



# Williams Notaro & Associates, Inc.

MECHANICAL, ELECTRICAL, PLUMBING & FIRE PROTECTION CONSULTING ENGINEERS

3928 Pender Drive, Suite 220, Fairfax VA 22030 ♦ 703.563.0381 ♦ Fax 703.563.5389 ♦ www.wnainc.com

## Waterless Urinals by Rupert Alfiler, EIT

Today's trends in building design point towards environmentally friendly methods of operation. Designers are increasingly conscious of the impact of mechanical, electrical, plumbing, and architectural systems on non-renewable resources, such as water.

So how can you save up to 40,000 gallons of water per year? With a waterless urinal, of course! Consider these factors before making a final decision. How do they work? Are they safe? Are there any design considerations? How much will it cost?

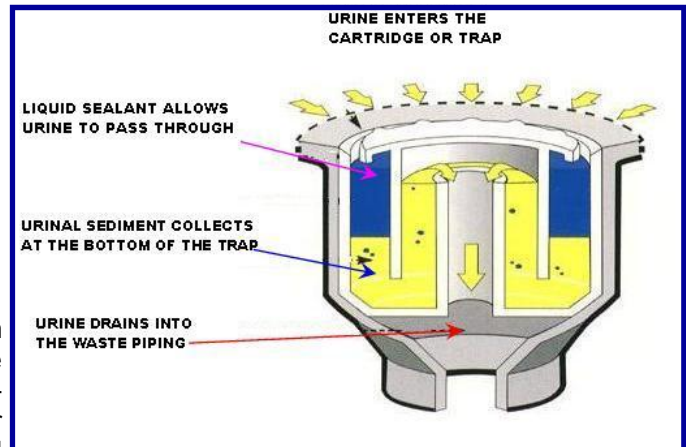


Waterless urinals are relatively simple. Urine collects into the urinal bowl and flows into the drain trap, or cartridge. A water repellent surface keeps the urinal bowl dry. A layer of sealant fluid, with a specific gravity lower than urine or water, allows the urine to flow through. Sediments are collected at the bottom of the cartridge while urine overflows into the

drain piping. Sewage gasses and odor are sealed in the drain piping by the liquid sealant. However, as with conventional urinals, trash can accumulate and clog the drains

Waterless urinals, in some ways, are cleaner than conventional urinals. Sewer gases, urine, and moisture are isolated from the atmosphere by the liquid sealant. Although urine is sterile, water/moisture promotes microbial growth on the inner surface of conventional urinals. The water repellent prevents moisture accumulation, thus reducing the risk of developing bio-film or microbial growth. Flush type urinals produce invisible mist carrying moisture, bacteria and urinal sediment. Waterless urinals do not flush and consequently eliminate moisture spray.

Though waterless urinals can be installed anywhere conventional urinals are installed, some remodeling may be necessary. Additional piping may be required to accommodate the raised drain piping connection location when retrofitting from flush type to a waterless. Also, demolition and capping of existing water lines and preparation of the drain piping are extra costs. However, there are no flush valves to buy, install, maintain or replace.



Some conservative designs incorporate backup systems, such as capped domestic cold water piping, for each urinal location. This precaution provides some options, should conventional urinals be required in the future. Maintenance of waterless urinals consists of regular cleaning and monitoring of the sealant system. Urinals with fixed trap systems require a refill with roughly three ounces of sealant fluid every three months. According to one manufacturer, each refill costs approximately \$1.50 to \$2.00. Cartridge systems are usually more expensive; from \$40 to \$50 per cartridge. Frequency of service ranges from 1,500 uses to 7,000 uses, depending on the manufacturer.

With concerns about dwindling water supply and growing operating costs, reducing your water usage can be a small solution to a global concern. Waterless urinals are one of many options available for promoting water conservation.



**Rupert Alfiler, EIT**  
**Mechanical Engineer**

Mr. Alfiler is a mechanical engineer with Williams Notaro & Associates, Inc. He holds a Bachelor of Science in Mechanical Engineering from Virginia Polytechnic Institute and State University. Rupert has performed mechanical and plumbing design work for such clients as Americas Capital Partners, National Rural Electric Cooperative Association (NRECA), and Orbcomm since joining the WNA team.

# Win \$100 Gas Card



Every season we feature a photo on our web site that illustrates the importance of including Construction Administration in the Engineering scope of work. Even small, seemingly unimportant installation deficiencies can cause poor system performance, increased maintenance, or reduced equipment service life. Visit our web site at [www.wnainc.com](http://www.wnainc.com) and enter our Installation Bloopers Contest. Correct respondents are automatically entered to win a \$100 gift card to Shell Oil. Our next winner will be chosen on November 15, so enter today!

## Winner

Congratulations to John M. Futrell, Vice President, B&Z Services, Inc. in Norfolk, VA

He correctly identified our last installation blooper and won a \$100 Shell Oil Gas Card.



Visit [www.wnainc.com](http://www.wnainc.com) to enter our Fall contest. Drawing will be held November 15.

## Last Contest

Our last blooper shows a junction box mounted directly below the pipe union. It has stains from previous glycol solution leaks or spills. The junction box itself is not watertight, and has open mounting holes that can allow the glycol solution to soak the electrical connections. Neither the junction box nor the piping have adequate clearances for proper servicing. Any glycol solution that leaks from the system should be cleaned and properly disposed of using a method approved by the local jurisdiction.

Unfortunately, these types of installation mistakes are more common than people realize and can have a huge negative impact on the performance of the HVAC system. Minimize oversights by including Construction Administration in the Engineering scope of work.



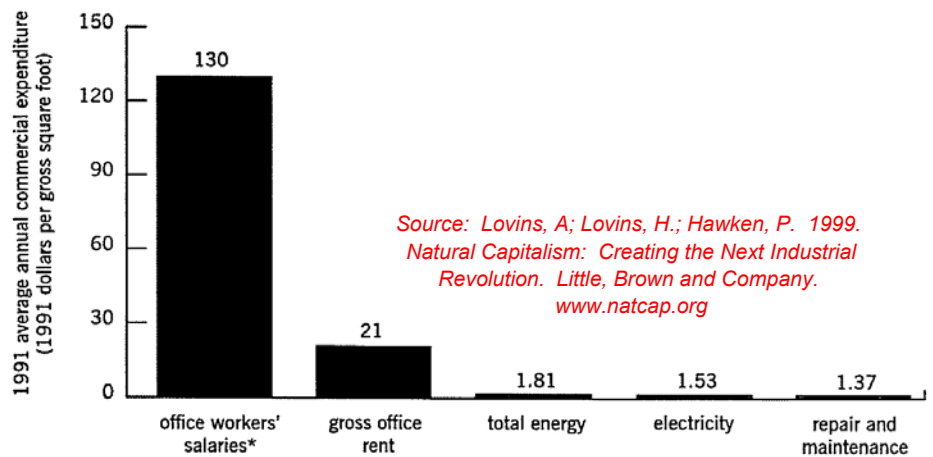
## Did You Know?

'Green' design features not only lower the impact of buildings on the environment through energy efficiency and limited resource use, but also increase employee productivity by improving indoor air quality and creating a healthier environment. Recent studies have concluded that implementing 'Green' design features into a space can:

- ♦ Reduce healthcare costs and work losses from communicable respiratory illnesses by 9 - 20 % and allergies/asthma by 18 - 25 %
- ♦ Reduce average annual employee absenteeism
- ♦ Increase workforce productivity
- ♦ Reduce workforce turnover and improve recruitment

A minimal increase in workforce productivity can provide savings to a company that can outweigh operating costs. The graph illustrates the comparison between the various costs of operating an office building.

COMPARING PEOPLE, ENERGY, AND OTHER COSTS OF RUNNING AN OFFICE BUILDING



Source: Lovins, A; Lovins, H.; Hawken, P. 1999. *Natural Capitalism: Creating the Next Industrial Revolution*. Little, Brown and Company. [www.natcap.org](http://www.natcap.org)

\*excluding benefits, equipment, and other overhead

If you'd like to explore options for incorporating 'Green' design features into your space, please give us a call at (703) 563-0381.