HOW ONE FACILITY COLLECTS WATER

▲ **The water from the collection tank** is filtered on the way out of the tank before reaching the pumping system..

Grinnell College completed phase two of an athletics building construction project in late August of 2010. The phase two construction consisted of an Olympic size swimming pool and an indoor field house with athletic offices attached. Phase one, Darby Gymnasium (home of the record-breaking Grinnell men's basketball team), was completed in 2005. A unique aspect of the phase two project included a rain water collection system from the large field house roof and surroundings, which feeds a 20,000-gallon collection tank. Condensate water is also harvested from the air handling system in the field house, which provides a large amount of clean water for the collection tank. The water collected is used for toilets

When the tank water level reaches 91 inches, the excess water is diverted to the storm sewer system that feeds the Grinnell Country Club ponds.

▲ **Down spouts** from field house roof feed the collection tank.

▲ **The field house roof** behind the football game field.

in the field house and to irrigate the game day football field.

A new main irrigation line, valves, decoder system and controller were installed after the building project was completed. This system was hooked onto our current infield piping and irrigation heads. We installed a Hunter Industries wireless Solar Sync ET sensor to help with weather monitoring, which helps conserve water on the football field.

City water is used for all of our other fields and the water quality is not good. With the city water's high pH, bicarbonates and sodium issues, the idea of using natural rain water was quite positive. With any unique projects we had our reservations but after a full calendar year of having the system in tactic it has performed well.

How the collection system works is simple; the rain water is collected from the roof, storm drains, and bleachers from the field house area and funneled by drains into the concrete 20,000-gallon holding tank under the field house. Condensate from chiller and air conditioner units also help feed the storage tank.

The collection tank was actually dug, formed and poured with concrete as the field support structure was being constructed. When the tank water level reaches 91 inches, the excess water is diverted to the storm sewer system that feeds the Grinnell Country Club ponds. Irrigation for golf course is pumped out of these ponds. When a low point level is reached at 34 inches the system switches to city water by sensors and

▶ **The variable pump system** has been a large upgrade; also the coverage of the irrigation heads has increased.

electric valves, until the collection tank is recharged by rainfall. As an example, the summer of 2013 saw a state-wide drought and our system never switched over to city water because the condensate collection kept up with the watering demand. Ground water seepage and the condensate lines must be adding a lot of water to the tank to keep up with our current water demands and lack of rainfall.

The water from the collection tank is filtered on the way out of the tank before reaching the dual variable pumping system; this system is based on flow needs for the restrooms and field irrigation. The variable pump system has been a large upgrade; also the coverage of the irrigation heads has increased. The water quality has been relatively good so far; we have been sending in water samples to track the water quality to see if there is much fluctuation in the tank water through the year. One interesting sample I sent in early April 2011, at our irrigation system start up, was of water that had sitting for an extended period of time; the test came back very good even after being stagnate. Water test have fluctuated some but the tank water has been a huge upgrade in quality for our turfgrass compared to our city water.

This water collection system has been a success so far and more systems similar to this will be examined for any future building projects on our campus. Benefits we are experiencing so far include saving water, spending less money on water resources, slowing the watershed runoff speed from the building, and increasing the water quality immensely. ■

Jason Koester, CGCS, is the sports turf manager and irrigation specialist for Grinnell College, Grinnell, IA.

▼ **When the tank water level reaches 91 inches,** the excess water is diverted to the storm sewer system that feeds Grinnell Country Club ponds.