

Load Rail®

Engineered Solution for High-Capacity, Precision Load Handling

Engineered steel rails are the high-performance choice for companies seeking to improve efficiency and reduce the cost of heavy-duty load handling in a variety of applications, including the harsh environments for chemical manufacturing, mining, shipbuilding and steel and glass mills.

As many as 90 percent of manufacturers fabricate their own load-handling solutions by welding angle iron, sheet steel and I-beams together. These fabrications are used to guide raw material, components and finish products through their production facilities. Other fabricated rails move architectural elements, scientific and medical equipment — sometimes even people.

These home-built solutions are often justified as less-expensive options, perhaps making use of internal fabrication capabilities. While high-performance materials may initially be more expensive, total cost of ownership should be evaluated when planning to implement a new material handling system. A close examination will reveal that engineered rail actually reduces costs for material and repairs. Businesses can avoid significant production downtime because engineered rail is more reliable, extends the life of load-carrying rollers that move over it, and requires less time and expense to repair or replace.

■ What is Engineered Rail?

Engineered rail provides consistent straightness. The rail is machined to tight tolerances removing side loads that cause wear on rollers and bearings and the rail itself. Engineered rail comes in standard lengths and with standard spacing for mounting holes. Osborn Load Rails®, for example, are made from 1045 steel and come in three standard profiles:

- Engineered rail is available in lengths up to 12 feet, enabling manufacturers to standardize load-carrying solutions.
- Mounting holes are spaced every 12 inches, which speeds installation, repairs and replacements while reducing the fluctuation of the rail material under load compared to field-drilled holes.
- Custom rail lengths and hole locations are available to meet unique customer requirements.

■ Industries

- Architectural (awnings, doors, roofs)
- Automotive assembly
- Cement and concrete plants
- Fiberglass manufacturing
- Food and beverage production and bottling
- Foundries
- Medical equipment and facilities
- Metal processing
- Mining
- Pharmaceutical
- Pulp and paper
- Sand and gravel
- Scientific (satellite arrays, telescopes)
- Shipbuilding
- Steel mills
- Wood products

■ Evaluating Engineered Rail vs. Other Solutions

The hardness of the rolling surface is critical to durability and quality. Rails should be made of steel that's harder than the material used for the rollers and roller bearings. Rail is typically the more expensive component and rail repairs or replacements are more difficult. When the rollers and bearings are made of the harder material, the rails wear out faster than the rollers or bearings.

Osborn solves this problem by producing its Load Rail® with a standard hardness up to 65 HRC while the standard hardness of Osborn Load Runners® rollers is up to 60 HRC. For severe environments, chromium plating increases hardness up to 78 HRC to protect the load rail and also reduces the coefficient of friction leading to smoother, easier operation.

Heat, force and contamination all wear rail. Engineered rail is precisely cut and enables consistent movement, thus eliminating stresses that wear down and lower the rail over time. The smoothness of the rail surface is among the critical factors to consider.

Side-by-Side Comparison

	Angle iron, sheet steel, I-beams	Osborn engineered rail
Material	Inexpensive steel	Hardened 1045
Hardness	67-83 HRB (Standard A36 angle iron)	Up to 65 HRC
Straightness	Varies	0.002" per foot
Surface finish	Varies	32 micro inches
Installation	Custom welded fabrication	Standard holes for bolts to mounts
Lifespan	Unpredictable	Load Rail® up to 10X Load Runners up to 4-5X
Rail ends	Saw cut	Machined to eliminate gaps between rails

"Even though inexpensive steel rails may appear to have a smooth track surface, as the rollers are going over it, they're going to pick up all the peaks and valleys that the rail have on it," says Scott Scheider, Load Runners Product Manager.

"As the rollers go over the peaks and down into the valleys, there's a lot of acceleration that causes wear in the bearings of the rollers. Having the better finish of engineered rail leads to smoother rolling and the rollers are going to last longer."

Another key quality factor is the smoothness of the rail ends. Rail solutions fabricated on site typically are saw cut. Engineered rail is precision machined up to 64 micro inches so that the end butting fits rail mounts tightly together.

"When you butt the unfinished ends of the inexpensive steel up against each other there will be gaps and you will have a jump for the rollers," Scheider says. "When the roller comes back down it will start indenting the end of the rail and also start wearing out the roller. When you use engineered rails with machined ends, they fit together tightly and you have a smooth transition."

How Precision Rail Lowers Total Cost of Ownership

Many businesses choose inexpensive rail solutions based on the initial purchase price of the rail material. When building the business case for investment in rail, it's important to also evaluate costs that will arise over the entire lifecycle of the load-hauling system.

That analysis will reveal that using engineered rail makes rollers and the rail last longer, thereby lowering overall costs for repairs, material replacement, production downtime and disruption along with labor costs. Inexpensive rail solutions accelerate the wear of roller bearings by as much as a factor of 10. Businesses seeking to increase operational efficiency also can benefit by choosing engineered rail.

Maintenance and repairs are easier using standard rail lengths that can be quickly unbolted and replaced with rail of the same length with standardized mounting holes. The replacement rail can be kept in stock or ordered from distributors or directly from Osborn. This eliminates variability in rail material and doesn't require onsite fabrication and welding for custom fitting. At the same time, engineered rail eliminates the need to pull welders or other workers from other tasks for time-consuming fabrication.

Why You Should Invest in Rail

Choosing the right rail solution for your application can make or break your bottom line. Often the unsung hero in the application, engineered rail plays a significant role in the overall success of any load-moving process. Properly specified, rail optimizes line speed and product handling, regardless of material run or machinery used.

If you're involved with product selection, operating parameters or sourcing, contact the Osborn team for support throughout the entire design, specification and purchasing process.


Load Runners®

www.loadrunners.com