



S.T.A.T.E. TESTING, L.L.C.

**570 Rock Road, Unit K
East Dundee, IL 60118**

**Tele: 847-836-6002
Fax: 847-836-6342**

Thursday, May 9, 2019

Village of Itasca, Public Works
411 N. Prospect Ave.
Itasca, IL 60143-1757

Attn: Mr. Ross Hitchcock

Village of Itasca - Public Works Director

Reference: Robinson Project Number 18-R0745

Our firm employs registered professional engineers and technicians who specialize in highway materials and quality assurance programs. We have over 30 years' experience in the design and control of asphalt, concrete, and manufactured products such as reinforcing steel and prestressed concrete. We provide expert materials engineering advice on the development and implementation of quality assurance programs, specifications, and materials quality assessment through sampling and testing programs. We routinely conduct reviews of poor performing concrete on completed facilities for private and public agencies and provided expert opinion in legal disputes. Clients for our engineering materials expertise include large and small agencies including the Illinois Department of Transportation, the Illinois Toll Highway Authority, the Chicago Department of Transportation, Kane County, Du Page County, Cook County, and McHenry County among others.

Based on our field review, review of the specifications, and discussion with your personnel, our observations and conclusions are as follows. Our conclusions are based on visual assessment of the facility and did not include any involvement in the development of the specifications, construction control, or physical testing of the material.

1. The concrete slab in dispute is located in the entrance to the Village Hall located at 550 W. Irving Park Road. The slab is subjected only to foot traffic with no heavy vehicle or equipment loading. At this point in time, none of the distress is structural in nature.
2. The surface of the concrete is colored and stamped for aesthetic appeal. The color was applied both in the concrete mix at the plant and broadcast on the surface to create a natural variation in color. The delamination of the surface in some areas is problematic but not severe.
3. Three distresses were observed during our review:
 - a. There were several small cracks or tears in surface. These crack or tears are typical of stamped concrete. They can occur because of the stamping operation or can be caused by minor shrinkage cracking at the surface. They cannot be repaired during finishing without

damaging the stamped texture. These cracks or tears are superficial in nature and rarely extend one-quarter inch into the slab. They should not have a detrimental effect on the long-term performance of the slab.

- b. There is a tight crack in the south section next to retaining wall. This is probably the beginning of settlement of fill below the slab adjacent to the retaining wall. It may be caused by inadequate compaction of the base material and lack of load transfer between the retaining wall and the slab. This should be monitored and if the crack does expand, the Village should look into pressure grouting the slab with a polyurethane foam to restore sub-slab support. It should be recommended to caulk expansion material between slab and retaining wall to prevent moisture introduction to slab sub base, also all construction joints of slab should be re-caulked.
- c. There is some delamination of the surface in some areas which is evidently caused by the application of the field color treatment. The location of the delamination at the end of the pours leads us to conclude that it is related to the techniques used and timing of the application during construction and the contractor should be held accountable for reasonable resolution.

It should be realized that the field application of color in this situation is subject to a number of variables and can be difficult to achieve perfect results. The ambient weather temperature and humidity, concrete mixture composition and water content, and field placement constraints can all affect the final product appearance. Small variations in the concrete, temperature, or other factors can produce differences in appearance that could be addressed in a smooth slab but cannot be fixed in the field for this type of surface. However, this contractor is responsible for the final product and this appearance is sufficiently marred to suggest the need for remedial treatment.

We understand that the contractor is claiming the delamination is caused by the premature application of deicing chemicals. This could be the case, however, the delamination is not focused in the pedestrian path leading to the doors where the deicing chemicals tend to get ground into the surface. In our experience, surface deterioration caused by deicing chemical application occurs in these areas. Also, both areas of delamination are at the end of each days pour. This suggests it occurred during the field color application to the concrete surface while the concrete was in a plastic state. It is our conclusion the delamination is related to the timing, technique, and workmanship at the time of construction.

Based on the above observation, we offer the following professional recommendation:

Because of the contribution of the workmanship to the delamination areas, the contractor should be responsible for reasonable action to improve the appearance. It is our recommendation that the contractor pressure wash the surface and reseal it, and add a coloring agent to seal and better blend areas. The contractor should wash and reseal twice for the first year. This will not result in a perfect surface and texture but should improve the appearance and prevent further deterioration.

If I could be of further assistance in a conversation with the Village Board or other, please let me know. I could be available at my current principal rate of \$230.00 per hour.

Sincerely,

A handwritten signature in black ink, appearing to read "Jay Behnke". The signature is fluid and cursive, with the first name "Jay" written in a larger, more prominent script than the last name "Behnke".

Jay Behnke, PE
President
State Testing, LLC

Cc: Mark Wesolowski, PE, Robinson Engineering/Village Engineer
John Beissel, PE, Robinson Engineering Senior Project Manager