

On the Waterfront

by Jim Reed

Back in August, I had a conversation with Mike Sprouse of Randall Oaks Golf Club in Dundee, IL. He explained how at the end of each irrigation season after he blows out his system, he sends out his crew to pull out the drive assemblies, inspect the nozzles for damage, look for worn parts, and make sure no water is left in the sprinkler bodies. The crew inspects every sprinkler on the golf course. Mike reports that in his 5+ years at Randall Oaks, only 2 sprinklers have given him a problem during start-up the following spring and he has had time to work on other more important projects during that busy time. Just something to think about doing in November to close down the course.

This month's article from the Keller-Bleisner Engineering study on "Designing, Operating and Maintaining Piping Systems Using PVC Fittings" is on "Pressure Surges — What Causes Them and How to Control Them". This section of that report concerns "Controlling the Magnitude of Pressure Surges in the Design Phase".

A number of design techniques are used to control water hammer in piping systems. To limit surges generated by pump operation, air chambers or surge tanks that absorb surges in conjunction with pressure regulating and pressure relief valves are often installed in the pumping station. Packaged pumping plants with all necessary controls and equipment are available from a number of manufacturers and are commonly used in golf course irrigation systems. When all valves and controls are properly sized and adjusted, surges generated by changes in pump flows and/or demands are reduced to non-harmful levels. If a packaged pumping plant is not used, the pumping station should include, at the very least, a pressure regulating valve to maintain constant pressure regardless of the flow rate. Pressure tanks decrease the pressure fluctuation seen at the valve and increase the pressure modulation in the system.

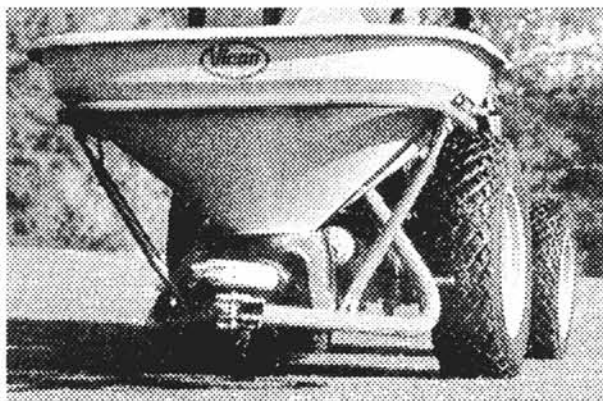
Controlled valve closure speed is critical in limiting the magnitude of pressure surges in the system. A typical valve-in-head sprinkler will close in 6 to 10 seconds, which seems sufficiently slow to limit surges to acceptable levels. However, the valves are electrically controlled hydraulic valves that operate on the principle of pressure difference across the valve for closure. The higher the pressure drop across the valve, the faster it closes. Therefore, the closer the valve is to being closed, the faster it closes, which significantly reduces the effective closure time of the valve. As a rule of thumb, about 75% of the fluid flow is shut off in the last 25% of the poppet movement. Therefore, a 6 second closure time becomes a 1 1/4 second effective closure time. In general, valves with slower effective closure times generate smaller surges.

In simple systems, pressure relief valves downstream of the main pressure regulating valve can reduce the magnitude of some pressure surges. However, in complex systems, where surges can start at many places, it may be too costly to place pressure relief valves at sufficient intervals to be effective.

Entrapped air is one of the most troublesome and potentially dangerous causes of pressure surges. A later section will deal with the entrapped air problem.

(cont'd. page 10)

Special Low Pricing on Vicon Seeder Spreaders!



25% OFF ALL MODELS IN STOCK

The accurate, versatile, reliable spreaders available in sizes from 400 - 3,600 lbs.

HUBER RANCH POWER EQUIP., INC.

Box 188, Schneider, IN 46376

1-800-553-0552 or (219)552-0552



WILBUR-ELLIS

IDEAS TO GROW WITH®

YOUR ENVIRONMENTAL COMPLIANCE COMPANY

WE DELIVER SERVICE.....

...CUSTOM RINSATE PAD DESIGNS
...WORKER RIGHT-TO-KNOW TRAINING
...SARA TIER II REPORTING
ASSISTANCE

WE ALSO DELIVER PRODUCTS.....

.....A COMPLETE LINE OF TURF & ORNAMENTAL
PLANT PROTECTANTS, PLANT NUTRIENTS,
GRASS SEED, HERBICIDES, AND MORE!
.....FAST FREE DELIVERY WITHIN 24 HOURS

JOHN MEYER OR JOE WOLLNER
800-747-7400

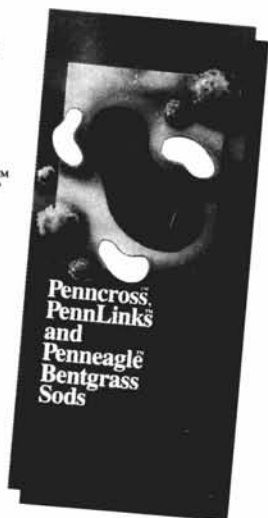
Finally, Bent Sod With Assured Compatibility

PENNCROSS GROWN ON A FUMIGATED USGA GREENS MIX SOIL

H & E Sod Nursery provides you with PennCross™ Bentgrass Sod that is grown on fumigated USGA Greens Mix soils making this superior turf totally compatible with golf course greens anywhere in the country.

For more facts about all of the top golf course turfs we provide: PennCross™, PennLinks™ and Penneagle™ Bentgrass Sods...phone, fax, or write for a FREE INFORMATION PACKET: 3900 West 167th Street, Markham, IL 60426. Fax: 708-596-2481.

Phone: 708-596-7200



Reach, Speed & Stability



Ford New Holland "Super Boom" skid-steer loaders do more for you:

- * Reach - Loads center of six-wheel dump.
- * Speed - Faster cycle times, speeds up loading/unloading operations.
- * Stability - Longer wheelbase with low center of gravity.

MARTIN IMPLEMENT SALES, INC.
16400 S. 104th Ave.
Orland Park, IL 60462
(708) 349-8430



(On the Waterfront cont'd.)

At the design stage, the safest surge control technique is to limit velocities in the system to 5 feet/second and to include computation of surge potential in determining the pressure requirement of system components. Many problems will be eliminated if the surge potential is adequately assessed and the components of the system selected to withstand the potential surges.

Winterizing of Pump Stations

1. Turn all switches "OFF". Turn all disconnects "OFF".
2. Open hose bibb on tank to drain the tank and upstream side.
3. Drain irrigation piping.
4. Disconnect all tubing on the control valve and blow it out till it's empty.
5. Loosen the bonnet bolts on the Cla-Valve and break the bonnet free so all water drains out. Then retighten the bonnet, and fill it with about 1 quart of antifreeze.
6. Insure all controllers are drained of water. Include sensing chamber on CRL's. (Remove to heated building if possible).
7. Remove brass plugs from pressure switch manifolds and allow to drain. Blot up drained water to prevent cabinet rust. Leave plugs out of manifolds for duration of the winter so any remaining water in manifold can expand without damage to pressure switches.
8. If you have centrifugal pumps, drain the pump volutes by removing the lowest plug in the volute. Reinstall plug after volute is drained.
9. If you have a wye strainer, insure that it is drained.
10. Insure all pump isolation valves are open.

Prior to restarting of pump station in the spring, insure all tubing is replaced, all connections are tight, all drain valves are closed, and all operating valves are open. Insure Cla-Valve bonnet tight and drain plugs are installed in pressure switch manifolds.

Next month's topic will cover "The Effects of Management on Pressure Surges".

Marketing Position at Greensmix, Waupaca, Wisconsin

Greensmix is the industry leader in custom soil blending of rootzone mixtures for sports turf and golf course construction. Among the existing golf course clients that we serve are the Nicklaus, Palmer, and Trent Jones, Jr. design firms and the Cleveland Browns and Florida Gators for sports fields.

Our rapid growth has resulted in the need for another uniquely qualified team member. This entry level marketing position involves presenting our products and services to golf course and sports field superintendents, contractors and architects.

An educational background in agronomy, soil science, horticulture, or a related field, is a definite plus. Excellent communication skills and effective one-on-one people skills are required. This position is highly visible and offers rapid advancement and career growth while associated with a high respected company within the sports turf industry.

Interested individuals should submit their resumes to Robert Faulks, E3481 Hwy. 22 & 54, Waupaca, WI 54981.