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## Bridge Delamination Problem

Bridge decks in Vermont fail due to delamination problems. Bridge deck delamination is the process in which chlorides reach rebar inside the deck. This causes corrosion to occur which makes the rebar expand breaking the concrete from the inside. Eventually large pieces of concrete break off from the structure visible in the photos below.



Figure 1. Bridge Deck Delamination caused by chlorides

## Innovative Solution 1

Ultra High Performance concrete has the most promising results for long lasting repairs to Vermont bridges. The concrete makes for a very strong wearing surface, along with being nearly impervious. It would prevent chlorides from damaging rebar as quickly and resist damage from plows and the freeze thaw cycle.

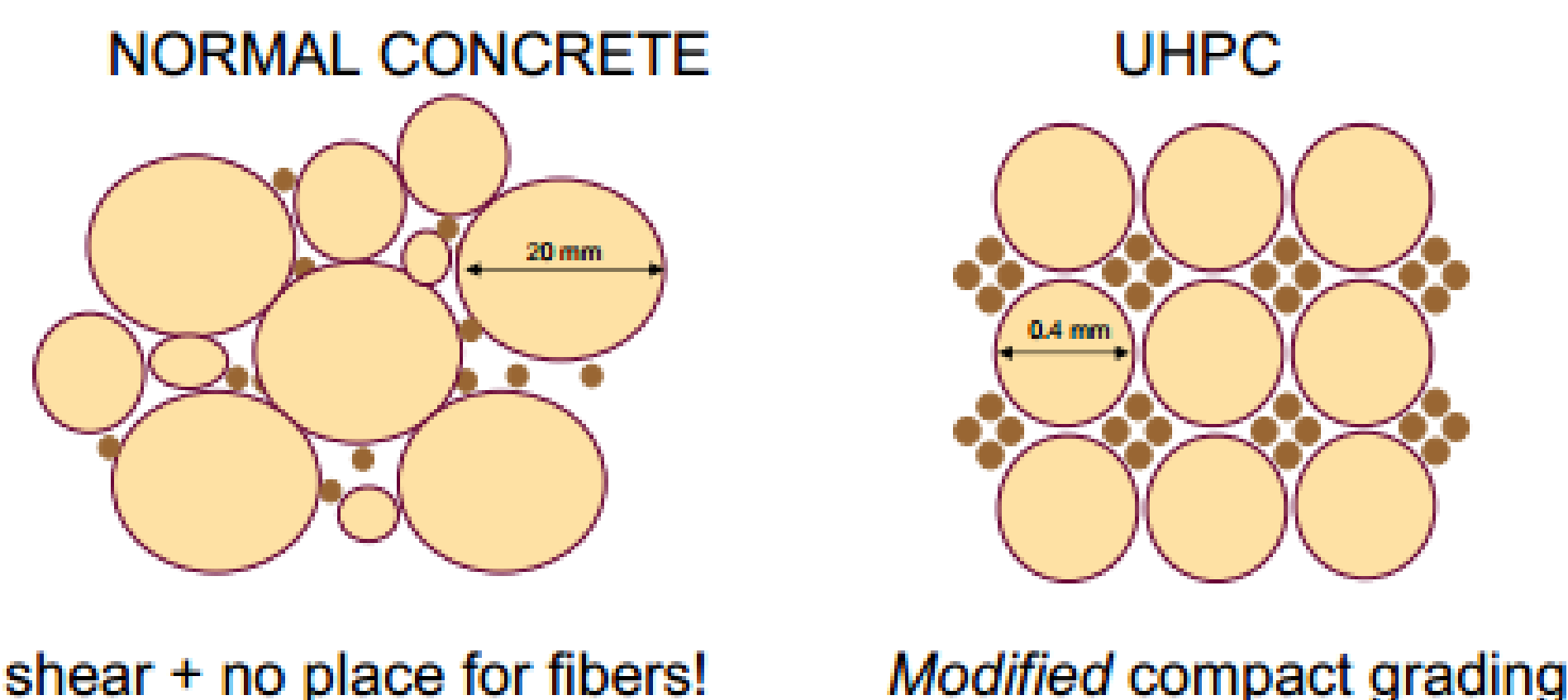


Figure 2. Normal Concrete Vs. UHPC Configuration

## Innovative Solution 2

Polymer Concrete Overlays are a much cheaper fix to bridge deck rehabilitation. The Big difference could be the number of times that it may have to applied over the years. The overlay typically needs to be replaced every 10 years. Polymer overlays offer a great affordable option that creates a impervious surface to protect the structure from corrosion.



Figure 3. Polymer Deck Overlay

## Long Term Benefits

The infrastructure in Vermont is deteriorating at a fast rate. This makes it difficult to keep up with the maintenance on bridges along with a lack of funding. Innovative bridge deck overlays could help protect the bridges which are in decent condition from further deterioration. This could save the state money along with creating a safer travel experience for the residence of Vermont.

## References

Wisconsin Highway Research Program, <http://wisdotresearch.wi.gov/rfps-and-proposals>  
 Iowa State University, [intrans.instate.edu](http://intrans.instate.edu)