Verification of Practical Application of Steel Movable-Nose Crossings for the Shinkansen

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Currently, almost movable nose crossings used on Shinkansen main lines are made of high-manganese steel. We have developed a steel movable nose crossing made of steel rail for the Shinkansen to enhance ultrasonic inspection efficiency and reduce maintenance costs by extending replacement intervals. To verify its practical performance, test installations were conducted at a Shinkansen rolling stock depot vehicles (at 30 km/h) and on a conventional line with freight vehicles at 80 km/h. Consequently, switching performance, component stresses, rail defects, and rail wear remained all within allowable limits, confirming that the crossings offer sufficient performance under these test conditions.