

Dynamic Response Characteristics of Prestressed Concrete Sleeper

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The prestressed concrete sleeper (PC sleeper) is designed in consideration of the impact of the wheel load which is mainly caused by a rail joint or wheel flat. This research focused on the impact of the wheel load at rail joints. The field measurements of dynamic response of PC sleeper show that the maximum bending moment of a PC sleeper at a rail joint during train running is almost 4 times larger than that of PC sleepers in the plain sections, and the maximum bending moment of the PC sleeper adjacent to the rail joint is almost 2.7 times larger than that of PC sleepers in plain sections. The numerical analysis shows that the support condition has the greatest influence on the bending moment of the PC sleeper among various factors. Furthermore, the impact of the wheel load caused by a rail joint affects dynamic behavior of PC sleepers located within 4m from the rail joint.