system and replace it without compromising the integrity and durability of the stucco base coat. Finally, the sheer volume of work that would be required would be disruptive to the City's businesses, residents and visitors alike.

To the community's benefit then, this subtle code change would maintain the status quo. The change would not be disruptive and would instead maintain the integrity and aesthetics of existing building stock.

Current code language restricts Planning Division approval/authorization of acrylic finishes on new construction and maintenance on existing buildings. For Planning Division staff, approval of this code change would entail a reduction in work load to pursue more time for assessment of critical public health and safety issues.

Encl.: Acrylic Finish Durability Standards, ASTM C 926.

## Acrylic Finish Durability Standards

Referenced Std.	Accepted Criteria	Required Results
Abrasion Resistance ASTM D968	Determines the resistance of coatings to abrasion produced by min. 500 liters abrasive falling onto coatings	Pass/ Fail based on cracking or loss of integrity of coating.
Accelerated Weathering ASTM G153	This apparatus is intended to induce property changes associated with the end use conditions, including the effects of sunlight, moisture, and heat.	Pass/ Fail based on the deleterious effects at 2000 hours when viewed under 5x magnification.
Flexibility ASTM D522	Determines the coatings resistance to cracking (flexibility)	Findings are based on the diameter of a mandrel which the coatings are bent around
Freeze Thaw Resistance ASTM E245	Determines the effect of freezing and thawing cycles on coatings	Pass/ Fail based on deleterious effects of min. 10 cycles under 5x magnification
Mildew Resistance Military Std. 810B	Establishes uniform environmental test methods for determining the resistance of coatings to the effects of mildew	Pass/ Fail based on growth supported during 28 day exposure period
Moisture Resistance ASTM D2247	Tests water resistance of coatings by exposing coated specimens in an atmosphere maintained at 100 % relative humidity	Pass/Fail based on examination of deleterious effects at 14 day exposure
Scrub Resistance ASTM D2486	Determines the resistance of coating to erosion caused by repetitive scrubbing cycles	Reporting value based on weight loss calculation. Most finishes exceed 10,000 cycles.
Surface Burning ASTM E 84	Determines the relative burning behavior of the material by observing the flame spread	By code individual components shall each have a flame spread <25 and smoke developed <450 Manufacturers typically report findings <15 flame spread and <15 smoke developed
Water Vapor Transmission	Determines water vapor transmission (WVT) of materials through coatings.	Reported as Pass/Fail permeability value. In this respect all coatings used in stucco applications are permeable

<p>Adhesion ASTM D4541</p>	<p>Determines the greatest perpendicular force (in tension) that a surface area can bear</p>	<p>ICC minimum 15 psi. Most coatings exceed substantively</p>
<p>Tensile Bond ASTM C297</p>	<p>Determines the flatwise tensile strength of the the core-to-facing bond</p>	<p>ICC minimum 15 psi. Most coatings exceed substantively</p>