

Virgin River Bridge Restoration

PROJECT

Virgin River Bridge
Rehabilitation

LOCATION

Hurricane, UT

OWNER

Utah Department of
Transportation

ENGINEER

Todd McMeans, P.E.
Modjeski and Masters, Inc.
Harrisburg, PA

GENERAL CONTRACTOR

Wadsworth Brothers
Construction - Utah

CONCRETE SUPPLIER

Western Rock Products

**LIGHTWEIGHT
CERAMIC AGGREGATE
PRODUCER**

Utelite Corporation

**LIGHTWEIGHT
CONCRETE
SPECIFICATION**

4000 psi @ 113 lbs./ft³
6% +/- 1.5 air entrainment

Lightweight Concrete Deck Fill Provides Multiple Benefits In Historic Bridge Restoration



Virgin River Bridge, Hurricane, Utah

The steel arch bridge over the Virgin River at Hurricane, Utah, was rehabilitated to widen the roadway, improve its live load capacity, and most importantly to preserve this unique and historic 1937 bridge structure. In order to minimize strengthening of structural steel members, the center hinge of the 3-hinged arch was fixed, and a 4-inch filled steel grid deck installed. To further reduce dead load on the structure, Modjeski and Masters Consulting Engineers specified structural lightweight concrete for the grid deck fill.

Benefits from choosing structural lightweight concrete include the following:

1. Reduced dead load on the entire structure.
2. Reduction of 10 psf of bridge deck dead load.
3. Improved live load capacity.
3. Minimal strengthening of existing riveted arch rib members required.
4. Bridge preservation.

Previously, Modjeski and Masters specified structural lightweight concrete for the bridge deck replacement and widening for a mile and half long bridge over the Hudson River. This bridge was built for one traffic lane in each direction. After a new parallel adjacent bridge was constructed, the original bridge had the replacement deck widened to three lanes for single direction traffic using a structural lightweight concrete deck slab, to reduce the new dead load. For the 1000-foot long main span a steel grid deck was filled with structural lightweight concrete.

For Additional Information About the Advantages and Applications of ESCS,

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