

## **Aluminothermic Welding Method Applicable to Shinkansen High-Speed Sections**

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In a previous study, aiming at introduction of an aluminothermic welding method to Shinkansen lines, we developed the aluminothermic welding method that can improve bending fatigue strength. However, since the rails at the base of the rail foot weld collar did not melt slightly, and this had to be removed by grinding. In addition to this, there is concern about the occurrence of “solidification crack” in the aluminothermic welding method, which is a factor preventing its introduction to the Shinkansen lines. Therefore, in this study, we solved the problem that the rail at the base of the rail foot weld collar does not melt by improving the mold shape and welding conditions. We also generally clarified the mechanism of solidification crack and proposed a welding procedure to prevent it.