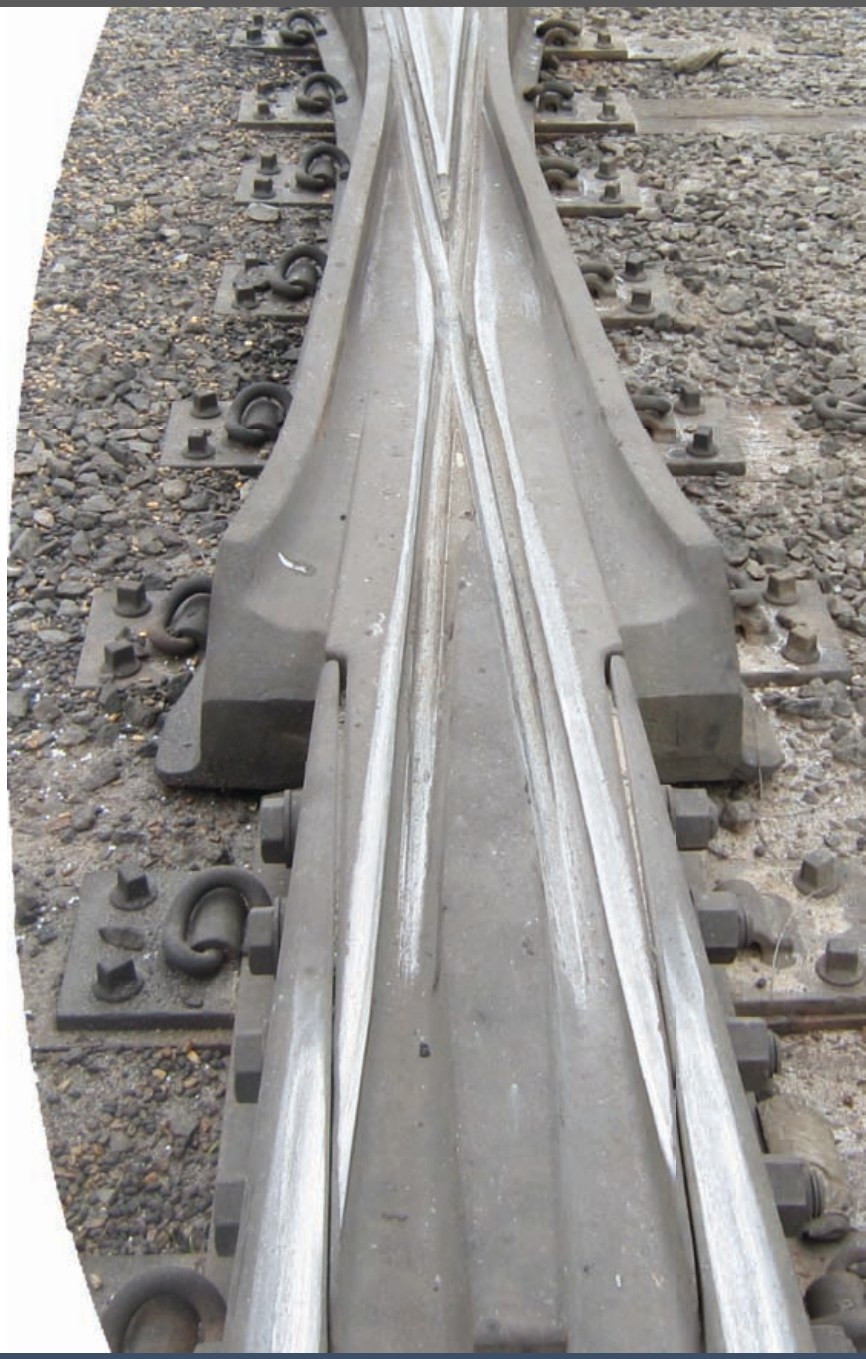
Partial Flange Bearing Frog No. 9

Class I railroads are looking at flange bearing technology to be in the future for special trackwork applications. PRS was asked to develop a partial flange bearing No. 9 solid manganese self guarded (SMSG) frog similar in concept to what is being done on the OWLS crossings. As we were using manganese steel and are familiar with its wear characteristics, we took the approach of rather than making a partial flange bearing frog with a 1” deep flangeway from the start we would incorporate a 3/4” deep flangeway. Manganese steel work hardens under rolling wheel load and prior to hardening there is some deformation that occurs. Generally in an impact condition you will loose 1/4" height of the casting section fairly quick. We figured too that in the flangeway the steel would be confined and after some initial deformation and having no place to go it would hold it shape for a longer period and we would experience more flange bearing than tread bearing wheels for a longer period.



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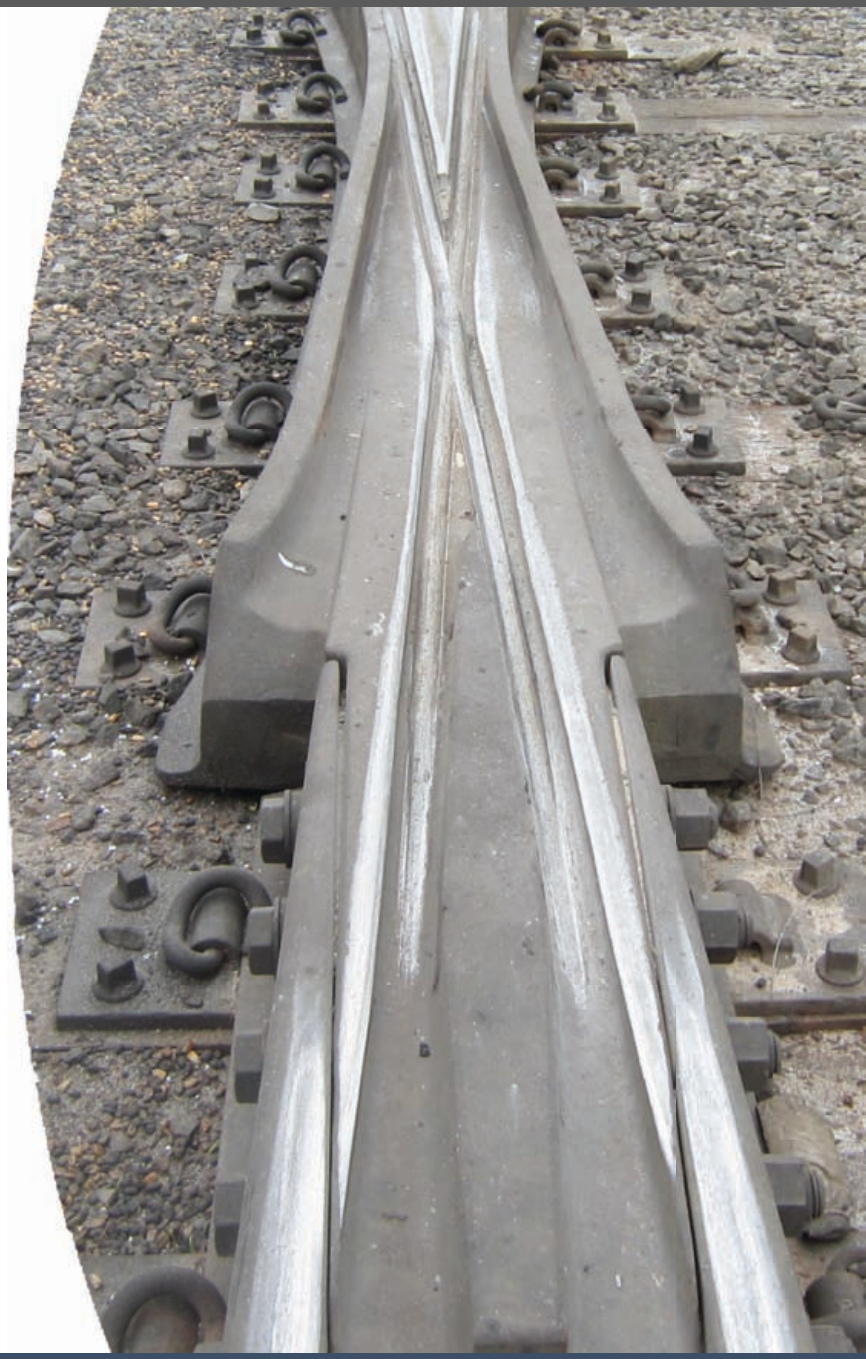
Special Trackwork

The frogs pictured are in a Class I hump yard. At the time of this picture, they had been in track 8 months and have almost 1,700 cars a day go over them. As you will note there is some wheel tread contact but there is still a considerable amount of flange bearing wheels too.

- All wheels start off being flange bearing and at 10 MPH there is little to no impact.
- Surface deformation is slowed as the material is confined in the flangeway and compresses and hardens.
- Minimum impact joints at rail/casting connections.
- Reducing impacts at joints and flangeway openings helps maintain the ballast integrity and therefore vertical alignment.
- Surface hardening will occur more gradually through rolling loads rather than impacts.
- There will continue to be a combination of flange and tread bearing until the flangeway deepens to where all wheels are tread bearing
- Taper rail machining same as on RBM and Spring frogs



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