

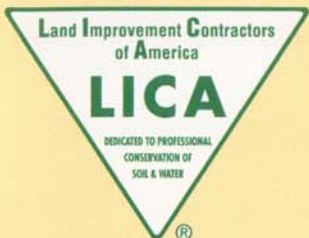
The **LICA** Contractor

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A LICA Contractor is Making Waves

**Joe Mayers finds a niche free of
competition in onsite system
installations for island properties.**





The Land Improvement Contractors of America

The LICA Contractor is the official publication of the Land Improvement Contractors of America, dedicated to the professional conservation of soil and water. LICA was founded in 1951 and is today comprised of twenty-four chapters across the continental United States.

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The LICA Contractor welcomes letters, subject to editing for accuracy and brevity. The LICA Contractor also welcomes articles relevant to the land improvement industry. Include your name and daytime phone number for verification purposes.

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president's message



I am excited to be writing the first President's message for The LICA Contractor. The LICA Contractor is a full-color magazine dedicated to LICA and its members and will be published four times a year. This is the beginning of a new era for LICA and I would like to thank everyone involved in its production. First and foremost, thank you to our advertisers for their support, John Weatherhead of Reed Construction Data for his belief in LICA, and our Executive Vice President Jerry Biuso for his vision for our future.

Please take time to look over our exciting new publication and make sure to review your new LICA benefits.

I think you will all enjoy the feature article "LICA Contractor Makes Waves." It is giving recognition to a LICA contractor who has shown extraordinary imagination and commitment to finding a niche for his business.

*Enjoy your new publication,
Doug Hey, National LICA President*

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Going Where None Dare Go

By Greg Sitek

Joe Mayers found a niche for his business in tackling difficult or seemingly impossible situations, such as specializing in the installation, maintenance and repair of island and lakefront septic systems.

Contractors never know what they're getting into when they bid a job. This is especially true for contractors involved in septic installations. Joe Mayers of Joe Mayers Excavating, a Limited Liability Corporation located in Sussex County, New Jersey, is a full service, fully insured septic system specialist serving all of northern New Jersey, Pennsylvania and New York since 1982.

Today Mayers is not only a "septic expert," as his web address so notes, he is also an innovator, designer and "Captain." And, he has decided that he is, indeed, the "Captain of his own ship," so to speak, in this case a barge.

Mayers says, "Our Company specializes in repairing, installing and inspecting septic systems. We also cater to homeowners/buyers in need of septic system services during real estate transactions. We are certified through NJSMA and PSMA to inspect both conventional and alternative septic systems."

Before getting to the barges, Mayers installed the first drip irrigation system in the state of New Jersey. A drip irrigation system is an alternative septic system used in special situations where a conventional system may not apply.

Mayers provides the following services to his customers:

Septic Inspections: Mayers offers his customers and/or individuals interested in buying a home a complete system inspection and provides them with a detailed written report on how the system is operating.

Installation and Repairs of Septic Systems: Mayers and his crew are experienced in installing and repairing various types of septic systems, including gravity feed systems (bed and trench systems), pressure dosed systems (raised, sand mound) and drip irrigation systems, and gravity or pressurized infiltrator systems.

Ground and Run-off Water Solutions: Includes the installation of various types of drainage systems such as curtain drains, surface drains and catch basins and leader drain tie-ins.

Electronic Locating Devices: Flushable transmitters are used to locate septic tanks and related components. He offers this service to homeowners, as requested, who do not know the location of their septic system and components.

Portable Barge Services: He provides this service for septic systems that need to be repaired/installed on islands or lakefront homes that would otherwise be inaccessible.

Getting Wet

Mayers found a niche for his business in tackling difficult or seemingly impossible situations such as specializing in the installation, maintenance and repair of island and lakefront septic systems.



A home inspector had gone out to look at an island property, only to find that the septic system was failing and needed to be replaced. The inspector turned to onsite system installer Joe Mayers.

"He asked, 'Are you up for the challenge?'" Mayers recalls. "That's how this whole thing started, and I haven't looked back." His first island septic system installation was on an island at Highland Lakes in Vernon, N.J.

Mayers put together a barge, experimented with techniques using small-scale equipment on rugged terrain, and successfully replaced an aging system. The job brought him a great deal of satisfaction and a handful of referrals for

The barge loaded with rolled sod to cover septic system on island.



Joe Mayer



similar work that nobody else seemed to want to do.

Mayers has found a niche market with endless possibilities. In New York alone, there are more than 5,000 small inland lakes, some with single homes on small islands, and others with island communities of 40 to 50 homes. Between New York and Mayers' home state of New Jersey, there are thousands of lakefront and island homes, many built from the 1920s to the 1950s and still using their original, primitive septic systems.

State water quality officials are starting to demand better septic systems for these homes. At the same time, regulators are putting tighter controls on how contractors work on islands.

Increasingly, states forbid installers to transport equipment over the ice, wanting to avoid the risk of heavy equipment breaking through.

Owners of island properties and other waterfront sites generally can afford the premium price a specialist like Mayers must demand. While typical septic system replacement in New Jersey costs about \$15,000, an island system may cost twice as much, though the price per system comes down about 20 to 25 percent when Joe contracts for multiple replacements on one island.

"I never knew how many island homes there were in my area," says Joe. "I simply never paid any attention to it. After that one job, I started getting

phone calls from other lake communities inquiring about my services. I never thought in a million years I'd be doing septic systems on islands. But I just fell into it and it took off."

Unique Barge Design

Mayers said, "Everything had to be built for small areas both on land and on the water. Being able to get to difficult-to-reach locations is important. A lot of the lakes have limited access, so I had to design the barge so it could be maneuvered through some tight spots."

Mayers hired a Florida barge-building company to bring his design for a barge with four equal rectangles of 8 feet-wide, 15 feet-long and 4 feet-deep that fits two-deep, side-by-side,

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Loading logs from island onto the barge to bring back to mainland.

for a maximum 16x30 foot deck to fruition. Each section is an airtight cube, purged with argon gas, built with 1/4- to 3/8-inch steel panels and a

reinforcing superstructure to prevent flexing on the waves.

“The barge literally can not sink,” Mayers pointed out. “The airtight sections are designed so they won’t take on water even if we hit something. Traveling these lakes can be tricky because you never know what what’s under you.”

“Some barges have a manhole so you can get down inside them,” Mayers adds. “With this barge, if you were to rip a hole in the bottom, it wouldn’t sink because there’s no hole on top to let the air out. And if one cube leaks, you still have three holding you up.”

The front end of each 4.5-ton section is raked at a 45-degree angle to cut through water efficiently or to move over and break ice in early winter. The two rear sections have a steel catwalk on the back with adjustable brackets to hold the engines. The sections are joined

Drip Irrigation Systems

We have installed the first Drip Irrigation System in the state of New Jersey for a commercial application. A drip irrigation system is installed just beneath the surface of the earth using a vibratory plow. It is primarily used in areas where there is a high water table and/or steep slopes, or where a conventional septic system would not be suitable.

Septic Tips

#1 - Pump the Septic Tank!

Homeowners should practice pumping out their septic tanks at least every three years, depending on usage. The failure to pump out the septic tank when needed is the most frequent cause of a septic system failing. If accumulated solids are not removed from the tank at least every three years, solids may be pushed into the disposal field. If this happens, the field will not filter the wastewater appropriately and the septic field will become clogged. When the septic field is not functioning properly or is clogged by solids from the septic tank, sewage can back-up into the household plumbing or ponding of wastewater effluent may become apparent in your yard. It can also contaminate drinking water.

#2 - Don't Pour or Flush Harsh Chemicals down the Toilet!

Because wastes are decomposed anaerobically by naturally occurring bacteria, flushing harsh chemicals can be toxic to the bacteria in the septic system. In addition to disrupting the biological treatment system, household products may contain chemicals which cannot be adequately treated by the septic system and which, if discharged, will pollute groundwater. Some of the chemicals people pour down the toilet without realizing the effects that occur

in the septic tank are: oil, grease, paints, stains, solvents, acids, antifreeze, pesticides, herbicides and photographic chemicals.

#3 - Only flush Toilet Paper!

Don't flush disposable diapers, sanitary napkins, paper towels or other materials that cannot be treated by the septic system. Flushing bulky items can result in pipes being clogged.

#4 - Don't flush Cooking Oils, Fats or Grease down the Drain!

These items are best disposed of in plastic containers or Ziploc bags and thrown in the garbage. Grease and oil will congeal in plumbing pipes and septic tank over time and may clog system operations.

#5 - Don't Park or Drive over your Septic System (unless designed to)!

This includes paving over the septic system, planting trees or large shrubs where their roots may clog or disrupt the septic system. Parking on the septic system could result in crushed pipes underground, preventing the wastewater from reaching the septic disposal field.

#6 - Be Cautious when using Chemicals or Enzymes to Clean your Septic System!

Commercially available products can claim to improve septic system performance. BEWARE! These products may harm your system by interfering with the natural bacteria found in the septic tank that naturally decomposes the waste.

through steel flanges that mate together and are held in place with 2-inch-diameter steel pins. The two front sections have a steel lip on the front for mounting 2 ramps and 4 spuds that go through spudwells, through the barge, and into the lake bottom to hold the barge steady in the water for equipment loading.

"The adjustable catwalk is one of the designs that is patented," Mayers states. "It makes it possible to adjust the engines to better accommodate the loads."

Mayers hauls the barge to the lake using a semi tractor and trailer. He has two ways of getting the barge into the water for assembly. He can back the sections down a boat launch using a pickup truck and gooseneck trailer



Preparing to depart for the island with 4¼ ton excavator.

Going Where None Dare Go



when the space is tight. Or he can pick each section off the semi-trailer with an excavator and place it into the water.

Once in the water, he loads equipment via a pair of 700-pound channel

steel ramps. When empty, the 18-ton barge has a 10-inch draft. Fully loaded with 22 tons of equipment, the draft is 3 feet, and a foot of the barge is above water. Mayers likes to load to about half

Unloading sand from containment pan into track dumps on the island.

capacity to transport sand or gravel. He moves one piece of equipment at a time, securing it to barge cleats. The barge deck has an anti-slip sand surface.

The barge can be powered by two 25-hp Mercury four-stroke, tiller-controlled outboards with long shafts and torque props. Where lake rules prohibit gasoline engines, it can be moved by four electric trolling motors powered by eight deep-cycle marine batteries. An onboard generator charges the batteries for longer trips. Mayers avoids using the trolling motors in high winds. He also keeps a rowboat on board as an emergency escape craft in case he's stranded on a lake in bad weather. Joe has a patent on the design and use of the sectional barge.



Back To The Beginning

His first job was difficult. Using a 12x12 foot floating wooden dock with extra pontoons, he moved an 1,800 pound mini-excavator to the island. “It was tippy and started to look like a cereal bowl by the time I got across the lake,” says Joe. “It started to deflect and bend and flex under the weight. I realized that wasn’t good enough.”

That first customer ended up buying Joe a smaller used sectional barge to help him complete the project. As he worked with the equipment at hand, Joe kept thinking of ideas that would make an island or confined-space job work easier.

“There were many sleepless nights because we didn’t know exactly how this was going to work out,” he says. “We learned a lot, but there’s nobody to teach you. It’s all gut instinct.”

A Serious Challenge

It was in the fall of 2003 that the owners of an upstate New York Christian resort learned that the septic system on their Tapawingo Island girls’ camp was failing. Any system failure is like a bad dream, but when the failure happens to be on an island in the middle of a freshwater lake it’s a nightmare.

Preparing to leave for the island with four 1,500 gallon septic tanks manufactured by Rochester Rotational Molding with anti-flotation columns.

Septic Inspections

If you are considering purchasing a home with an on-lot sewage disposal system (septic system), you should consider having one of our Certified Septic System Inspectors conduct a thorough inspection of the septic system.

JOE MAYERS EXCAVATING is certified in both New Jersey and Pennsylvania through NJSMA and PSMA. We are trained in both conventional and alternative septic systems. We have installed and repaired septic systems for the past 23 years, including the first drip irrigation system in the state of New Jersey.

As an additional service to our clients, we offer Septic System Inspections using the NJSMA and PSMA septic system standards. Our inspections are comprehensive and typically include the following:

- **Septic Tanks (Concrete, Plastic or Metal)**

Locate septic tanks and/or pump tanks, inspect all components and inspect overall condition of tanks.

- **Disposal Area:**

Inspect field for breakout, lush vegetation or odors. Extensive probing of the disposal area to determine the level of effluent in the aggregate, if any, and look for signs of any previous malfunction.

- **Seepage Pits:**

Examine the interior of the structure to inspect its condition/construction and to determine the available capacity for the home's daily flow rate. We also look for signs of high water staining and signs of previous malfunction.

- **Reports:**

Once a septic inspection is complete, the requestor is provided with a detailed report of the findings in an easy to read report format.

- **Corrective Measures:**

If requested, we can provide a separate list of corrective measures that may be necessary per the inspection.

How do you replace the system on a postage-stamp property surrounded by water? Call Joe Mayers, who specializes in serving customers in hard-to-reach resort locales, including small inland lake islands.

Mayers trucked his equipment to the mainland camp in May, assembled a four-section 16x30 foot, 18-ton steel barge, mounted two 25-hp engines on the back, and floated the job materials 1.25 miles to the island.

"We designed the barge system so that it could be transported over Interstate highways," Mayers said. "I didn't realize until we started moving the equipment to upstate New York that it would fit through the toll booths. It did."

Site Conditions

The 2-acre island consists of sand and an underlying rock ledge. Additional sand was trucked out to the

island when the first septic system was installed in the 50s. Mayers used that sand as fill.

The site has a 3 percent grade from the central high ground where the main buildings sit to the water's edge. The island's highest point is about 12 feet above the water level. The onsite system is located 35 feet from the water in an open area. The designer had to work around wooded areas, a dozen sleeping cabins and other buildings.

System Characteristics

The system is designed to handle an average of 3,200 gpd during two months of the summer, as determined by a metered municipal water system serving the island from an underwater pipe. The water and sewer service are confined to the bathhouse with 16 sinks, eight showers and 13 toilets; the nurse quarters with a sink and toilet; and the kitchen with a sink and drain.



Getting ready to load wood chipper onto barge with excavator for much needed work on the island. The wood chipper is towed off barge and around the island with rubber tracked dump trucks.

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On the deck of the barge are two rubber tracked dumps to haul material around island.

Three- and 4-inch existing drain lines from the buildings were spliced into a new 6-inch SDR-35 pipe that feeds by gravity into the new septic tanks. The buildings are about 30 feet apart, and the first septic tank is about 40 feet from the buildings.

Five 1,500-gallon plastic tanks manufactured by Rochester Rotational Molding are buried side-by-side in series with an inlet on one end and an outlet on the other. Effluent works its way through the system, making a U-turn from one tank to the next, with SIM/TECH brush filters at the 4-inch outlet baffles.

The first two tanks use dual brush filters, while the second two tanks have individual brush filters at the outlet. The fifth tank is the pump tank, which has two ITT Red Jacket pumps that move effluent at 75 gpm at 15 feet total dynamic head into the distribution system.

Atop each pump are two SIM/TECH pressure filters with pressure alarms. A pressure-activated switch sets off visible and audible alarms when the pressure reaches a pre-determined level to warn of accumulated debris in the filters. The float-triggered tank pumps alternate 400-gallon dosings to two larger drainfields and a mini-field created to work around an underground ledge.

The drainfield system consists of 144 Eljen Corporation In-Drain System two-stage Biomat units (3x4 feet and 7 inches thick) laid in a series of

11 49-foot-long trenches and a series of four short trenches totaling another 49 feet. The trenches are two feet deep and four feet wide to allow for Eljen's specification of six inches of sand surrounding the bio-matresses that simulate gravel voids.

Effluent moves to two concrete distribution boxes and then into the drainfield through 6-inch perforated SDR-35 pipes secured to the filter bags with horseshoe spikes. A third distribution box is connected to one of the two main distribution boxes and runs to the four shorter drainfield lines.

The drainfields are covered with a fabric mesh and backfilled with sand. The tanks were covered with 18 inches of wood chips, and sod was laid over the leachfield for cold-weather insulation. A chain-link fence keeps campers away from the system.

Installation

Aside from getting to the island, the biggest challenges to installation were reconfiguring the drainfield to work around shallow rock ledges and keeping the drainfield footprint as small as possible to limit environmental impact. The Biomats are lightweight and easy to transport, as were the plastic tanks.

And Today

Mayers' patents have been approved and he is interested in developing his

businesses in keeping with the ebb and flow of the economic tide.

"The barge has become a floating billboard with our name and business painted across the side," Mayers comments. "Everywhere we go we end up with calls and more business, with a lot of the business being other than septic systems. For example, we had a job recently moving pallets of landscaping blocks to an island job site. The landscape contractor had to install a retaining wall and couldn't figure out how to get the material there until he contacted us."

"In fact, there are a number of lake communities that have contracted with us to haul their harvested weeds out of their lakes. There's no end to the possibilities," he said.

Mayers does about 30 installations per year, about one-third on islands or rustic lake properties. He has bought two barges and is working on a third for island pumping work. He has tailored his fleet of machinery to cross the water easily and leave no footprints.

Mayers expects to expand his pumping work with a recently designed skid-mounted 1,200 gallon vacuum tank and containment pan.

"It's easier for me to go in and pump systems than it is for others. In most cases I have the advantage because I can float in, drain the system and float out, not only for island properties but for lakefront houses as well. A lot of the lakefront properties have septic systems that are easier to reach from the water than land."

When he started going over the water in the year 2000, Joe found that homeowners were having trouble coordinating island system replacements. They might find someone with a barge but no knowledge of onsite systems. Or they may find an onsite installer with no means of getting to the work site. Mayers has come to the rescue.

Loading one of two 700 pound steel ramps used for loading the barge.

Rather than hunt for customers, Mayers usually piggybacks several jobs each time he sets out for an island. Lake associations let all homeowners know when he will be in the area. With several contracts in hand, and with extra work hauling lumber and debris from home building projects, or pumping systems, Mayers often can spend a few profitable months in the same lake.

Mayers works hard to limit impact on the natural beauty and water quality in inland lake regions. The rubber-tracked equipment helps. He also can use electric trolling motors to power the barge, thus eliminating the noise and exhaust from outboard engines.

He is gratified when he replaces an outdated septic system with a new conventional or alternative system, which treats waste more effectively and protects the environment.

He wants to concentrate more and more on his specialty. He sees no competition and wants to take advantage of the knowledge he has built over the years. He sees only growth in his niche as lake property continues to gain in value and concern increases for environmental quality on the lakes.



Mayers also sees growth in the custom barge business as he points out, "Based on the experience I've had with our current barge systems, I can design and build a barge system to fit virtually any application or environment. The transportability of this system and its ease of assembly make it a natural for many applications. Once at the launch site it takes about a day and a half to breakdown and set up."

Maybe you want to barge in on a new line of excavating... ▼

Portions of this article were taken, with permission from: National Onsite Installer, August 2004, Making Waves National Onsite Installer, September 2004, Barging In

How a Septic System Works!

If you are an owner of a home with a septic system, you should be aware of the process that takes place once you flush the toilet.

There are two parts to the average septic system. The first part is the septic tank - or holding tank. The second is the disposal field, also known as the leach field or septic bed.

Once you hit the flush lever on the toilet, the wastewater flows through the pipes in your home into a holding (septic) tank buried outside. The function of the septic tank is to trap settled solids, allowing the liquid portion of the wastewater to flow into the disposal field.

The wastes held in the septic tank are decomposed without air by naturally occurring bacteria.

Once the remainder of the liquid flows into the disposal bed, it gets purified aerobically as it filters through the soil back into the groundwater.

The disposal bed is typically composed of a network of laterals nestled in a layer of crushed stone, which is located on top of another layer of sand or bank run. The laterals distribute the effluent evenly throughout the septic bed and then seep through the sand or bank run to be purified before filtering back into the ground.