

THE FEVR FLASH

A PUBLICATION OF THE NEBRASKA RAILROAD MUSEUM

1835 N. SOMERS, FREMONT, NE 68025 DECEMBER, 2007
EXTRA EDITION

This is a follow-up to the regular December 2007 edition. The subject of diamonds in the railroad trackage area is explored in more depth than is possible in the regular edition.

As mentioned in that edition, a railroad diamond is the intersection of two railroad tracks, most often those of two different railroad companies. In order to accomplish the passage of trains on the two tracks, a gap has to be provided in the rails of each line so that the wheel flanges of the other line can pass through. This discontinuity in the wheel running surface of each railhead produces a shock to each wheel and suspension system, causing accelerated wear and damage to both the wheels and the rails. The result, of course, is increased maintenance of both trains and the track.

In particular, since the customary traction motor design only provides a partial sprung suspension for the motors, the effects of passage through the diamond are particularly damaging. With dc current motors, the shocks can produce poor brush to commutator contact, with damaging arcing. The brushless 3-phase ac current motors are less affected.

A good locomotive engineer will minimize the damaging effects by proceeding slowly and if possible letting the locomotive coast through the diamond with no power applied. (The FEVR has a diamond with the BNSF north of Fremont and that is the procedure our engineers follow. The BNSF has a slow speed restriction at the same place.)

In lines with heavy loads and high speeds, the effects of the diamond are unacceptable and the goal is to eliminate them. One way is to provide a grade separation for the tracks of the intersecting lines. This is the method that has been constructed to provide passage for the BNSF over the multiple track Union Pacific line in Grand Island. This method requires that the overpassing line begins the ascent several miles from the overhead structure to avoid a grade factor that would slow trains too much. In Fremont, the BNSF curve south of the diamond would be a problem, plus a highway overpass proposed for 23d street would have to be excessively high since the BNSF there would be already quite elevated.

Another method is to provide switches in the track being crossed to allow the intersecting line to enter the track of the other, travel on that line for a distance, then exit toward its original destination through another switch. This involves displacing the crossing line sufficiently to provide reasonably gradual curves for entering and leaving the switches, and if the line crossed is double track, then switches must be provided to allow the crossing line to get from one of the double tracks to the other. Sophisticated switch design can provide a much better running surface than a diamond.

A very good example of this is the crossing of the BNSF across the Union Pacific at Endicott, Nebraska. Unfortunately, after the installation was completed a few years ago, the BNSF line was abandoned afterwards. Another location where a diamond was eliminated is in Central City, Nebraska, where the Nebraska Central Railroad now has trackage rights on the Union Pacific to run a distance before crossing the Platte River.

Lacking a major and unlikely reconstruction for the BNSF, it would appear that the diamond in Fremont will remain in the foreseeable future. It may well be the only one left on the Union Pacific main line in Nebraska.