

## Hybrid Gravity/Reinforced Headwalls Help the Environment

Project: Schewe Farms (Omaha Storm Chasers' New Stadium Development)  
Precaster: Workman Precast

**Owner/Customer Name:** Sanitary and Improvement District No. 290 in Sarpy County, Neb.  
**Geotechnical Engineer:** Thiele Geotech Inc.  
**Civil Engineer:** Lamp, Rynearson & Associates, Inc.  
**Wall Installer:** Linhart Construction Inc.  
**Project Location:** Papillion, Neb.  
**Year Built/Installation Date:** 2009-2011

### The Challenge

When the Omaha Royals (now the Omaha Storm Chasers) decided to move from Johnny Rosenblatt Stadium, home to the NCAA Division 1 College World Series since 1950 and the Royals since 1969, they chose build on a site just south of Omaha in Papillion, Neb.

Sarpy County broke ground on the \$26 million Werner Park in 2009. The total cost for the stadium portion of the project was estimated at \$20 million, with the remaining \$6 million allotted for infrastructure. The 6,000-seat stadium is the anchor for a family entertainment district that is expected to include hotels, shopping, restaurants and recreational activities. The access road needed for the 30-acre development, however, crossed through an area of wetlands. This required special environmental consideration and protecting the local wetlands became a high priority.

### The Solution

Initially, engineers considered grading a gradual slope from the roadway down into the wetlands. Instead, they chose a design using architectural precast concrete culverts and headwalls. "The objective was to minimize the footprint through the wetlands," explained Dan Thiele, president of Thiele Geotech. "Rather than creating a 3:1 slope and destroying or disturbing all that wetland, the vertical headwall saved a substantial amount of wetland."

The installation of three culverts required six headwalls that abut the culverts and stand approximately 30 ft. from the center of the roadway on either side. The project's civil engineering firm and contractor had both worked with large precast



modular wall systems in past and liked the mass of the blocks and their inherent stability in headwall applications. The system ultimately chosen for the project featured a natural ledgestone texture — made possible by using wet-cast concrete.

Thanks to innovations in the way they are produced, the natural-looking headwalls have a very different facade than large block precast systems

## Hybrid Gravity/Reinforced Headwalls Help the Environment

of the past. “The new Ledge stone face looks really good,” Thiele said. “Aesthetics wasn’t a primary consideration, but once they saw the new face the deal was sealed.”

The design of the headwalls was also unique, using a hybrid of reinforced and gravity structures. The civil engineers for the project, Lamp, Rynearson & Associates, Inc., required the top 7.5 to 9 ft. of the headwall to be a gravity structure. However, since the headwalls stand 28.5 ft. high, the bottom portion needed to be reinforced. “Creating a geogrid-free zone in the upper part of the walls helped prevent potential conflicts with utilities that would be installed under the roadway — waterlines, sanitary sewers, storm sewers, power, and communications,” Thiele explained.

To meet the design criteria, Thiele designed the bottom portion of the headwalls using reinforced blocks with a 28 in. depth. Prior to constructing the walls, the installation crew from Linhart Construction Inc. installed leveling pads of compacted stone to ensure the stability of the walls. During the installation of the first 12 courses of block, the crew reinforced every course with geogrid extending 18 to 20 ft. behind the walls and backfilled with compacted sand. The remaining 6-7 courses used 41 in. gravity blocks to allow the top portion of walls to be built without geogrid.

### The Outcome

The headwall portion of the project was completed in about one month. Phase two of the project will include installing matching ledge stone texture columns and freestanding walls, as well as black metal fences on top of the headwalls.

