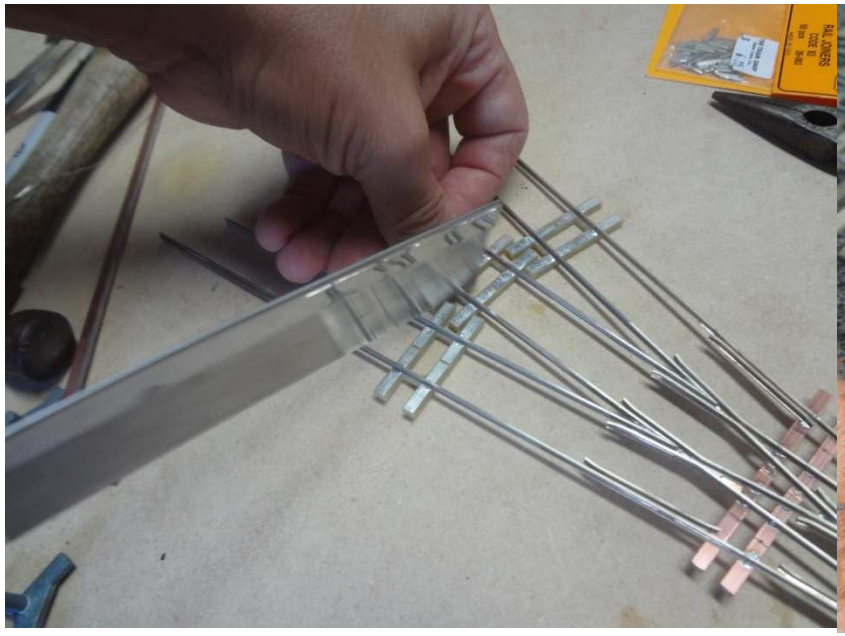
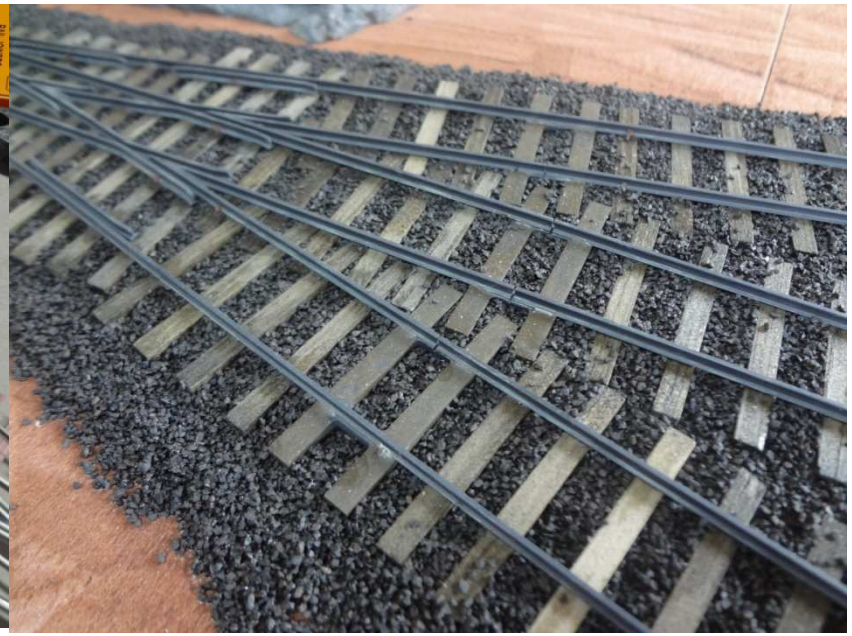
Novel Method for Gapping Rails

Wayne Perrier





My Dad was a “Real Engineer”

Something Completely Unrelated

The maze of tracks at King's Cross Station, London

4-way switch → it's real!

Where do we need to gap rails?

- After all (metal) Frogs
- Between Points and Frogs or Frogs and Frogs (esp for DCC)
- At Balloon Tracks and Wyes
- Between modules (for isolation)
- At Special Trackwork (diamond crossings, slip switches, etc)

What was the problem I was trying to solve?

- When I built my On30 module with handlaid track and wooden ties I gapped my rails using “traditional” methods.
- I actually built the gaps in-place out of discrete rails rather than cutting gaps after the rail was laid.
- Some gaps I tried to insulate with paper, others with styrene. In all cases I tried to keep the gap size to a minimum for the sake of realism.

What was the problem I was trying to solve?

- I found that after a few years, I was having trouble with gaps opening up and closing.
- In some cases a direct short was happening, which was very troublesome to debug when my modular group set up at shows (especially when I wasn’t there!).
- I also started having some alignment issues especially on curves.

“Traditional” Methods of Rail Gapping

Leave a gap between rail pieces

- Simply put two separate pieces of rail down, whether flextrack or handlaid (spike on both sides of the gap).
- Potential for kinks on curves and at switches.
- There is no relative alignment between adjacent rails. Gap can open or close as benchwork / rails expand / contract.

“Improvement” – use insulated rail joiners

- Gap won’t close – this is good
- Gap could open substantially
- No lateral rigidity – gauge can change
- Potential for kinks on curves
- Plastic railjoiner looks terrible
- Not practical for smaller rail sizes due to flanges hitting.

“Traditional” Methods of Rail Gapping

Leave a gap; fill with epoxy

- No rigidity to rail alignment
- Epoxy can detach over time
- Messy and time-consuming

Insulate with paper or other non-conductive spacer

- Gap generally won’t close – this is good
- Gap could open substantially
- No lateral rigidity – gauge can change
- Potential for kinks on curves

None of these methods worked for me

I literally had a 3AM “aha!” moment !

The Solution

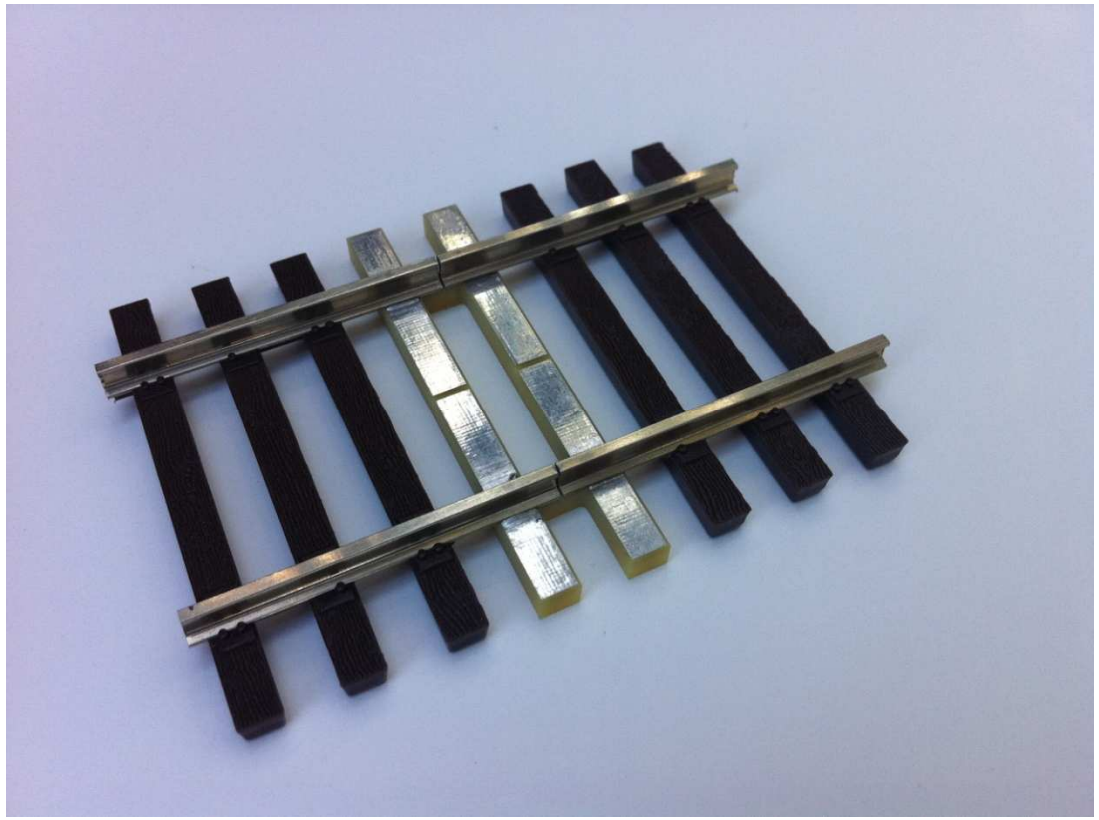
- Solder the rails down to a rigid substrate
- Shape the substrate to take the place of 2 or 4 railway ties
- Cut the gaps after soldering, to guarantee permanent alignment in all directions.

The Solution

- I googled, only to find that no one made anything like this.
- I had a friend make some units at home on his milling machine and did some experimenting.
- I handed some out to my modular group and members encouraged me to make more of them, and eventually to go into business offering them to other modelers.

The Solution : Introducing the Gapmaster

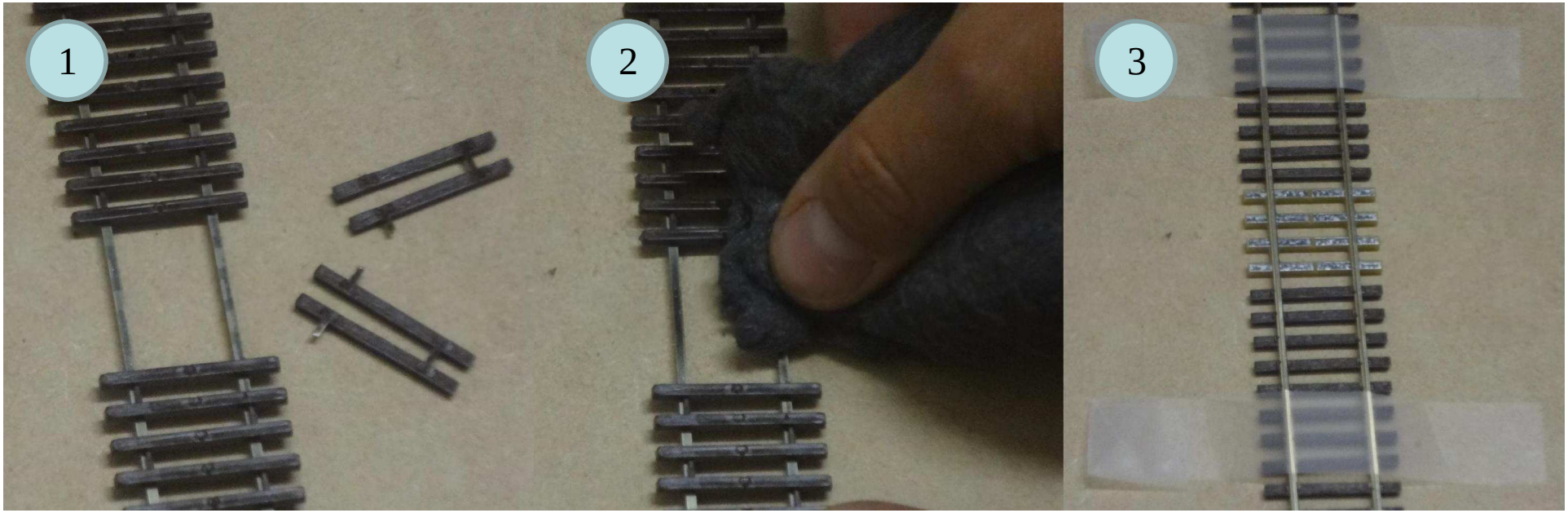
- Precise, narrow gaps
- Rails always in perfect alignment
- Visually unobtrusive, mechanically robust
- Installs in minutes -- EASY



Suggested Tools

How to Install the Gapmaster

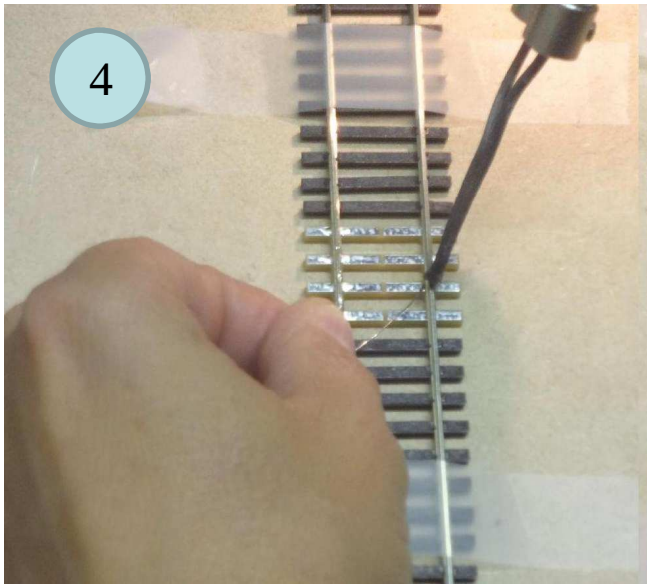
- HO Code 83 Flextrack shown

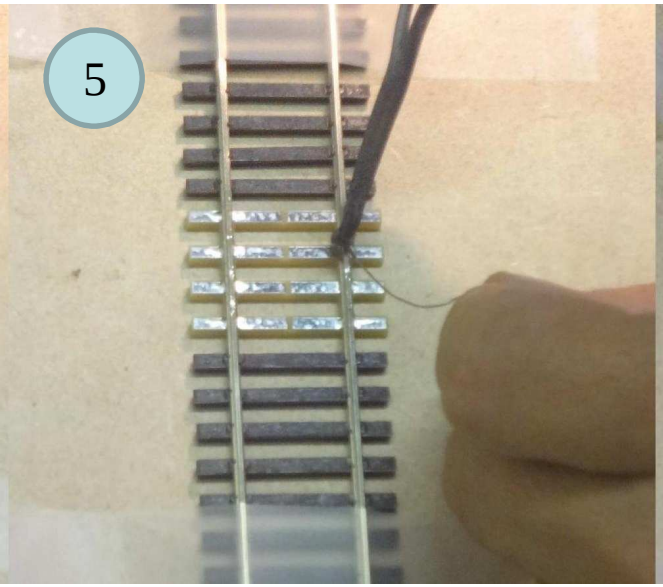


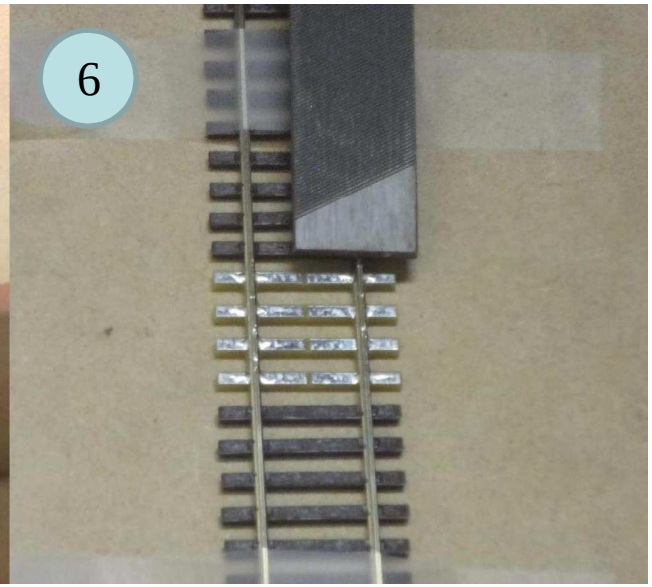
- Remove 2 or 4 ties
- Clean rail underside with #0000 steel wool
- Place Gapmaster into position.
- Apply tape if desired.

How to Install the Gapmaster

- HO Code 83 Flextrack shown







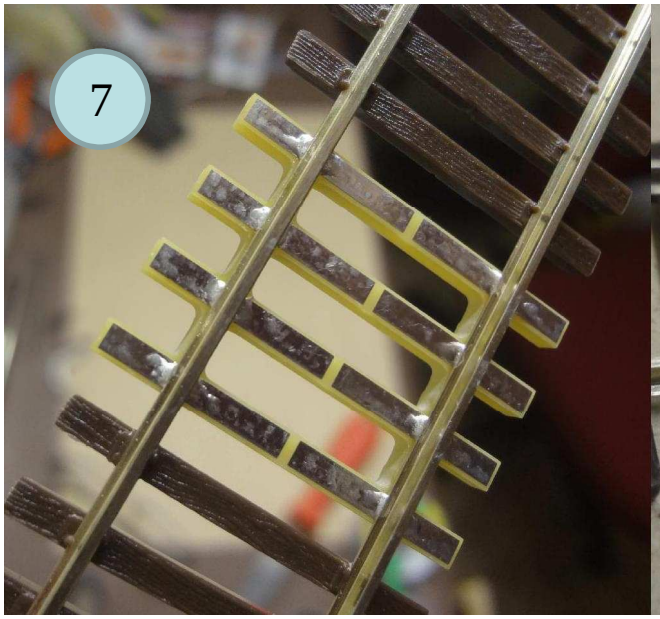
- Heat top of railhead with Weller soldering gun

- Apply fine 0.025” rosin-flux silver-bearing solder where rail base meets Gapmaster metal top.
- Repeat for all ties

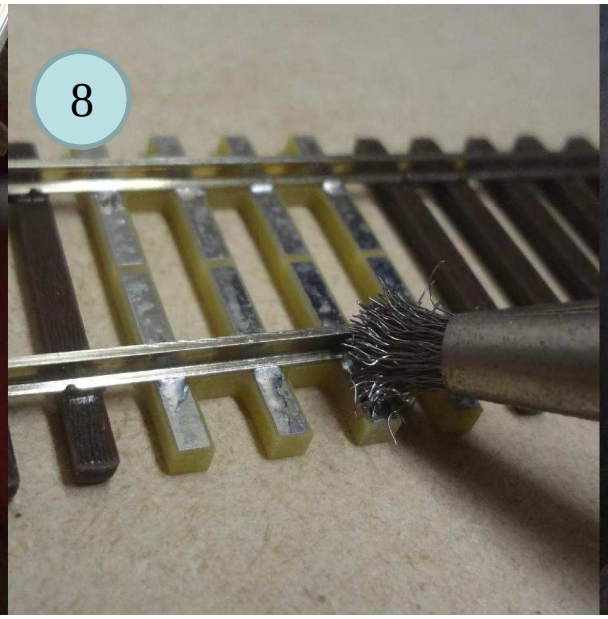
- Strike any solder residue off of railhead with flat file.

How to Install the Gapmaster

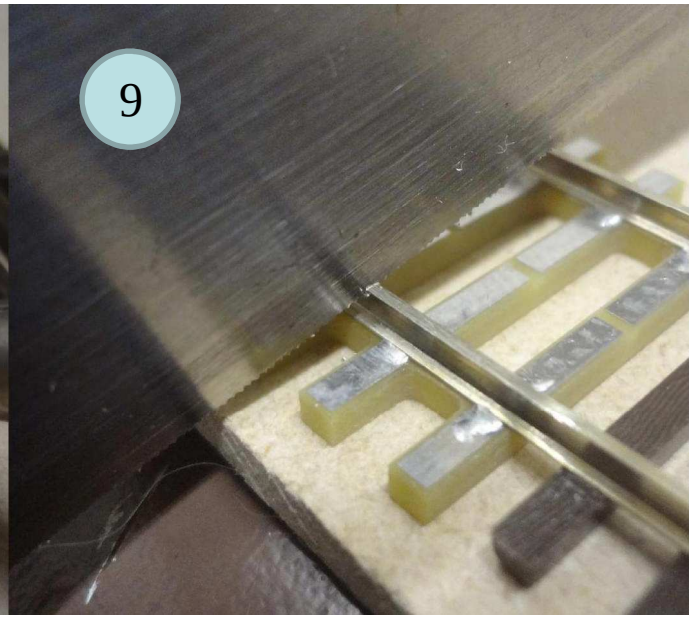
- HO Code 83 Flextrack shown



- After soldering done.



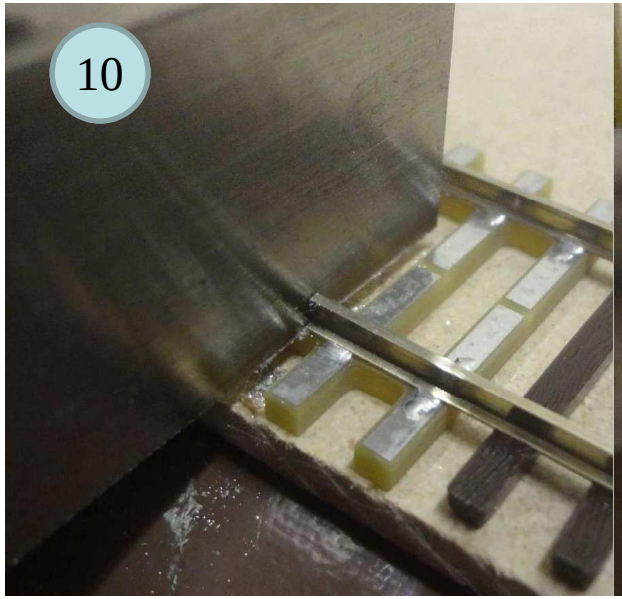
- Clean up soldered joints with steel wool and or scratch brush.



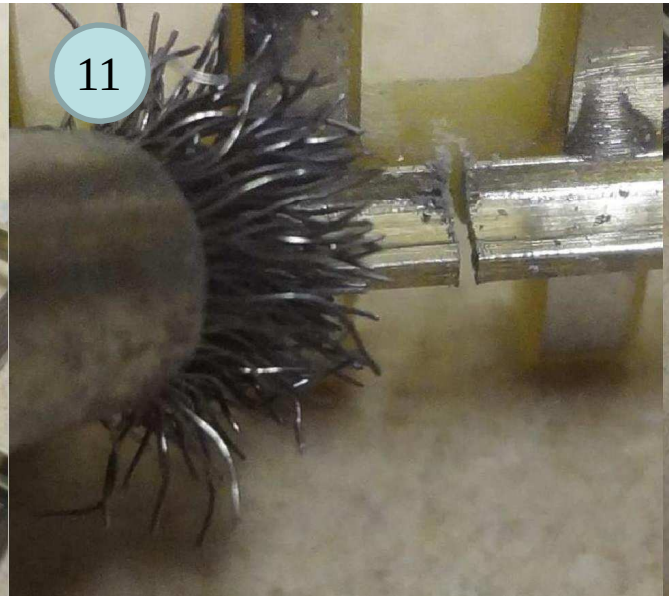
- Cut gap(s) with X-Acto #239 razor saw, held firmly.

How to Install the Gapmaster

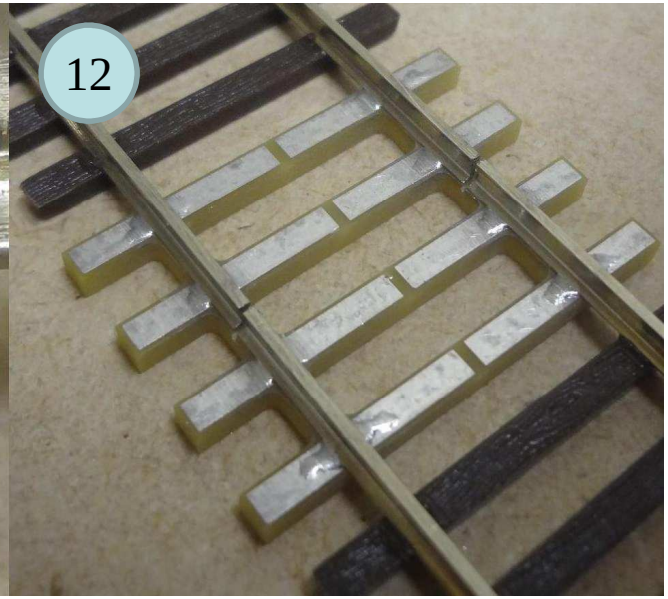
- HO Code 83 Flextrack shown



- Complete gap(s) by sawing through rail base and slightly into composite substrate.



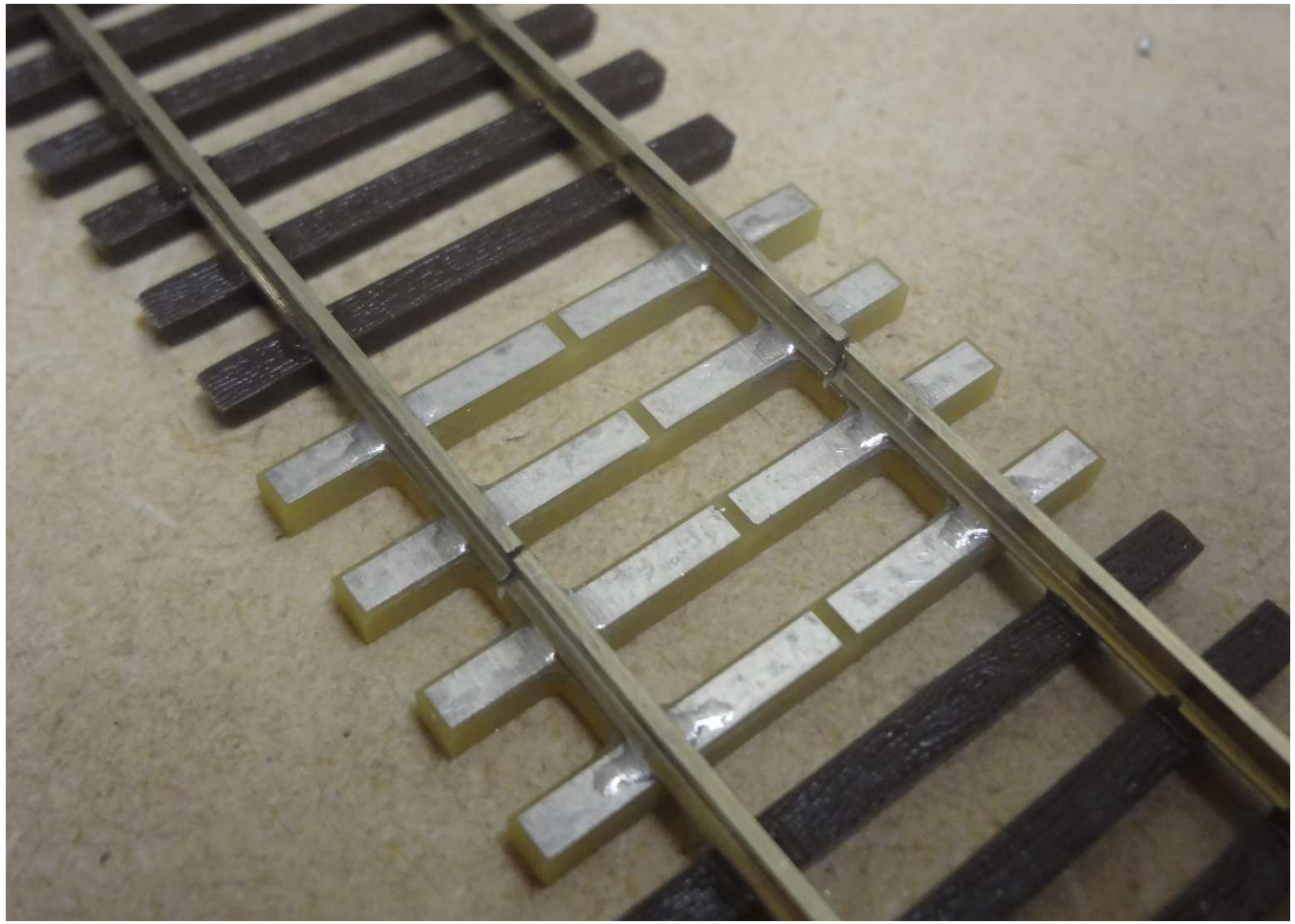
- Remove any burrs using scratch brush.



- Complete! Install on your roadbed.

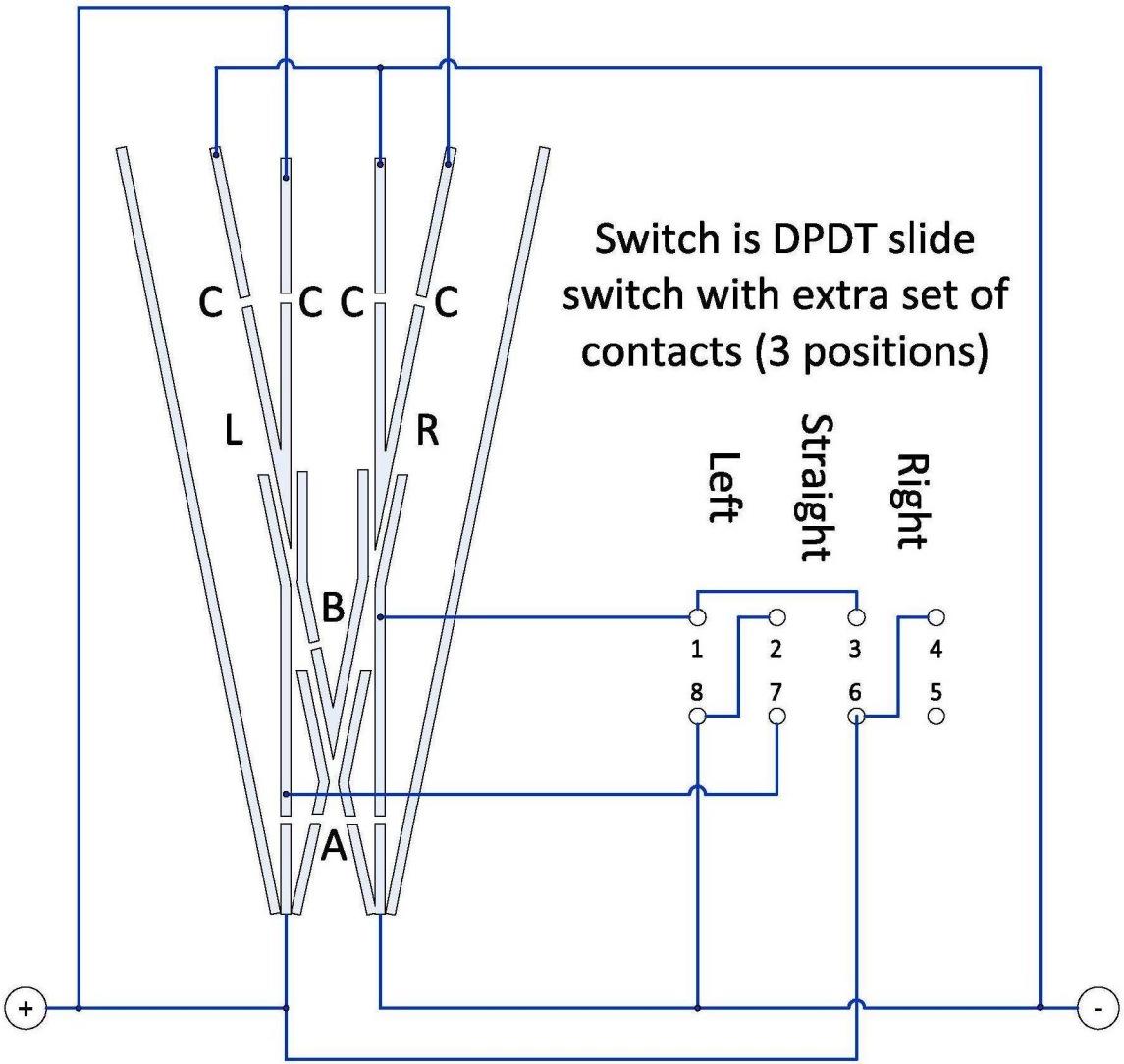
Completed Installation

- HO Code 83 Flextrack shown



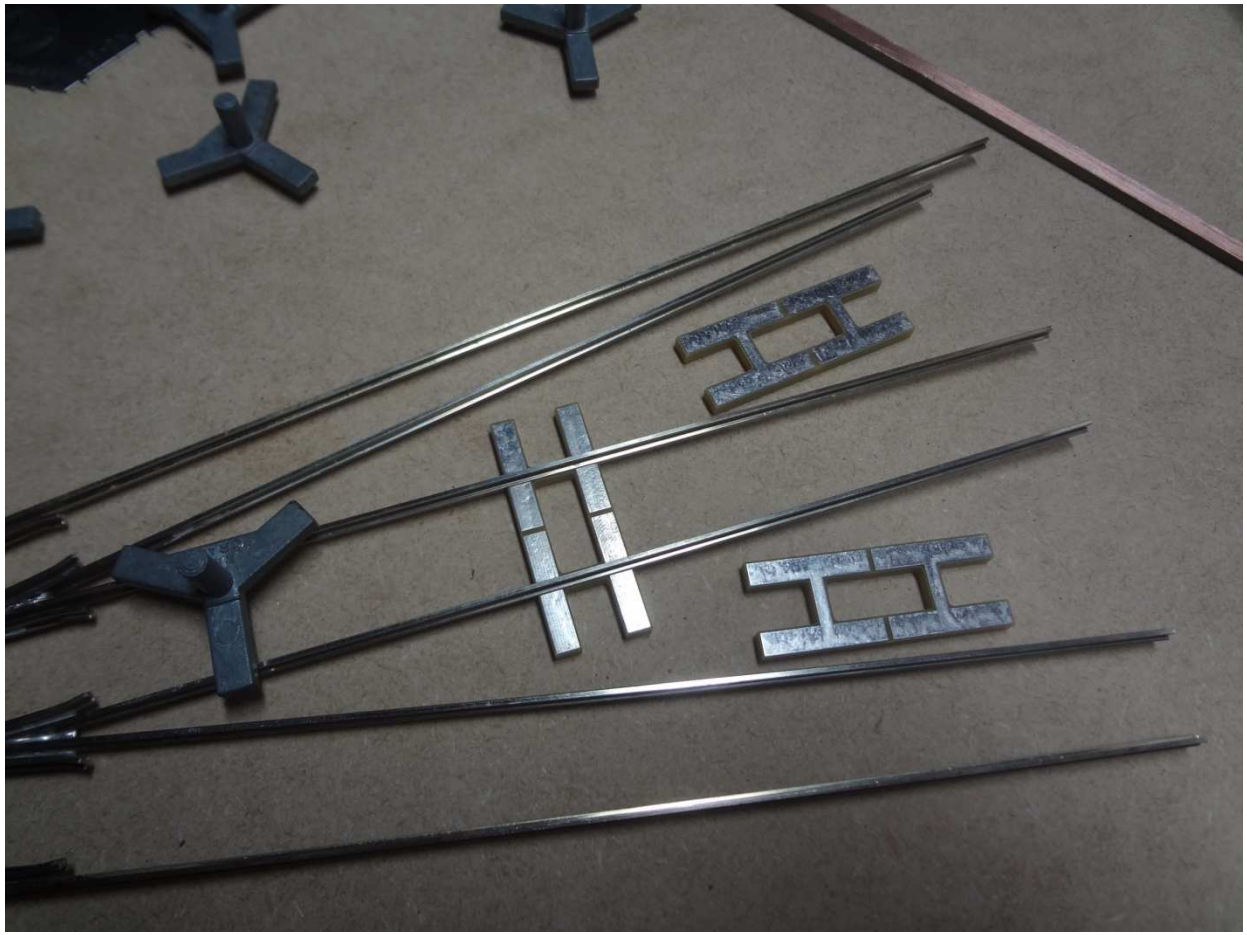
Gapping/Wiring a 3-way stub switch

- Gaps labelled C are required after frogs
- Good candidate for Gapmasters
- Similar situation for all switches



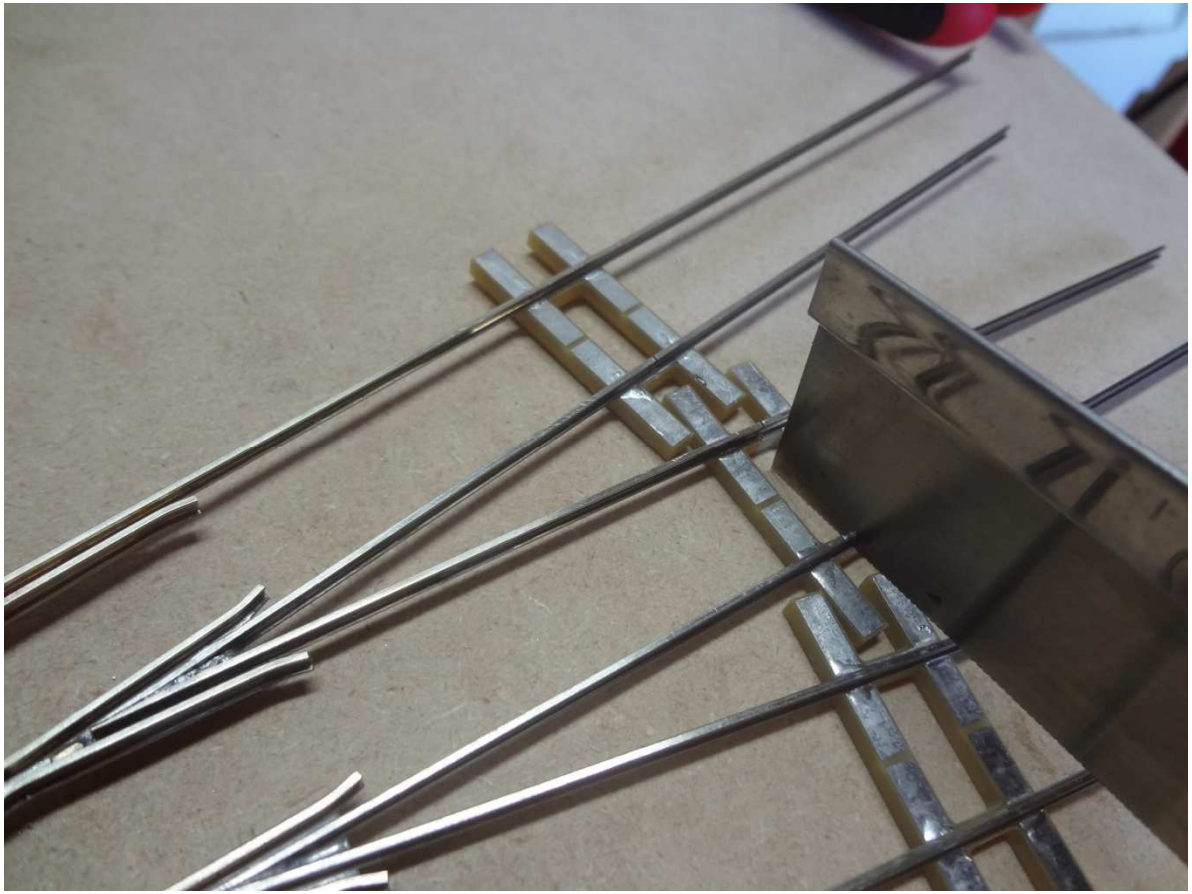
Gapping a 3-way stub switch

- Place Gapmaster
- Solder and cut gaps as before



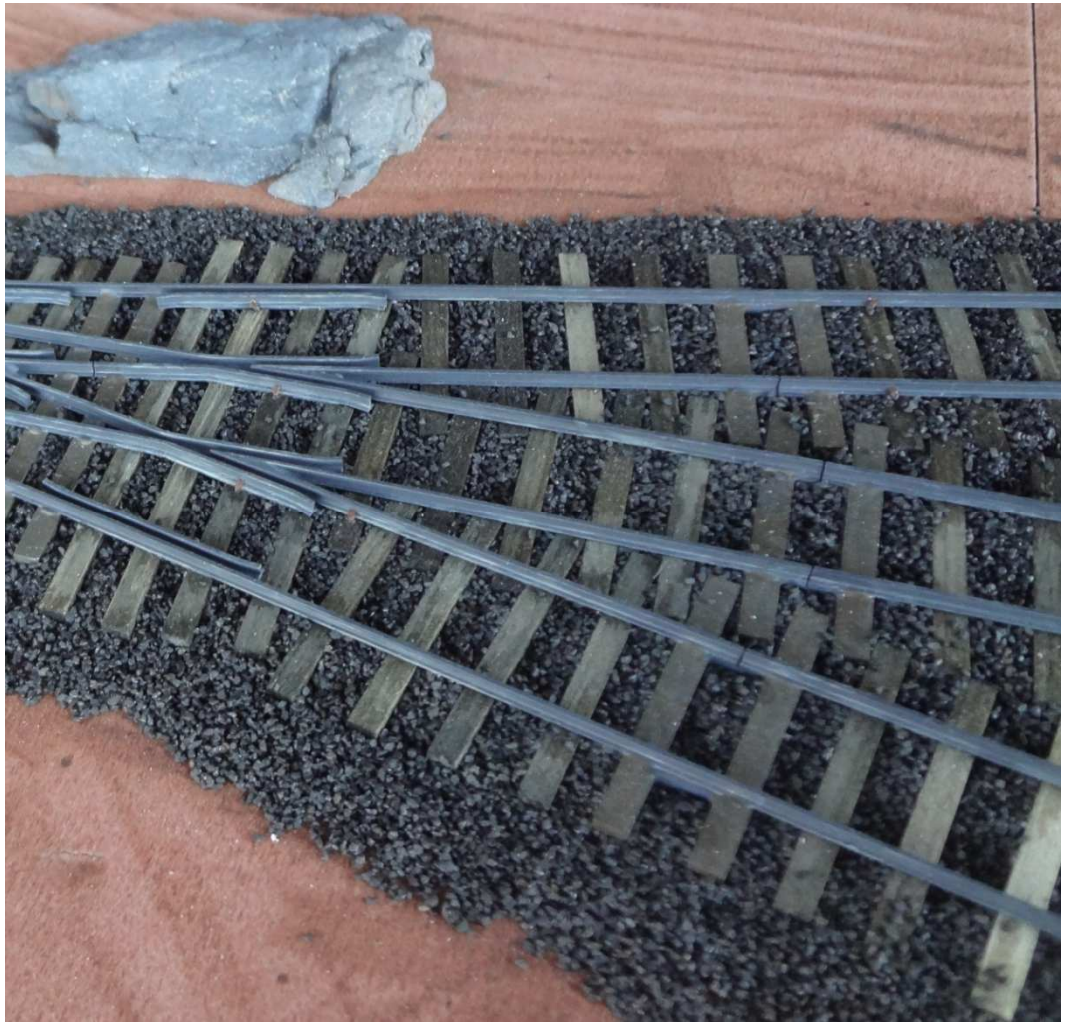
Gapping a 3-way stub switch

- Lather, rinse, repeat.



Gapping a 3-way stub switch

- After painting and ballasting, appearance is good.

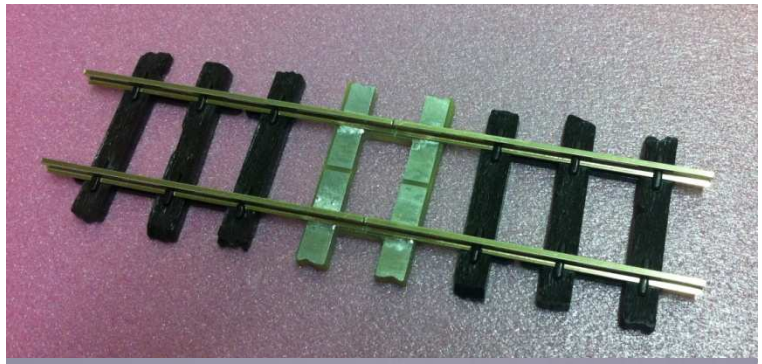


O Versions

GM010 with 9 foot ties, shown with ME flextrack

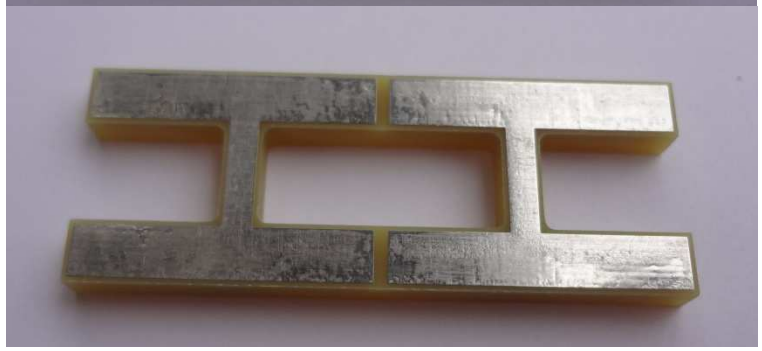
GM001 with 8 foot ties, shown with handlaid

O Narrow Gauge Versions



GM002 for Peco On30

GM004 for On3 handlaid 6 foot ties



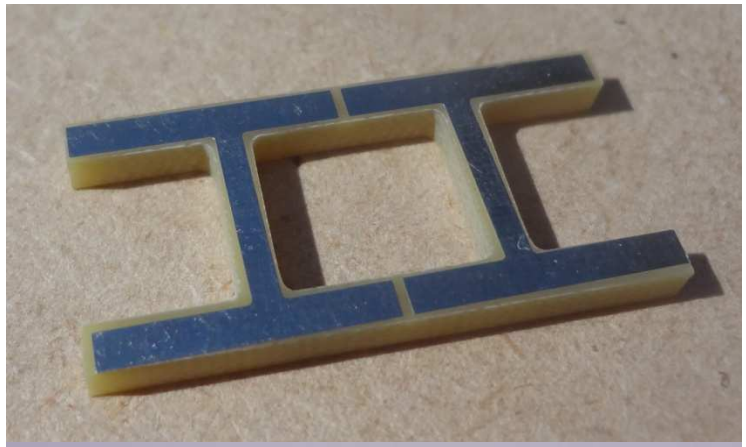
GM005 for On30 handlaid 6 foot ties

O Narrow Gauge Versions

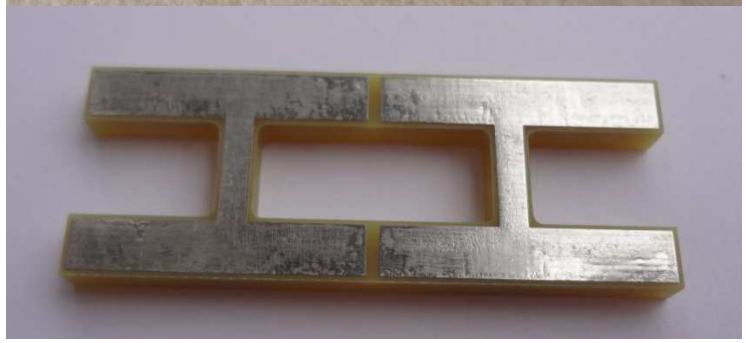
GM006 for On30
ME flextrack

GM011 for On30
handlaid 6’6” ties

O Narrow Gauge Versions



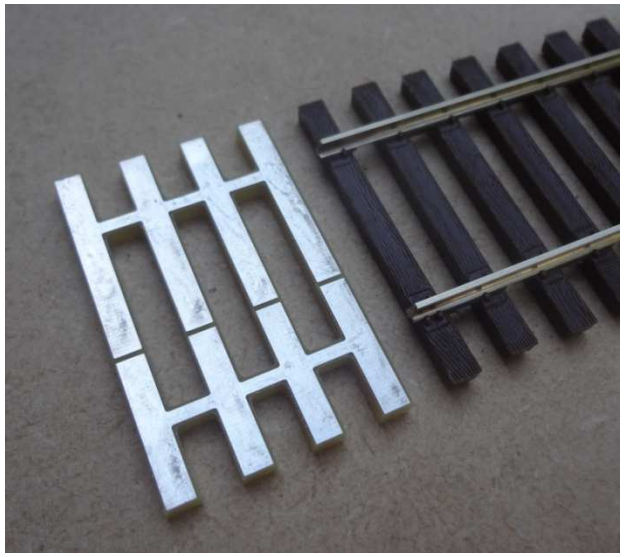
GM014 for On2.
5”x5”x5’ ties on
2’ centers

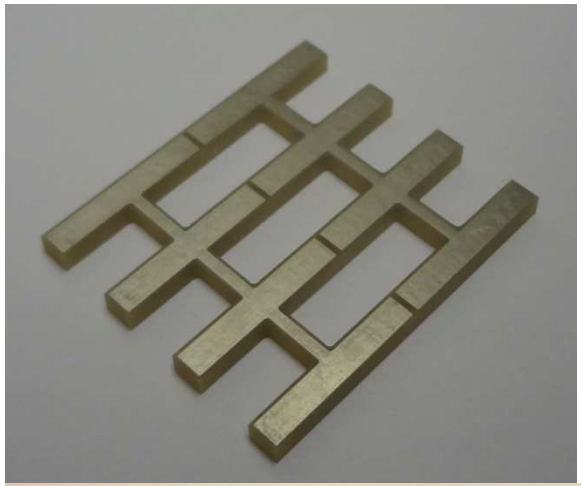


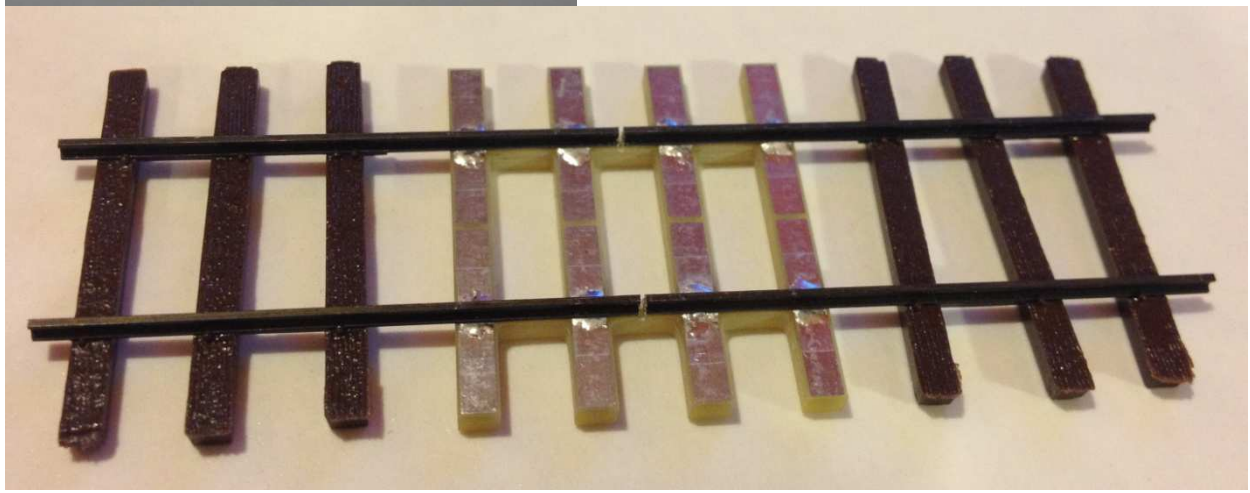
GM017 for On3
handlaid or PSC
flextrack 6’6” ties

S/Sn3 Versions

GM015 S shown with Tomalco flextrack

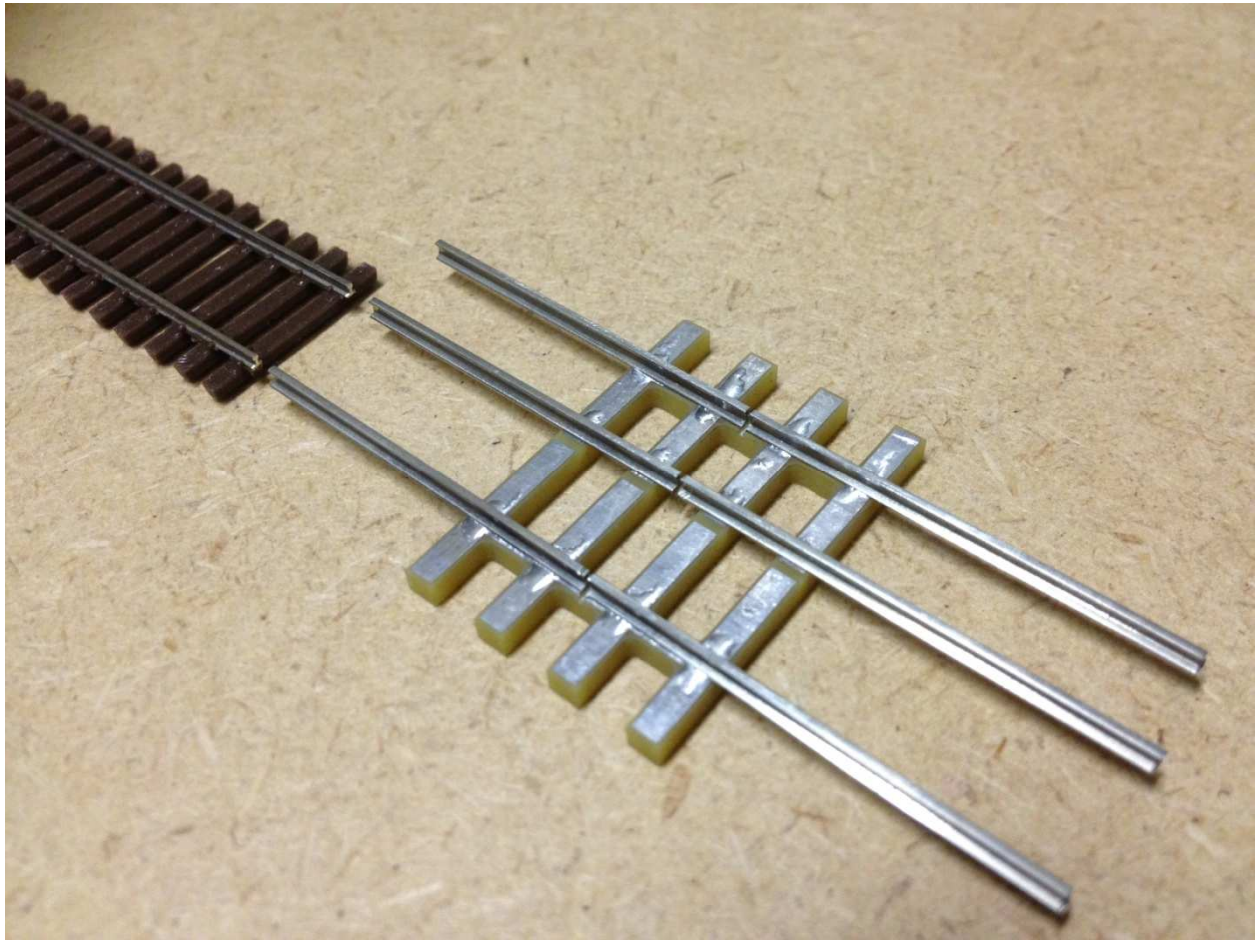






GM012 Sn3 shown with P-B-L flextrack

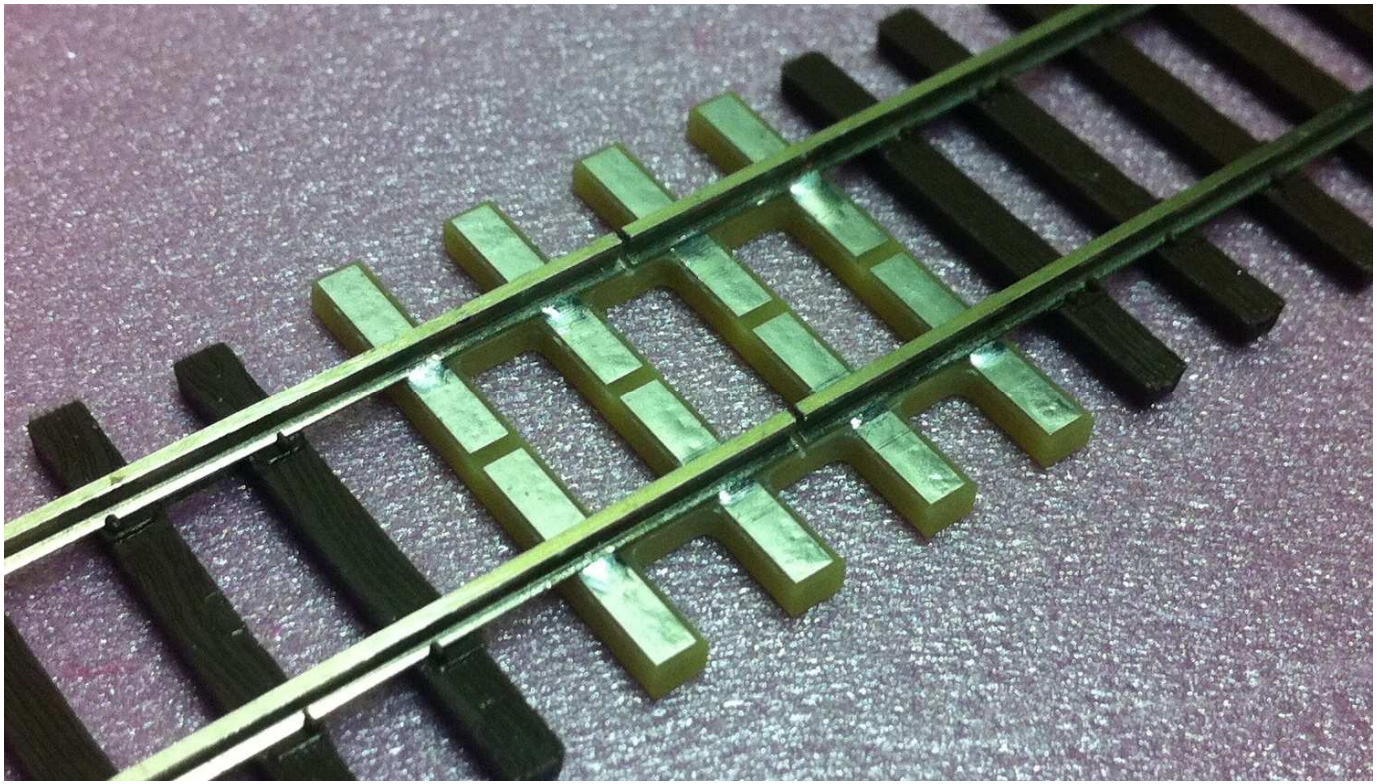
Dual Gauge Installation



Earlier GM007 (HO) shown with HOn30 3rd rail added

HOn3 Version

- 4 ties
- Code 55 flextrack shown



How to Obtain This Presentation

www.americantieandtimber.com

- Then go to How-To Presentations tab