

# PERVIOUS BRIDGE APPROACH

# PROJECT SPOTLIGHT

## KEY PLAYERS

OWNER: State of North Dakota  
ENGINEER: North Dakota Department of Transportation  
CONTRACTOR: Northern Improvement Company  
SPECIALTY CONTRACTOR: Cellular Concrete Inc.

## ROSE COULEE BRIDGE

FARGO, ND

## BACKGROUND INFORMATION

The south embankment of the Rose Coulee Bridge structure was experiencing instability, threatening the integrity of the structure. The bridge is located in a flood zone and water levels would often rise to completely saturate the soils under and around the bridge. As the water levels would subside the soils under the bridge would wash out, compromising the foundation. To stabilize the situation, the North Dakota Department of Transportation recommended unloading the upper portion of the embankment, replacing the excavated material with pervious cellular lightweight concrete fill.

## PROJECT DETAILS

A system of pervious cellular lightweight concrete, sheet piling and drain tile was used to solve the problem. The excavated material was replaced with 2,600 cubic yards of a 25 pcf pervious cellular concrete produced with AQUAERiX™ foam liquid concentrate. The pour took 7 days and was placed in fabric lined dirt forms. After the pervious material had cured for 48 hours, 300 cubic yards of 45 pcf, 300 psi cellular concrete was placed on top. Sheet piling was driven through the center of the embankment approximately 53 foot deep for additional reinforcement and a 4 inch wrapped perforated pvc drain pipe was installed to move water away from the concrete slab.

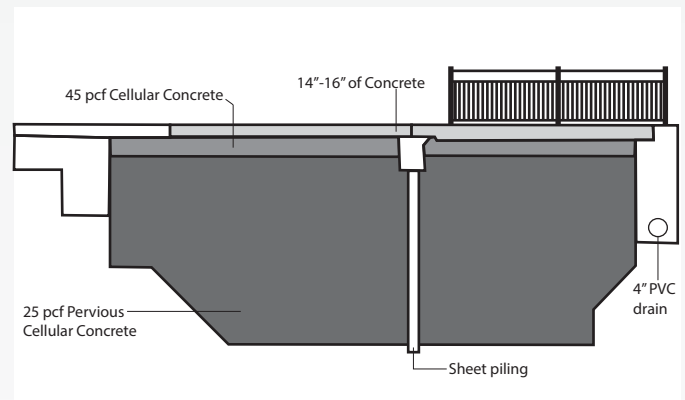
## AERIX ADDED VALUE

The 25 pcf pervious cellular lightweight concrete fill offered the unique advantage of allowing water to pass through the material, greatly reducing its buoyancy.

Two years after installation, the bridge approach has not experienced any settlement and continues to be seen as a success for the state of North Dakota.



Excavation after the removal of soil



Cross Section of project design



Placement of pervious cellular lightweight concrete fill at the Rose Coulee Bridge

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