

2017 Research Symposium & STIC Annual Meeting

STIC PROJECT TITLE

*Ultra High Performance Concrete
(UHPC)*

STUDY TIMELINE

July 2016

PRINCIPAL CHAMPION

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VTRANS CONTACT

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MORE INFORMATION

https://www.fhwa.dot.gov/innovation/everydaycounts/edc_4/uhpc.cfm

This fact sheet was prepared for the 2017 VTrans Research Symposium & STIC Annual Meeting held on **September 28, 2017** at National Life in Montpelier, VT. 8:00 am– 12:00 pm.

Fact sheets can be found for additional projects featured at the 2017 Symposium at <http://vtrans.vermont.gov/planning/research/2017symposium>

Additional information about the **VTrans Research Program** can be found at <http://vtrans.vermont.gov/planning/research>

Additional information about the **VTrans STIC Program** can be found at <http://vtrans.vermont.gov/boards-councils/stic>

FACT SHEET

Ultra High Performance Concrete (UHPC)

Project Description

First use of UHPC on Bridge Project in Waitsfield, Vt.

Methodology

Closure pour for precast concrete approach slab longitudinal joint.



Conclusion

Material installation was a success, but cost was much higher than expected. Non-proprietary equivalent could broaden its use.

Benefits to Vtrans

- **Higher Compressive Strength:** UHPC compressive resistance is 6 to 8 times greater than conventional concrete reducing the length of reinforcing lap lengths, and the size of closure pours required during construction.
- **Higher Tensile Strength & Ductility:** UHPC contains metal fibers that make it ductile. With a strength 10 times higher than traditional concretes, it can resist bending and can withstand major transformations (such as pressure or dilation) without breaking. Sources of the steel fibers are available in the U.S.
- **Increased Durability & Long Term Stability:** With UHPC's resistance to external aggressions such as abrasion, pollution, weathering and scratching, its longevity is 2 to 3 times longer than that of conventional concrete.