

Development of a Movable Nose Crossing for the Shinkansen Made of Rail Steel

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Since there is no gap of the gauge line in the moveable nose crossing, the vehicle can pass through the main line without speed reduction. Therefore, it is essential track structure thanks to which the Shinkansen is running at a high speed. Currently, the moveable nose crossing made of high manganese steel is used for turnouts for the Shinkansen. However, because it is made of cast iron, it is difficult to completely remove the shrinkage cavity. Cracks propagate from the shrinkage cavity, which can lead to damage. However, high manganese steel is difficult to inspect by ultrasonic nondestructive testing, it is not possible to grasp the crack propagation inside the moveable nose crossing. Furthermore, since there is a difference in material between the movable nose crossing and the rails adjacent to it, it is difficult to weld the moveable nose crossing to the front and rear rails. Therefore, we have developed a movable nose crossing made of rail steel which can be welded to the front and rear rails, and can be inspected by ultrasonic testing.