



Figure 9. CSX Track with Fiber Installed

As part of this project, a survey was sent out to North American railroads to inquire about the extent of existing fiber optic cable installed along the U.S. rail network requesting information regarding the total mainline railroad route miles, signal protected miles, dark territory, and the amount of fiber along each. Survey respondents included a subset of the railroads represented on the FOAD task force, which were CP, CN, UP, NS, BNSF, CSX, and Amtrak. The survey is included in [Appendix A](#).

Five railroads responded to the questionnaire about known fiber in their network and reported anywhere from less than 1 percent to as much as 90 percent of route miles having fiber optic cable installed in close proximity. Figure 10 shows the values reported by the five railroads. To provide anonymity in reporting results, each railroad was assigned a number, for example, Source 1. This coincides with the significant amount of overlap shown in Figure 8. Note that the reported value for Source 7 was below 1 percent, and therefore, does not show a bar on the plot. This value was observed to be significantly less than the values reported by other railroads, and warrants further investigation for future studies. Railroads could use the lengths of track with fiber optic cable already installed for deployment of a FOAD system, and benefit from reduced costs associated with installing fiber optic cable. The ever-increasing demand for broadband and increased data traffic fuels the expansion of the fiber optic cable network (Ross, S. S., and M., Zager, 2013). As development of FOAD technology in railroad applications continues, the expanding fiber network may provide even more opportunities to use FOAD technology in the railroad industry.