

Norfolk Southern Continuous Welded Rail Replacement

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Sharonville, Ohio

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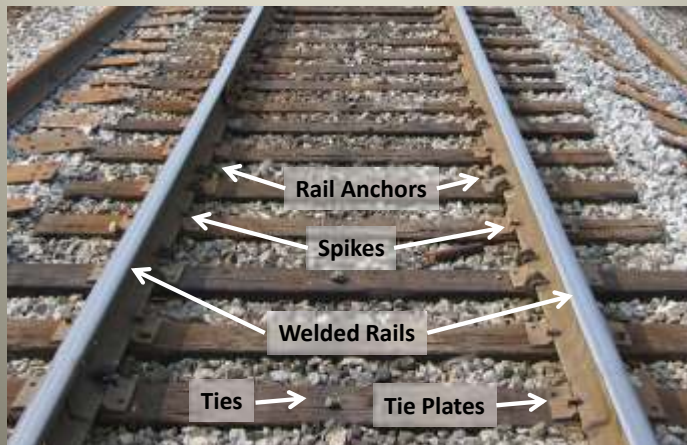
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Introduction

- Strong interest in prototype railroads for 75 years
- Noticed new strings of welded rail at the Hawk Rd crossing June 6 - MOW equipment train to showed up one month later
- Flexible work schedule at nearby GE allowed time for detailed documentation of process
- NS personnel were tolerant of my activity

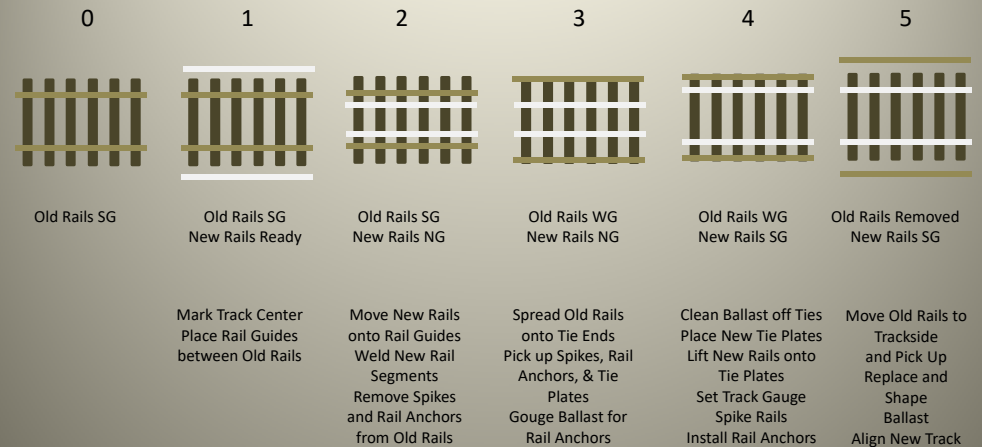
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Basic CWR Track Structure



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NS Dual Rail Replacement Steps



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Ribbon Rail String Data

- Length: 1320 ft (1/4 mile)
- Longer lengths are welded on site using a flash-butt welder truck
- Rail weight designation: 136 Lb (per yard)
- Weight of one string: 30 tons
- Rail Train Capacity: 32 – 40 strings (4 – 5 miles of track)
- Ribbon rail is amazingly flexible

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Rail Train in Sharonville Yard



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Rail Winch Car with Rail Positioners



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Rail Winch



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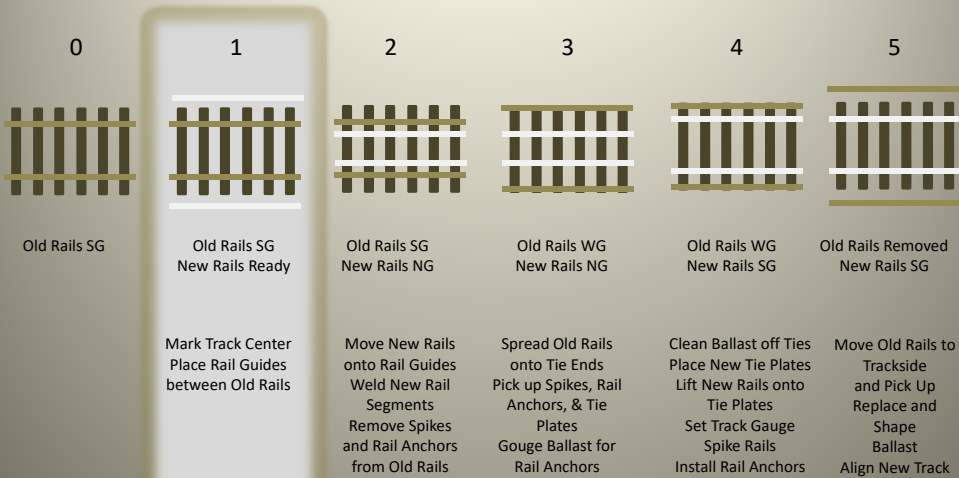
Movable Rail Positioners



Rail Handling Cranes



Rail Replacement Steps



Ready for Replacement



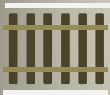
Rail Replacement Train



Ready for Work



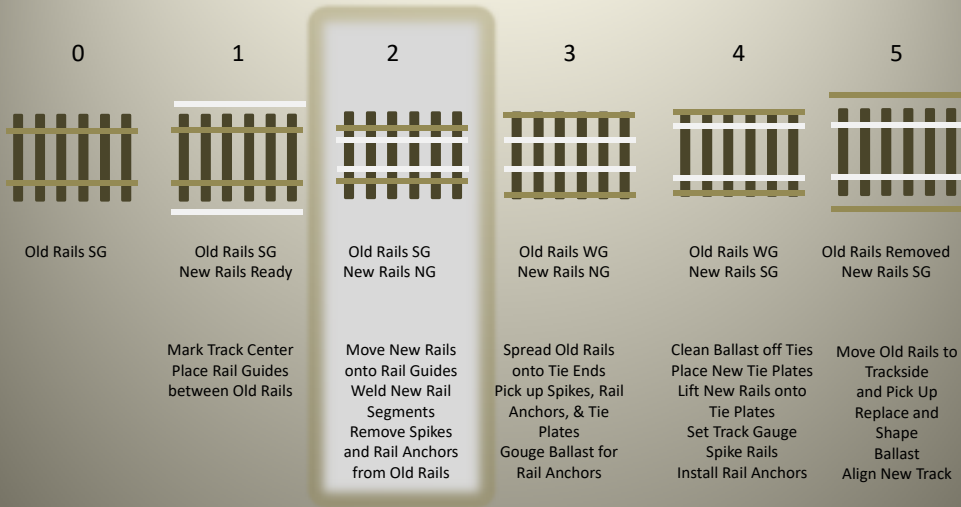
New Rail Guide Installation



New Rails on Rail Guides



Rail Replacement Steps



Moving New Rails onto Guides



Moving New Rails onto Guides



Crowbar Position Adjustments





New Rails on Guides



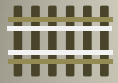
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Big Clamp Rail Positioner



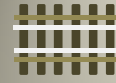
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Flash Butt Rail Welder



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Rails Prepared for Weld



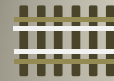
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FB Welder In Action



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Completed Weld



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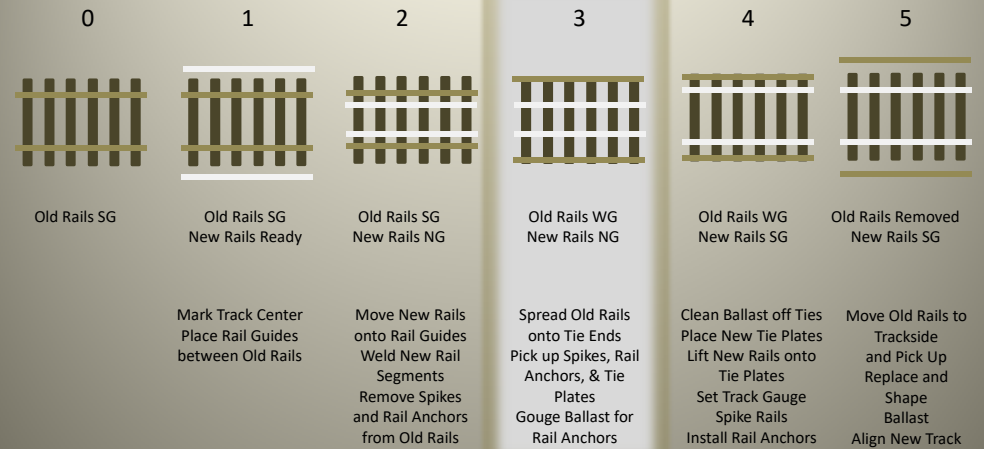


Spike Pullers

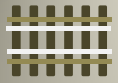


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Rail Replacement Steps



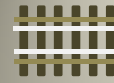
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NS's Rail Moving Process



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Spreading the Old Rails



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Magnet Wheel Scrap Scavenger



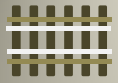
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Spike & Rail Anchor Scavenger



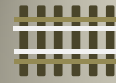
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Old Rail Spreader



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Loading Rail on Spreader



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Positioning Rail from Spreader



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Tie Plate Scavenger



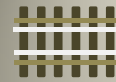
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Trailing Tie Plate Scavenger



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Tie Plate Scavenger in action



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Rail Spreading Trio Up Close



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Spike Hole Plug Insertion



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Ballast Gouging for Rail Anchors



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Ballast Gouger Mechanism



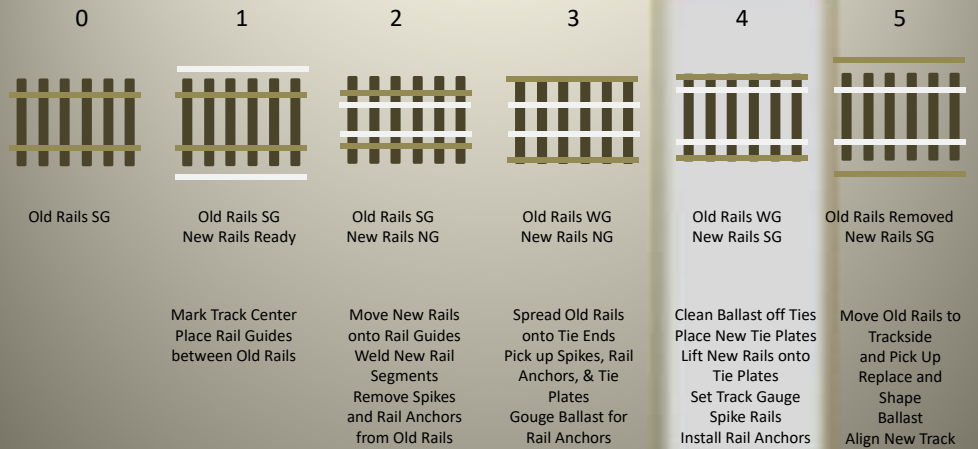
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Result of Ballast Gouging



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Rail Replacement Steps



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Tie Cleaner for Tie Plates



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Tie Plates Hand Placed



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New Rail Spreader



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New Rail Spreader



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New Rail Spreader Finished



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Tie Plate Final Positioner



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Tie Plate Final Positioner



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Tie Plate Crow Bar Tweaks



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Rail Heaters (not needed)



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Set Gauge & Spike #1



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Set Gauge & Spike #2



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RC Vibratory Tie Leveler



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Left & Right Rail Spiker



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Manual Gauge Check



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Spiking Completed



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Rail Anchor Installer



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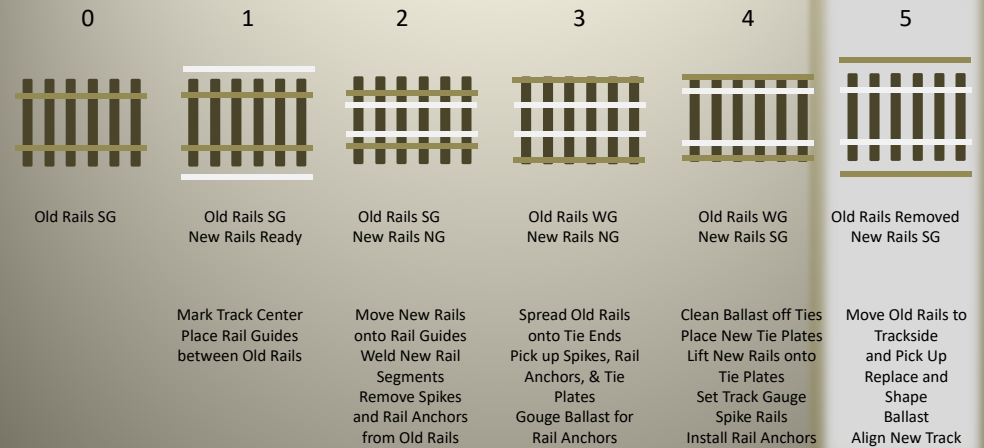


Finished Track Prior to Ballast Replacement and Shaping



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Rail Replacement Steps



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Track Alignment Machine



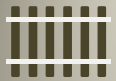
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Track Alignment Light Projector



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Track Alignment Adjuster



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Track Adjustment Tools



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How NS Manages Thermal Expansion

- New rail installed in hottest period of year
- The rest of the year the rails attempt to shrink
- A ¼ mile rail string installed at 90 deg F would shrink 9.6 inches at 0 deg F - if it were free to move
- Rail Anchors lock rails against ties and limit rail movement to a few thousands of an inch at each tie
- No large scale rail movement is allowed so rail kinks are prevented

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Model MOW Equipment

www.riograndemodels.com



<http://www.customfinishingmodels.com/Maintenance.pdf>



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Rail Anchor uses around the home



<https://railroadware.com/category/decor/kitchen-and-bath/>

Questions?