



### ***Reliant Stadium Houston, TX***

*Irrigation Installation*

*Mike Caldwell,  
East Texas Golf Course Services,  
Livingston, TX*

*Irrigation Equipment Supplier*

*John Kearns, Z Water Works,  
Spring, TX*



*Reliant Stadium is a multi-purpose facility that is home to the Houston Texans NFL football team and the Houston Live Stock Show and Rodeo.*

### **Rain Bird® Brings Out The Rain Guns® To Green Up Reliant Stadium.**

To serve the needs of both the football team and the rodeo, Reliant Stadium was designed and constructed so that the natural grass field used for football could be removed and soil brought in for the rodeo. The field is constructed on metal trays that are 8' x 8' square and have a soil depth of five inches. When installed, the completed field consists of 1,250 of these metal trays, interlocking to form the 80,000 square foot playing field. The trays sit directly on the solid concrete floor.



A typical irrigation system used to irrigate a football field could not be employed because of the removable trays, so the decision was made to use large agricultural guns that could water from the perimeter of the grass trays. However, the guns posed a problem, because they covered such a large area, and the grounds crew would not be able to micro-manage the water application.

*continued*



*To feed water to the Rain Guns, a 2" fire hose is used. The use of cam lock couplers simplifies the connection process, and each sprinkler has its own control valve to allow the grounds personnel flexibility in watering the turf.*

The original irrigation design called for six guns to water the entire field. Discussions concerning the inability to water smaller sections of the field forced the plan to be modified. The grounds crew needed a way to more efficiently control the water application.

The final plan consisted of fifteen Rain Bird® SR3003 Rain Guns® with a .55" nozzle operating at 70 psi. The guns were configured in a square pattern with 100' spacing. When compared against the competition, the Rain Guns were selected because of better distribution uniformity test results. The control valves selected were Rain Bird 200-PEB with pressure regulation, the chosen controller was a Rain Bird ESP-16MC. The Rain Bird valves and controllers were selected to match those already in use at the Houston Texans outdoor practice facility. Once the irrigation equipment was selected, it became the design team's responsibility to integrate it into a workable plan. When the design was completed, it was significantly different than what was first proposed.

"In order to water properly, we could not place any heads permanently in the center of the field," said John Kearns of Z-Waterworks. "The decision



was made to make the heads in the center portable so they could be used to water when needed and be removed when not in use."

The system installation had a high degree of difficulty, because the irrigation system—believe it or not—was a last-minute addition to the project. The playing field was a design/build project and the irrigation to

feed it was overlooked during the review process. The field contractor had irrigation figured in his bid but the grounds personnel felt it was unacceptable.

Given the time constraints of the project, and recognizing the need to be dead-on accurate with the installation, the system's installation

was negotiated by only the best irrigation companies. East Texas Golf Course Services (ETGCS) was eventually selected to do the installation.

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All of the main line piping is ductile iron pipe. The valve and head locations are in concrete valve boxes that have to be within plus or minus a half-inch of center in order for the locations to be accessible when the field

trays and warning track modules are in place. The lateral lines are 2" galvanized pipe with flanged connections for mounting the Rain Guns and for connecting the hoses for the center heads. When the system is not in use, blind flanges are bolted to the flanges to guard against any inadvertent



### 3000 Series Rain Gun® Performance Data

PSI @ Nozzle	Nozzle Size											
	0.55" 14mm		0.63" 16mm		0.71" 18mm		0.79" 20mm		0.87" 22mm		0.94" 24mm	
	(ft.) Radius	(gpm) Flow	(ft.) Radius	(gpm) Flow	(ft.) Radius	(gpm) Flow	(ft.) Radius	(gpm) Flow	(ft.) Radius	(gpm) Flow	(ft.) Radius	(gpm) Flow
40	103	55	105	72	113	92	131	114	126	134	126	162
50	109	61	111	79	124	101	137	124	136	148	137	177
60	115	66	120	86	133	110	141	136	140	162	142	193
70	121	72	126	93	140	118	146	147	149	175	151	209
80	128	77	128	99	146	127	153	157	161	188	166	224
90	134	82	135	106	151	136	159	168	168	201	175	240
100	140	88	141	113	154	144	164	178	176	214	184	255

discharge of water. There are also three Rain Bird Quick Couplers on each sideline to facilitate any hand watering that may be required.

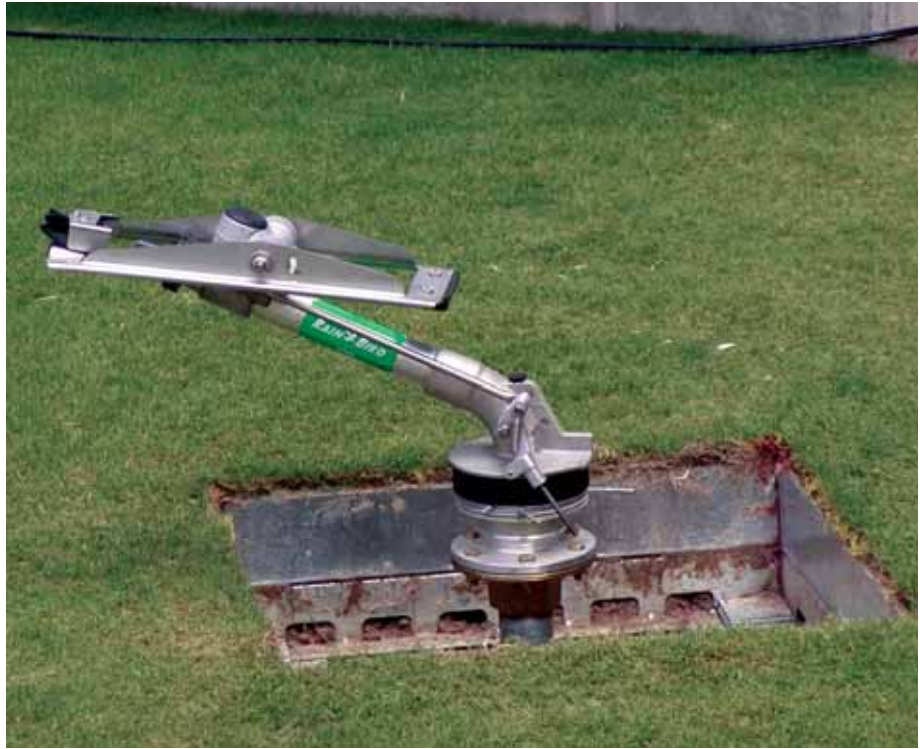
Numerous times the ETGCS crew worked until 3 a.m. to avoid any interference from other contractors working on the stadium flooring construction. Without question this was by far the toughest installation ETGCS had ever undertaken. All parties involved in the project give Mike Caldwell, owner of ETGCS, high praise for his company's performance in getting the job done right and on time.

The Rain Bird irrigation system works well for the Houston Texans and the organization is pleased with the overall performance of the equipment. They are equally impressed with the dedication of Rain Bird's territory manager, John McHugh, who made it a point to be on-site when the irrigation system was fired up for the first time on a Sunday morning at 7 a.m. Kearns says, "John makes it a point to stop by periodically to check on the system and help with tweaking it in order to maintain optimum performance."

The first season brought mixed reviews for the turf inside Reliant Stadium. Low light levels during the fall and winter months made growing the turf a real challenge. Knowledge gained



Mike Caldwell and John Kearns perform a routine system check to maintain optimum Rain Gun performance.



from that first growing season is being used to insure that the turf is the best that it can be for the 2003-2004 season.

The removable tray system has also presented numerous challenges for the grounds staff. In order to keep the field in excellent playing condition, additional turf modules are always being constructed and held in reserve to change out the portions of the field that show excessive wear or are slow to recover. A turf nursery facility is being planned on a remote site, and when completed, could accommodate enough turf for as many as three fields. The irrigation system for the nursery site will use Rain Bird's SR2005 3" Rain Guns and 4" Cast Iron Valves.

While the nursery is still on the drawing board, a temporary site is being used on the Reliant Center parking lot and great progress has been made in producing quality turf for the Texans. As a result of all the hard work that went into this project, the 2004 Super Bowl that will be played in Reliant Stadium promises to be a shining moment for Houston, the Texans and Rain Bird.

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