



An invincible champion lurks in the Pacific Northwest. Lewis County, Washington, is home to a custom SURVIVOR OTR truck scale like no other. Built to withstand the highly corrosive solid waste environment, where a seemingly endless stream of garbage trucks tests its mettle, this OTR is an augmented version of the already mighty Toughest Scale on Earth™. In the scale world, it is a legend.

OTR truck scales in similar environments typically feature beefy I-beams and a thick deck plate, which this model proudly incorporates—and takes one step further. The entire truck scale, including cover plates and load cell stands, are hot-dipped galvanized.

Galvanization is a special process that bonds molten zinc to steel, forming layers of armored alloy which shield the material from corrosion. Invented in India in the fourth century, galvanization was first used in the construction of the Iron Pillar of Delhi, which still stands today—nearly 1,700 years later. The process has dramatically evolved over the centuries.

Rudimentary galvanic paint was traditionally used to fortify metal until hot-dip galvanization was invented in 1742, revolutionizing the process by immersing metal in molten zinc to create a uniform coating. In 1772, Luigi Galvani made another technological leap forward. While performing scientific experiments on frog cadavers, he discovered that electricity creates unusual results. First observing a simple muscle twitch in frog legs when electricity is applied, Galvani broadened his experiments to ultimately discover the electrochemical process that occurs be-

tween metals. In 1836, modern hot-dip galvanization was patented, and named after Galvani. First, metal is cleaned with sulfuric acid and fluxed with ammonium chloride before being coated in liquid zinc at a temperature of 840 degrees Fahrenheit. This creates a strong, long-lasting bond between the metal and zinc, and completely insulates the metal from contact with the surrounding environment.

Before the galvanized OTR was installed, the Lewis County solid waste department was using a competitor's 20-year-old steel deck truck scale which had finally succumbed to the slow, steady march of time. Solid waste is a difficult material to handle, and Lewis County's equipment is expected to endure the test.

Collecting from both residential and business customers, the county has no way of knowing the contents of each garbage can or dumpster—and people throw away some pretty strange things. Usually, they're completely harmless; however, processing miscellaneous objects such as propane tanks, concrete highway dividers or objects containing chemicals can cause tremendous wear and tear on equipment. Heavy items create damaging collisions when loaded and transferred; combustible objects can explode; and chemicals from batteries, almost-empty household cleaning containers and everything in-between mix together for an acid-like cocktail (called "leachate") to attack equipment.

With no protective coating, the old scale was consumed by rust. Erratic readings and component lockups were becoming more



*A mix of solid waste chemicals, called "leachate," creates a highly corrosive environment.*



*The heavy-duty, galvanized OTR truck scale provides ultimate durability.*



*A gantry system enables the entire scale deck to be moved for routine foundation cleaning.*

“The amount of steel that’s in that scale is incredible. We joke that it would last 30 years without galvanization, so we estimate it’ll last exponentially longer with it.”

Steve Skinner, solid waste manager for Lewis County

frequent. It was time for an upgrade. To better serve the county, a scale designed for this environment, and to fit the existing foundation, was needed. Lewis County called Steve Orr, president and sales manager of Scales Northwest.

“Working with Steve and everyone at Scales Northwest was amazing,” says Steve Skinner, solid waste manager for Lewis County. “I’ve worked with other scale companies in the past, and Scales Northwest really knows the business inside and out. They were very professional and took care of all the measurements to make sure the scale fit our foundation. Ultimately, when the scale was installed, it fit perfectly.” Before installation, however, another integral component to extend the scale’s lifespan was put in place: a gantry system to move the scale platform for routine cleanout.

Track running along each side of the foundation was put in place. This allows a gantry crane to be positioned on each corner of the truck scale. Chain is attached to custom pick-hooks built into the OTR’s load cell pockets, and the entire scale deck is lifted and moved out of position for foundation cleanout. Every three months, the procedure takes place, and Lewis County has it down to a science.

“It only takes us two hours from start to finish,” says Bill Norwood, solid waste operations supervisor. “Because of the scale’s self-centering load cells, the procedure is pretty fast. When we’re done cleaning the pit, we can drop the scale back into position and it’s ready to go. There is no checking system we have to fiddle with. It just works.” Each SURVIVOR OTR features Rice Lake’s patented G-Force™ self-checking mounting system, which uses gravity to return the scale to center without check rods or bumper bolts. “Our old scale used canister-type load cells,” remembers Norwood. “We had to hold each load cell in place with a little pin while we tried to align everything. Rice Lake has a much better design.”

## Galvanized Facts

- When the Brooklyn Bridge was built, over 14,500 miles of hot-dip galvanized wire were used for its four main cables. Over 100 years later, the bridge underwent rehabilitation and the wire was in excellent condition.
- Hot-dip galvanized steel lasts longer today than it did 20 years ago. Because of environmental laws, our air is cleaner and less contaminated with corrosive emissions.
- Galvanizer’s kettles are set at temperatures ranging between 815° F and 850° F.
- Galvanizers can hot-dip galvanize a piece of steel that is larger than the kettle dimensions; it’s called progressive dipping.

Source: American Galvanizers Association

The entire system, consisting of two galvanized OTR truck scales and galvanized gantry tracks, was completed in the summer of 2015. The shining armor adorning the scales is a visual indicator of the durability that lies within. This durability is exercised on each load.

Because of the transfer process, the scales are subjected to more weight than dead load would indicate. When a truck dumps its contents on the “tipping floor,” located approximately 12 feet above the scales, a front-end loader pushes the solid waste to an opening in the floor. Beneath this opening, a container sitting atop the scale receives the payload. Those 12 feet might seem nominal, but the drop can create an impressive amount of velocity for heavy objects. When they hit the bottom of the container, a force far exceeding the weight (called “shock load”) is exerted on the scale. Then, an excavator compacts the material, creating an “aftershock.” It’s undoubtedly a job for the Toughest Scale on Earth.

Not everything from the trucks makes its way to the scale, however. Masters of repurposing, Lewis County salvages items they can use—from concrete blocks to decorative items. The blocks are used to build traffic lanes around the facility. Empty soda and water bottles create a greenhouse elsewhere on the property. Tin sculptures, rescued from their demise to greet visitors, decorate the estate. One man’s trash is another’s treasure, indeed.

To some, galvanizing a truck scale might seem like an extreme measure. Lewis County needed an exceptional solution for their environment. From leachate to shock loading, any scale would be put to the test. “The amount of steel that’s in that scale is incredible,” says Skinner. “We joke that it would last 30 years without galvanization, so we estimate it’ll last exponentially longer with it. That scale will still be here after I’m long retired.” Not every scale could withstand this environment—only a SURVIVOR. ■

## Galvanized for Greatness

Lewis County’s Galvanized OTR Specs

**Modules:** 4

**Material:** North American steel

**Deck plate:** 3/8 inch\*

**I-beams:** W8 x 48,  
8-inch construction for 12-inch profile\*

**Finish:** Galvanized\*

**Capacity:** 90 tons

**CLC rating:** 100,000 pounds

\*custom options

