

# Gumption in Grand Junction

Renovation and new irrigation installation was a long time planning, but worth the wait!

BY DERF SOLLER

**T**iara Rado Golf Course is located in Grand Junction, Colorado, in the Grand Valley of western Colorado. This municipal 18-hole golf course showed sound, practical judgment with a recently completed and long-awaited renovation, along with an entirely new irrigation system. With proper planning and prudent purchasing, they completed the project under budget and on time, and are now realizing energy savings, water savings with improved irrigation efficiency, improved turf conditions, and increasing golfer satisfaction. And, as a bonus, they are more efficient in their use of labor for daily course maintenance.

Originally designed by Tom Kolacny, Tiara Rado was opened in 1971. The golf course sits at the foot of the Colorado National Monument. The breathtaking vertical red cliffs of the monument and views of the Bookcliff Mountains to the north and the Grand Mesa (the largest flat top mountain in the world) provide spectacular vistas in all directions for residents and visitors to the Grand Junction area.

Doug Jones, CGCS, and Dave Carter, his longtime assistant superintendent, oversee maintenance on the golf course and were both instrumental in the planning and completion of all the renovation.

The golf course completed a renovation, mostly on the back nine holes, under the planning and direction of golf course architect Kevin Atkinson, of Phelps-Atkinson Golf Course Design. The renovation included the installation of a new pump station; a transfer pump station with sand filter; new underground water pipe, electrical wire, and heads of the irrigation system; three water-holding ponds that increased dramatically the irrigation water holding capability; and a water feature. In addition, they rerouted and improved holes 10-18, added two



*Assistant Superintendent Dave Carter enjoying a happy new year in 2010 with the demolition of the old pump station!*

bunkers and remodeled the practice putting green.

The golf course operates as an enterprise fund within the City of Grand Junction and is expected to operate financially on its own. The golf course capital projects also are to be funded out of the golf course budget, as they are needed, and that was certainly true in this case.

## OUT WITH THE OLD

The abandoned and replaced irrigation system was 40 years old. It originally had a life expectancy of 20-25 years when it was installed in 1971 and had been in the replacement plans for quite some time. The course had two shallow irrigation ponds with a total storage capacity of about 1 million gallons. That was approximately the amount of water that the course used on a summer day. Both of these ponds

would dry up daily during summer irrigation, and the recharge from the irrigation ditch was slow. Excess sediment was always in the irrigation water due to drawing down the ponds so low each day.

The course used to be able to water turf on the course from April 18 to October 18 each year, as this is when the irrigation ditches that supply water to the course are operational. It was impossible to water with the irrigation system outside of this six-month period. Unfortunately, this did not always meet the needs of the turf, as golf is usually played year-round in this high desert area of Colorado. It used to take more than 12 hours to irrigate the golf course with the old system.

Tiara Rado Golf Course, at an elevation of 4,600 feet, receives between seven and eight inches of precipitation annually. The aged system had

*stretched head spacing* or heads placed too far apart from each other in most areas and did not provide adequate irrigation coverage. The two previous pump stations, each with three 20 HP pumps, ran at approximately a 35-percent energy efficiency level. There were as many as four irrigation heads on each of the old block irrigating zones, making precision irrigation impossible. The 700 brass impact sprinkler heads could not be repaired, as parts were no longer available. Numerous labor hours each day were spent repairing breaks in the old polyvinyl chloride (PVC) plastic pipe mainlines, and four to five staff members each day spent hours moving around hoses and portable roller-base sprinklers. Finally, the old system required a separate budget line item for irrigation repair of \$12,000 a year for maintenance, just to be able to irrigate the golf course.

## IN WITH THE NEW

A new Rainbird pump station is now the heart of the irrigation system. It has three 75 HP variable frequency drive (VFD) pumps that are much more efficient to move water throughout the golf course. It sends water to 1,500 new Rainbird Eagle heads, each with valve in head and individual head control. The irrigation central computer system was the only component not replaced, but the software was upgraded from Rainbird's Nimbus 2 to the Sirius System.

All the irrigation pipe is new, utilizing high-density polyethylene (HDPE). There is an 18-inch-diameter pipe coming out of the pump house that has 12-inch mainlines throughout the golf course, and the smallest lateral line is two inches (for additional information, see the article [HDPE vs. PVC, What's the Difference?](#)). With the addition of three new irrigation ponds, the storage

capacity is now approximately 12 million gallons. Being able to have water available in the colder seasons of early spring and late fall is proving valuable in maintaining turf health. They are now only using about 600,000 gallons of water on a typical summer day and are able to efficiently water the course in about four hours. That's a *daily savings* of about 400,000 gallons of water and eight hours of running the electric-power pump station.

## LABOR MORE PRODUCTIVE

Four to five staff members were used almost every day in the summer to move hoses around the golf course and to apply water to areas of stressed turf caused by inadequate irrigation coverage. Two of these positions were used each day to repair breaks in the old pipe lines. One full-time irrigation



The new Rainbird pump station and pad for the new building in March of 2010.





*Beginning of the new irrigation holding pond and new lake feature on Hole No. 10 in January of 2010.*



*Holes No. 10 and 11 of Tiara Rado Golf Course and new pump station building, November of 2011.*

position was eliminated from the maintenance staff.

All of these labor hours are now utilized in daily maintenance of the golf course and not spent working on and supplementing the old irrigation

system. As Dave Carter enthusiastically replied when asked about the difference, "We have time now to do so many other things." They are now able to do important cultural practices on a more regular basis, including, most

importantly, deep-time aerating the fairways. The tight clay soils of the area require good soil drainage for turf plant health. Having the ability to use the labor for culturally improving the soil conditions is starting to show improvements in turf health and playability of the course.

### IT'S A WINNER!

To summarize:

- The \$3.5-million project cost was completed about \$40,000 under budget.
- Water-holding storage capacity increased from 1 to 12 million gallons.
- 1500 sprinkler heads now irrigate turf more efficiently versus 700 older heads.
- Daily average water use is 40% less (from 1 million gallons a day to 600,000).
- Eight hours less time running the irrigation pumps (from 12 hours to four hours per day).
- Savings of \$12,000 per year in the irrigation repair budget.
- As an additional benefit, the new irrigation ponds improved the wildlife habitat of the golf course. The Tiara Rado Golf Course was fully certified with the [Audubon Cooperative Sanctuary Program for Golf Courses](#) in 1997 and fledges a variety of birds each year.

The golfers were very understanding during the construction process. They are enjoying the new layout, and early comments about the improvements include the improved fun factor of playing the course; it is more challenging, has more variety, and has improved conditions. With good planning and judgment decisions, successful projects can be completed even in a down economy. The result is an improved golf course, while also saving valuable resources, in this case, water and money.

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