

## Technical Bulletin

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**MW# 182-190401**

### **Topic: Critical Light**

It can have several terms, but Critical Light best describes what can happen to buildings when a light source is at or near parallel to a wall surface. It can be visible from a man-made light source such as uplighting but is more commonly seen when the sun is parallel to the wall. Under these critical light conditions any small imperfections in the wall becomes visible, if only for a few minutes each day.

Exterior Insulation and Finish Systems (EIFS, CIFS®), stucco and direct applied finishes are hand applied materials, and there are natural and normal variations that will occur with the practice. It will not be perfect, and this variation does not affect the performance of the coatings and should be expected.

#### **Causes of Critical Light Occurrence**

Just because variations in the surface plane are expected does not mean they are appreciated. These are some common causes of variations:

- Out of Plane Framing
- Large flat wall surfaces
- Lack of secondary aesthetic treatments (Foam Bands, V-Grooves)
- Fine to super fine finishes

The flatter the wall framing, the better the project will look. The requirement is to have a wall flat to 1/4" in 10' both vertically and horizontally. EIFS is more tolerant of wall variations as the insulation board can be rasped somewhat easily. Stucco is less tolerant and direct applications mirror the substrate conditions almost directly.

Due to their size, large flat wall surfaces seem to show more variations when the sun is parallel to the wall. Corners, curves and aesthetic treatments tend to break up even the most irregular walls both visually and from critical light.

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The finer the finish the more variations can be seen. Painted stucco shows almost every variation and bolder finishes such as Medium Sand 1.5 cover wall variations and help minimize critical light.

### Tips to Avoid Critical Light Conditions

While critical light will never go away entirely there are some visual tips and tricks to minimize the condition:

- Realize it won't last forever. Critical light only happens while the light source is parallel to the wall and will disappear as quickly as it occurs.
- Avoid up lighting in favor of a wash. Shining an up light parallel to a building will show any wall variations and common floor-to-floor variations. The stucco applicator can't take out what the carpenter put in.
- Break up the building. If it fits aesthetically, break up the building with corners, aesthetic joints or projections. All these seem to break up the appearance and reduce the critical light effect.
- Landscape helps. Trees or anything that blocks parallel light sources against the building will break up the appearance of wall variations.
- Bolder finishes hide variations. While current trends are toward smoother surfaces, consider bolder finishes for larger wall areas. It really does help hide wall variations.

### Summary

From the framing outward, normal variations can be expected in any wall. Critical light is tied to the building conditions and orientation. Since buildings are not perfectly flat it will occur but will go away when the light source moves.

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