



With Winter Season Comes change.... Or Does It?



As I am writing this in mid October the leaves are changing, temperatures are predicted to be climbing toward the 70's and the Steelers just pounded Cleveland into submission once again. As much as things change, it's nice to know some things never do. That is why I am wondering how many of us are gearing up for another stout Western Pennsylvania winter season - 70 mile per hour winds (torn siding and downed trees) Temperatures in the single digits (broken water lines) heavy snow storms (collapsed roofs and awnings) ice storms (Ahhh yes, the dreaded Ice Dam) and of course roasting chestnuts on an open fire (smoke damage from closed dampers) it will be another busy season for claims personnel to shovel through their paper work. Yes here we go Pittsburgh and I don't mean the Steelers. It's almost time to run out and get stocked up on toilet paper. As is that great Pittsburgh tradition.

G.S Jones is busy thinking ahead to try to alleviate some of the burden for you:



Concrete Defects: Causes, Prevention, and Repair



Concrete is used in just about every type of construction and when installed properly, it can provide a solid foundation to build on, or a finished product designed for an aesthetic appearance. We know how to determine the properties required for its intended purpose, but careful attention is required to ensure the finished product actually has those desired properties. When flaws appear in concrete slabs due to errors in the process of its placement, it will likely show up as one of the following: blisters, cracking, crazing, curling, delamination, dusting, efflorescence, pop outs, scaling, or spalling. These imperfections can be minimized or prevented by using proper concrete placement practices.

BLISTERS are bumps of varying sizes that appear on the surface when entrapped air rises through the plastic concrete and gets trapped under an already sealed surface. Three principal causes are attributed to blistering and include an excess amount of entrapped air in the mix, insufficient or overuse of vibration and finishing still spongy concrete. Avoiding blisters can be done by using the correct ratios of cement, fines and air in the mixes, not overworking the concrete during placement, using proper finishing techniques and reducing evaporation over the slab with the use of a cover or a fog spray.

CRACKING can be blamed on one or a combination of reasons such as shrinkage, settlement and applied loads. Most cracking can be reduced when preventative steps are taken prior to placement. Proper sub grade preparation and sub base materials are essential to a well supported slab and prevention of settlement cracks. Proper concrete mixes using the lowest amount of water required for workability,

maximizing the coarse aggregate, avoiding calcium chloride admixtures and preventing a rapid loss of surface moisture will all help prevent shrinkage cracks. The use of handmade joints will help control cracks that develop from shrinkage or settlement and applied loads should be avoided from finished concrete until it has had enough time to gain most of its strength.

CRAZING Crazing is a "chicken wire" pattern of fine cracks on the concrete surface, but not considered to be structurally serious or an indication of future deterioration. Causes of crazing are related to rapid changes in temperature and loss of moisture during the curing process. Prevention of crazing includes protecting the surface from any rapid changes in temperature and moisture if possible.

CURLING is the rising of a slab's corners or edges when there are differences in moisture content or temperature between the top and bottom of the slab. It is usually caused when the top dries out or cools and begins to shrink before a wetter and warmer bottom. Prevention of curling is achieved using low-shrink mixes, proper control joints, large amounts of reinforcement steel or thickened edges.

DELAMINATION is similar to blistering where areas of surface mortar crack and separate from the underlying concrete. The cause of delamination is also similar to blistering in that bleed air and bleed water become trapped under a prematurely sealed surface. Prevention includes using proper finishing techniques to get as much of the bleed water and air out before the surface becomes too dense and seals them under the surface.

DUSTING is the formation of a fine, powdery material easily rubbed off the concrete sur-

Winter Con't.

We have recently added desiccant dehumidification to our on site arsenal including a truck mount unit. As everyone knows desiccants are the dehumidification work horse choice for low temperature and low humidity. As always we have access to hundreds of units of drying equipment within 24 hours.

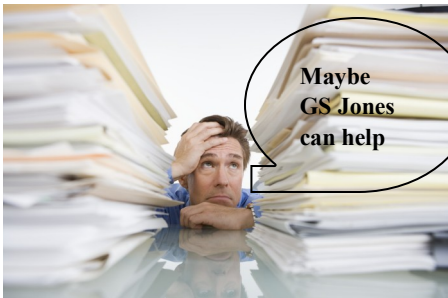
We have increased the readiness of our work force for those long nights that lay ahead sucking up water from the burst pipes or removing downed trees off of structures and boarding up holes in the roof.

If Mr. Griswold accidentally forgets about that fireplace damper our crews will be ready to clean his house and have it ready for the holiday guests.

Our Consultants and Estimators are always available to help you shovel through the annoying paper work. Whether you need a second opinion on repair costs or just a telephone opinion to help you decide if you should use all white lights to decorate your house or stick with the more traditional green and red lights for this Christmas season.

As far as running out and keeping you stocked with toilet paper you're on your own

Yes here we go Pittsburgh and I mean both Steelers and winter.



DID YOU KNOW!!!

- Venus is the only planet that rotates clockwise
- The largest pumpkin weighed 377 pounds
- The highest point in Pennsylvania is lower than the lowest point in Colorado

Concrete Con't.

face. The cause of dusting is related to working excess water on the surface during the finishing stage allowing the finest particles to rise to the top and subsequent wear results in dust forming on the surface. In this case, similar to blistering and delamination, proper finishing and protection of the surface are required to prevent dusting.

EFFLORESCENCE is a salt deposit that occasionally develops on concrete surfaces. It is caused by a combination of factors involving soluble salts in the material that dissolves in the water added to the mix, then migrates to the surface through hydrostatic pressure, and after evaporation, leaves a deposit behind. Prevention can be difficult but the use of properly graded aggregates, adequate cement content and low water-cement ratio combined with a thorough curing process is the best assurance against efflorescence.

POP OUTS, SCALING AND SPALLING-

Surface defects such as pop outs, scaling and spalling have similar causes but vary in size and depth. Typically they are caused by the penetration of water under the surface and the resultant pressure exerted on the surrounding concrete from expansion due to freezing or chemical reactions damages the concrete surface. Prevention includes proper design of mixes for intended use, proper sloping to shed water away from the slab and proper finishing and curing techniques. Topical and penetrating sealers will also help prevent these defects from ruining a perfectly

placed concrete slab.

REPAIRS There are many proprietary products available for repairing these types of defects. Generally, they are portland-cement based, non shrink and often self-leveling. Primarily they are used to repair the slab surface up to 1/3 of the slab's thickness as long as the underlying slab is sound. Other methods include combinations of surface grinding, filling voids with cement grout and the use of additional control joints. All these methods produce varied results often depending on the extent and cause of the defect.

This is just a brief overview of the problems associated with installing concrete slabs and one can see that most of the problems associated with concrete slab surfaces are related to one or a combination of the mixes used, the placement techniques applied and the curing process. Whether the concrete slab is for indoor or outdoor use it is important to pay special attention through the entire placement process to ensure the finished product has minimal or no defects at all.



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