



# Value of Track Bolt Tightening Maintenance for Rail Users



# Track Construction & Maintenance

**Railmark Track Works Inc.**, a Railmark subsidiary, performs track construction and maintenance in US markets where the company either has an operating railroad or one of its Railmark Rail Service Centers. Railmark's Rail Service Centers are designed to perform track work, railcar repair, and rail logistics from the same facility using the same local teams. In addition, Railmark Track Works has two rail product sales divisions, ECOrail® products and Railmark Technologies, specializing in products and technologies that enhance railroad operations.

Railmark Track Works provides full-service track construction, maintenance, and inspection services to the railroad industry, industrial rail users, and governments in the United States and around the globe.



Railmark Track Works personnel conducting track inspection and repair on an industrial track

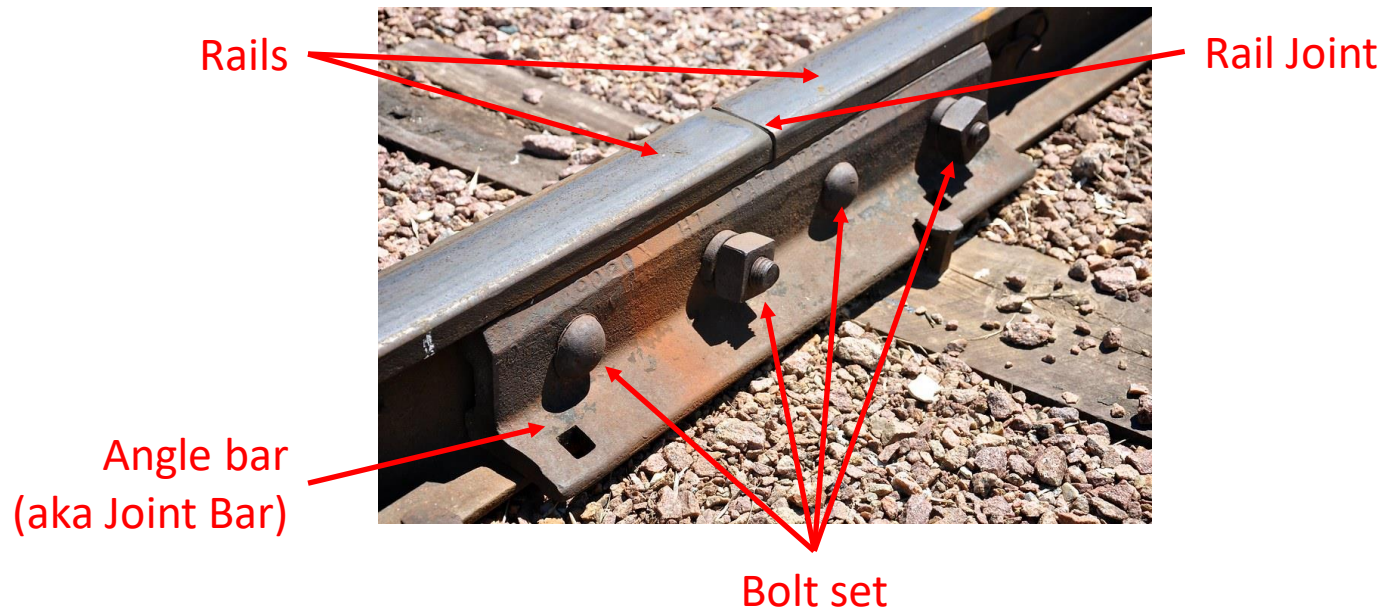


Railmark Track Works personnel preparing for maintenance work



# Rail Joints

Industrial rail tracks in the U.S. have *jointed* track, meaning that standard 39-foot length rails are connected to each other with a *rail joint*. These joints are staggered and consist of two *angle bars* (aka joint bars), fastened together with track *bolt sets* consisting of a specially designed bolt, nut and lock washer. The purpose of the rail joint is to hold the two ends of the rail in place and act as a bridge or girder between the rail ends. The angle bars prevent lateral and vertical movement of the rail ends and permit the longitudinal movement of the rails for expanding or contracting.



## Rail Joints (cont'd)

The **rail joint** is considered to be the **weakest part** of the track structure.<sup>1</sup> During rail use, the bolts and the joint will become loose and the bolts will require tightening.

Ignoring loose bolts leads to several joint defects which can cause the rail to spread or break, leading to joint tie defects. All these joint defects will contribute to conditions where derailments could occur.

Rail joints require periodic inspection for damage and missing or damaged track bolt sets and angle bars. Track bolts require tightening to maintain the correct torque and ensure a proper rail joint. Rail joint components that are damaged, missing or worn should be replaced.

The bolt inspection and tightening process should be considered an on-going, preventive track maintenance function. Inspection frequency should be matched with the amount of track usage.

Tight bolts contribute to tight rail joints which help maintain proper track gauge. Properly tightened track bolts prevent unnecessary rail movement which could cause derailments and accelerate cross tie wear at the rail joints.

<sup>1</sup> According to American Railway Engineering and Maintenance-of-Way Association (AREMA)

## Example of a Railmark customer's loose track joint before tightening



Loose lock washer

Less threads visible in bolt on left compared to bolt on right, indicating a loose nut.



## Example of a Railmark customer's track bolts after tightening



The same Railmark customer's track bolt sets after bolt tightening.

Note the increased number of exposed threads after proper tightening, indicating the degree of bolt looseness in its previous condition.

# Railmark's Track Program Is Comprehensive

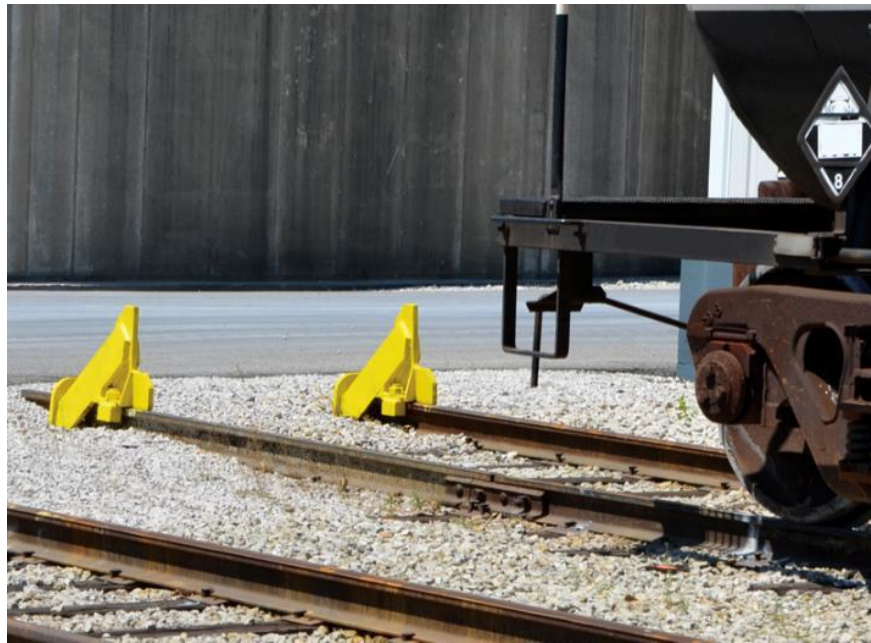
Proactive track maintenance starts with Railmark's thorough certified track inspections. Initial inspection identifies the technical features of your rail facility and its current compliance with OSHA, railroad industry safety standards, your serving rail carrier's specifications, HAZMAT compliance, state industrial rail use regulations, and the identification of any outdated rail components. Your rail volume usage is also considered.

Railmark's inspection covers **9 Inspection Points:** *Tie Condition, Track Gauge, Track Joints, Rail Condition, Roadbed—Ballast & Cross Level, Vegetation, Track Fixtures (including track protection), Drainage, and General Operations.*

Railmark then presents written recommendations. Unlike our competitors who want you to perform all the work at once, we present recommendations in **4 Work Categories:** *Emergency issues* (work that has to be performed now due to safety or derailment conditions are imminent); *Work to be performed in 1-12 months*; *Work to be performed in 13-24 months*; and *Work to be performed in 25-36 months*. Railmark's category approach ensures you are not caught off guard and most of the maintenance can be scheduled and budgeted.

# Industry Rail Operations Are Regulated

Whether it is federal OSHA, state OSHA, or another regulatory agency, an industry's railroad track facilities are regulated. Your connecting railroad will also have conditions that must be met before providing service to your facility. Railmark Track Works will keep you in compliance and, above all else, will make sure your rail facilities are safe. Our documented and certified track inspection report is a start to proactively managing the maintenance to your rail facilities.



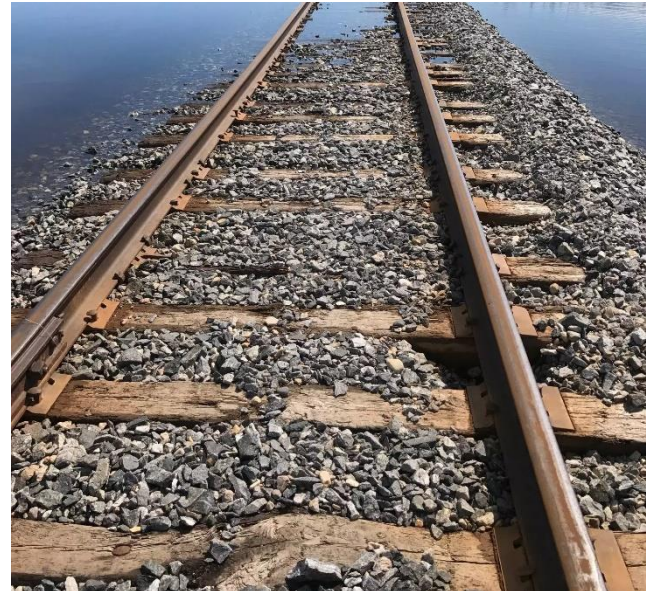


# Don't Let Small Track Defects Become Large Problems

Small track defects can lead to larger problems. Loose or defective bolts and deteriorating cross ties will lead to weakened joints and spreading gauge that will create derailment conditions. You have a lot riding on your rails and your tracks need the same proactive maintenance attention as any other piece of equipment in your plant.



Damaged or defective bolt sets and joint bars will cause track misalignment and create conditions for potential derailments and further maintenance.



Damaged and defective cross ties and improper roadbed rail ties are a big safety concern in railroad maintenance and can lead to larger track operating problems.

# Don't Let Small Track Defects Become Large Problems



Overgrown vegetation, fouled ballast, and poor drainage combine to contribute to a weakened roadbed, increased cross tie deterioration, and increase safety hazards for the switch crews.



# Don't Let Small Track Defects Become Large Problems

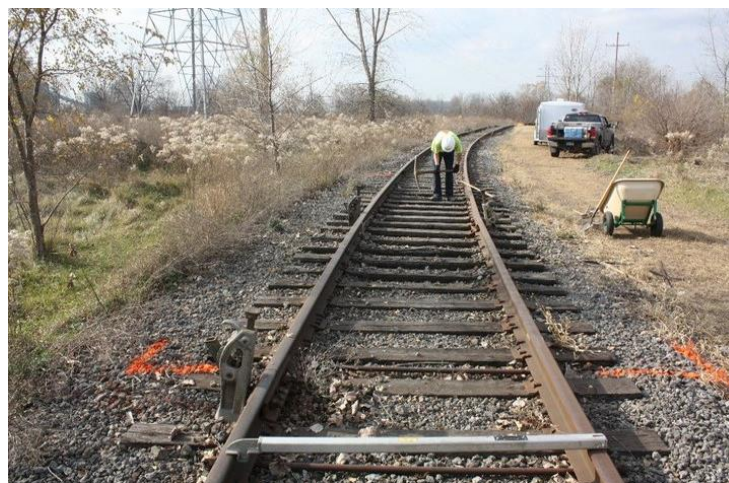


Track misalignment, worn or damaged turnouts, and poor roadbed conditions can be prevented with regular track inspection and maintenance, preventing potential derailments.



# Importance of Regular Track Maintenance

- ✓ Regular track maintenance is necessary to keep operations moving smoothly, safely, and proactively prevent costly derailments.
- ✓ Small, seemingly insignificant issues will develop into large scale problems.
- ✓ The financial cost of cleaning up just one derailment and repairing the track and equipment damage can potentially fund years of proactive track maintenance.
- ✓ Railmark's programs are easily budgeted and planned as opposed to our competitors who would press that all work be performed at once. Railmark will never compromise safety but will recommend spreading out the cost of maintenance and rail facility upgrades based on customer needs and budget.
- ✓ The strategy is simple: a certified track inspection, followed with a maintenance plan that is matched to the customer's operation and track usage.



Railmark Track Works personnel conducting track inspection and addressing maintenance details.



[www.railmark.com](http://www.railmark.com)

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