

1.8.1.4 Recommended Characteristics for Under Tie Pads

Under Tie Pad bedding modulus recommendations for various applications are provided in Table 30-1-5. These recommendations are provided as a general guide to good practice based on field practice from deployments in North America as well as internationally. Specific characteristics of the intended application/site should be considered when selecting the appropriate component characteristics for the desired application to ensure proper performance.

For maintenance reduction applications one of the main consideration is rail deflection, which should be limited to ensure rail bending stresses do not surpass rail bending capacities (Zimmermann, 1941; Talbot, 1980; Kerr, 2003). For the selection of UTPs for vibration mitigation a vibration analysis should be considered before selecting a product given UTP performance is highly dependent on specific application requirements and site characteristics (Thompson et al., 2009; Müller and Möser, 2013).

Table 30-1-5 Recommended Under Tie Pad Bedding Modulus for Different Applications

Purpose	Location	Loading Environment ¹	Static Bedding Modulus
Maintenance Reduction	Open Track	Light Rail	> 440 lbf/in ³ (0.12 N/mm ³)
		Heavy Rail	> 550 lbf/in ³ (0.15 N/mm ³)
		Commuter Rail	> 550 lbf/in ³ (0.15 N/mm ³)
		Freight Rail	> 660 lbf/in ³ (0.18 N/mm ³)
	Special Trackwork	<i>Under Development</i>	
Vibration Mitigation	Open Track	Light Rail	> 150 lbf/in ³ (0.04 N/mm ³)
		Heavy Rail	> 185 lbf/in ³ (0.05 N/mm ³)
		Commuter Rail	> 205 lbf/in ³ (0.06 N/mm ³)
		Freight Rail	> 295 lbf/in ³ (0.08 N/mm ³)
	Special Trackwork	<i>Under Development</i>	

¹ Refer to Table 30-2-1 for typical axle load

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