

Table 1 Summary of Equations for Neutral Line Model with fixed clamping and misalignment.

Equation (6)	$A_1\alpha_1 + \frac{D_a}{P} = 0$
Equation (7)	$B_1 - \frac{M_a}{P} = 0$
Equation (9)	$B_2 = A_1 \sinh(\alpha_1 L_1) + B_1 \cosh(\alpha_1 L_1) + e_1$
Equation (10)	$A_2\alpha_2 = A_1\alpha_1 \cosh(\alpha_1 L_1) + B_1\alpha_1 \sinh(\alpha_1 L_1) + \beta_1$
Equation (12)	$B_3 = A_2 \sinh(\alpha_2 L_2) + B_2 \cosh(\alpha_2 L_2) + e_2$
Equation (13)	$A_3\alpha_3 = A_2\alpha_2 \cosh(\alpha_2 L_2) + B_2\alpha_2 \sinh(\alpha_2 L_2)$
Equation (15)	$B_4 = A_3 \sinh(\alpha_3 L_3) + B_3 \cosh(\alpha_3 L_3) + e_3$
Equation (16)	$A_4\alpha_4 = A_3\alpha_3 \cosh(\alpha_3 L_3) + B_3\alpha_3 \sinh(\alpha_3 L_3) + \beta_3$
Equation (17)	$A_4\alpha_4 \cosh(\alpha_4 L_4) + B_4\alpha_4 \sinh(\alpha_4 L_4) + \frac{D_a}{P} = 0$
Equation (18)	$A_4 \sinh(\alpha_4 L_4) + B_4 \cosh(\alpha_4 L_4) - \left(\frac{M_a}{P} - \frac{D_a}{P} L_{\text{tot}} \right) = a$

Table 2 Summary of Equations for Neutral Line Model without fixed clamping and with symmetry plane.

Equation (7)	$B_1 = 0$
Equation (9)	$B_2 = A_1 \sinh(\alpha_1 L_1) + e_1$
Equation (10)	$A_2\alpha_2 = A_1\alpha_1 \cosh(\alpha_1 L_1) + \beta_1$
Equation (12)	$\frac{a}{2} = A_2 \sinh(\alpha_2 L_2) + B_2 \cosh(\alpha_2 L_2)$

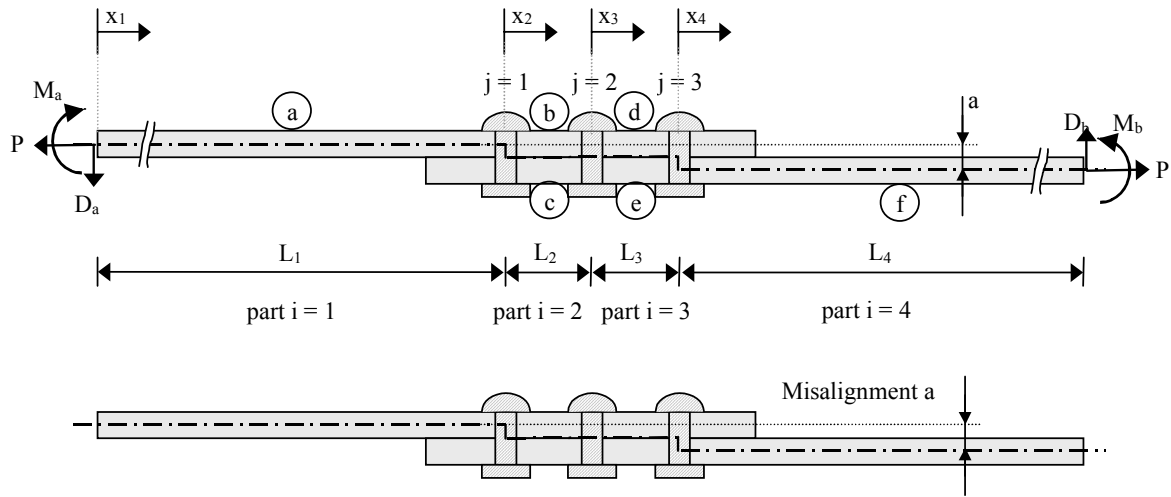


Figure 1 Nomenclature for neutral line model.

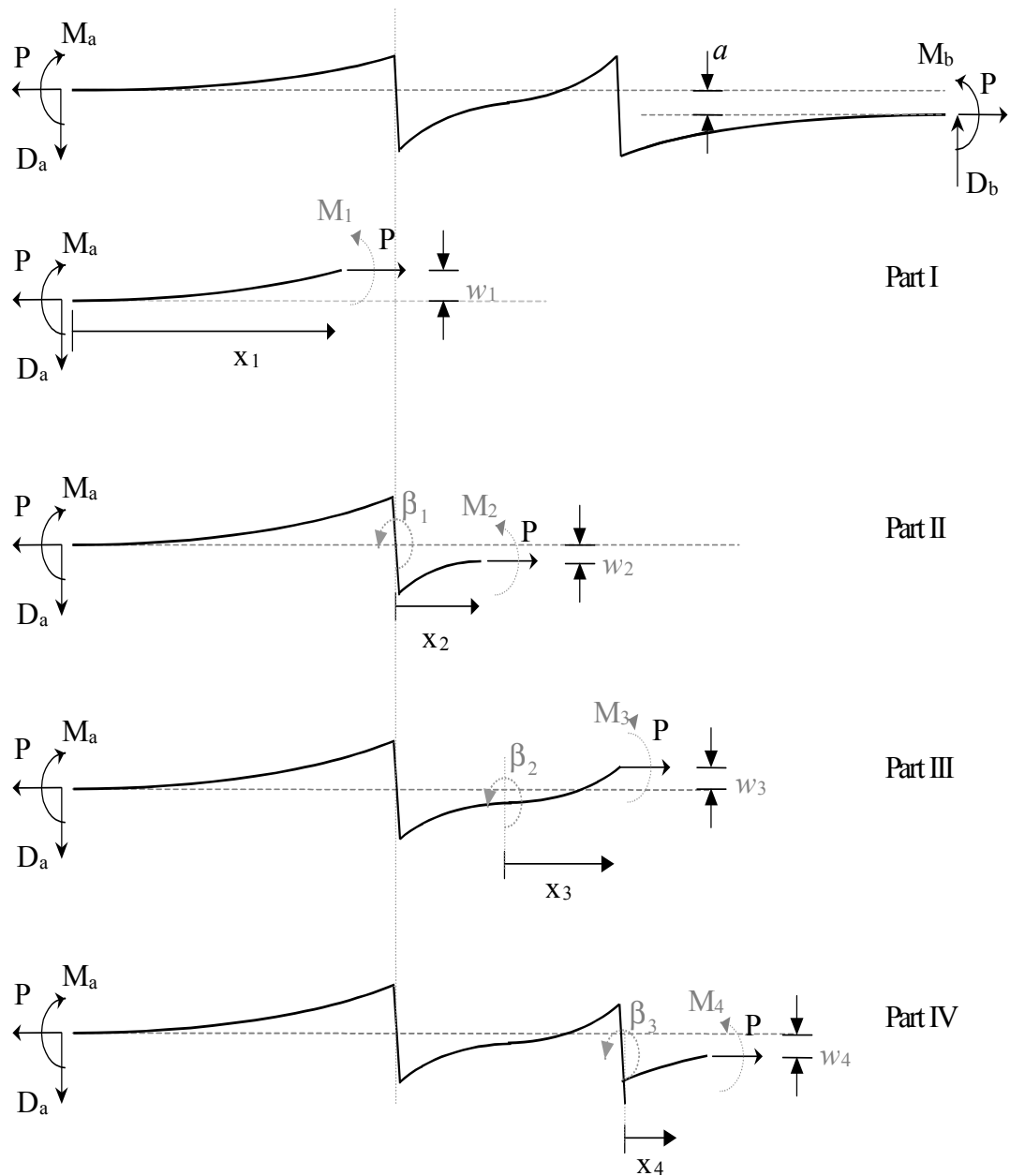


Figure 2 Deflection of neutral line for a three-rivet lap-splice joint.

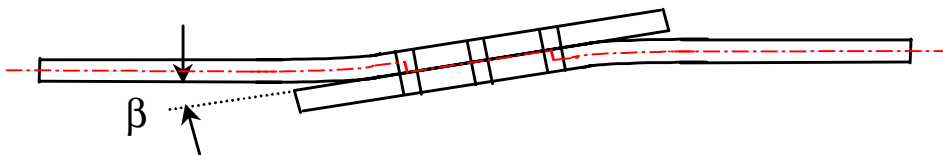


Figure 3 Influence of small permanent bending at the out the outer fastener rows.

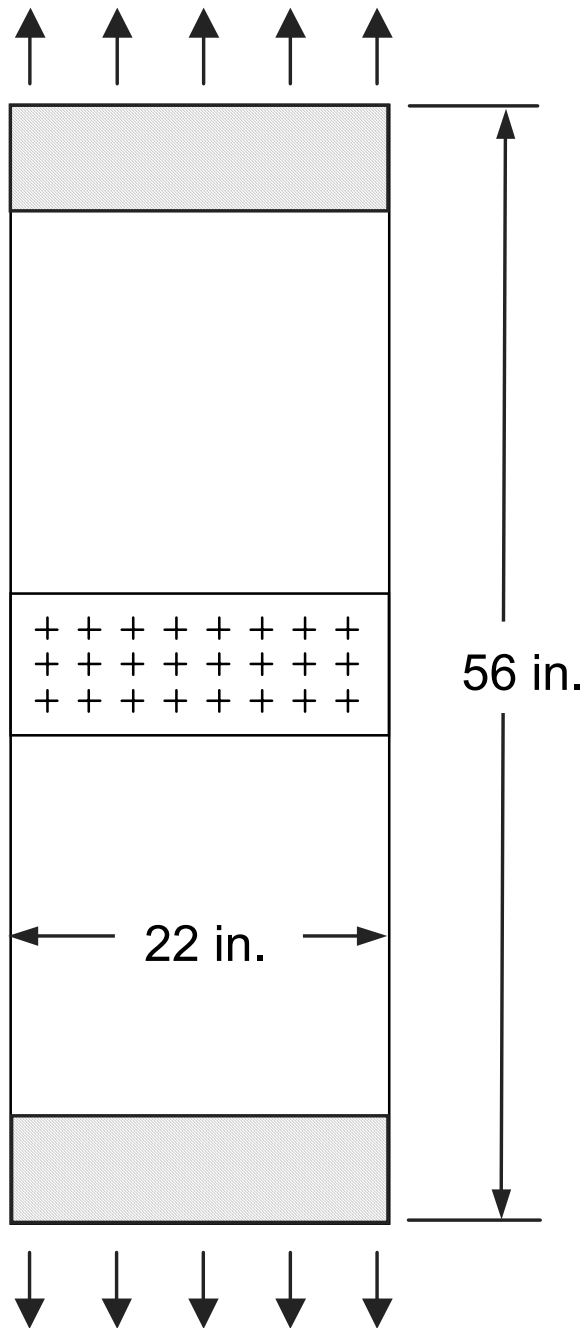


Figure 4 Specimen geometry layout.

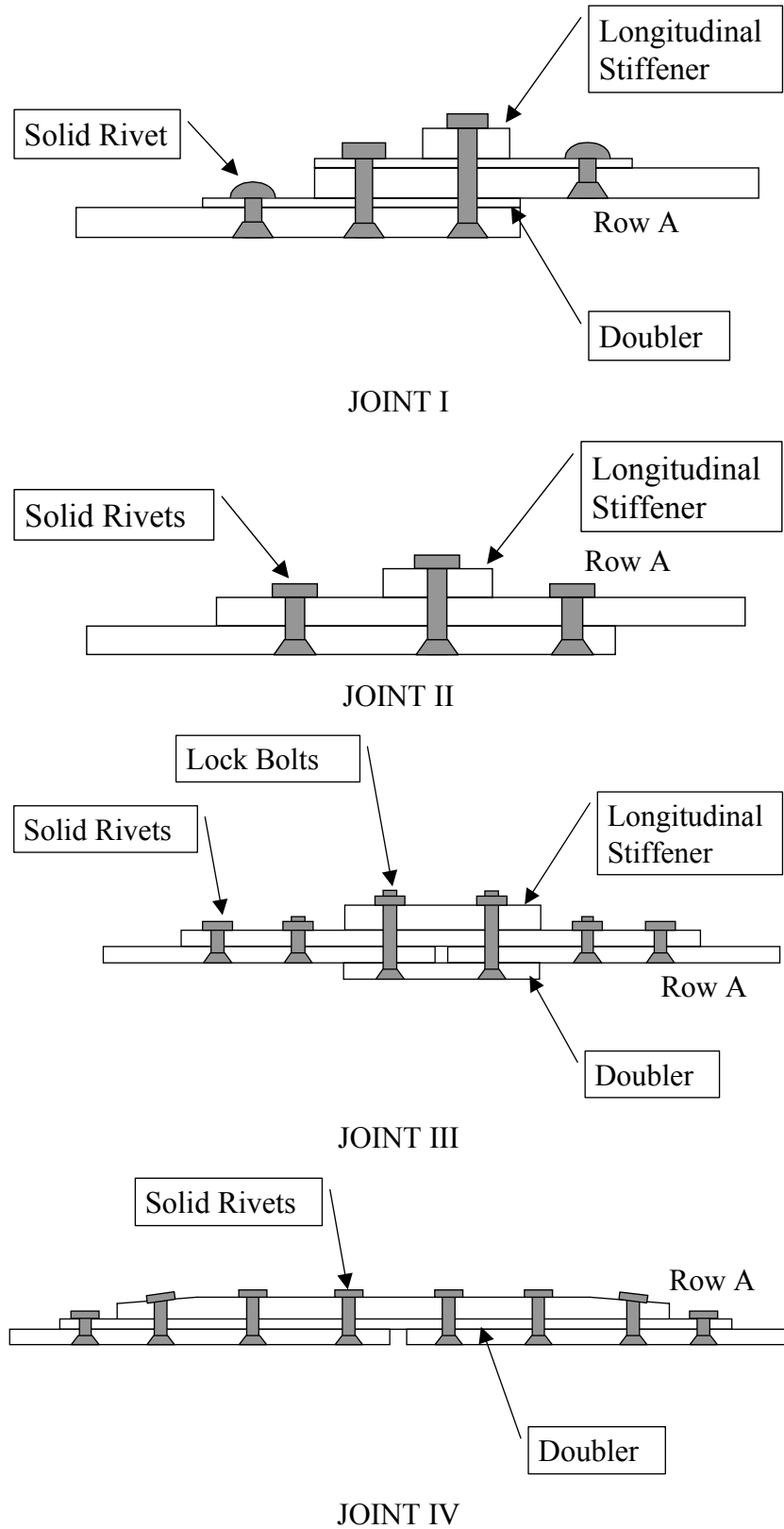


Figure 5 Four different joint layouts used for stress measurements.

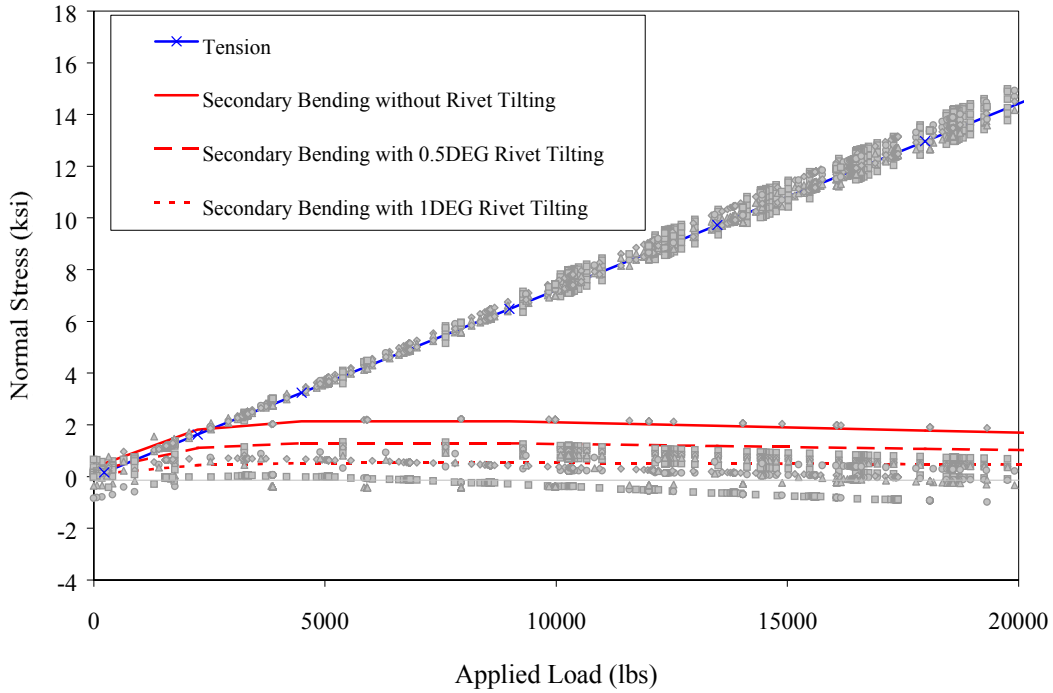


Figure 6 JOINT I: lap-splice joint Secondary bending and Tension stresses

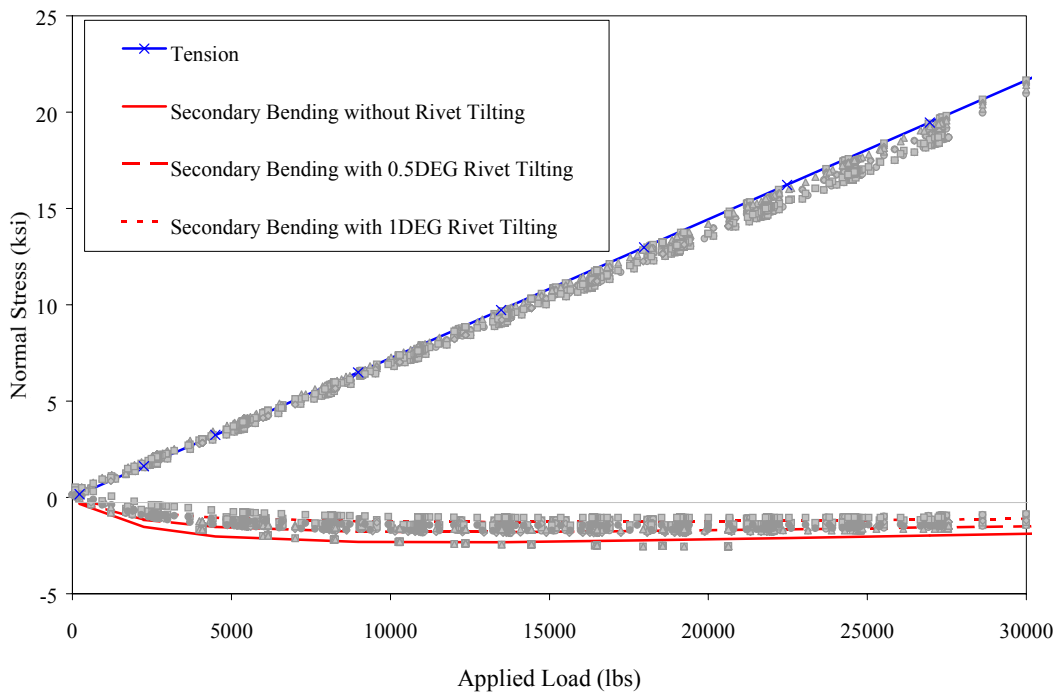


Figure 7 JOINT II: lap-splice joint Secondary bending and Tension stresses

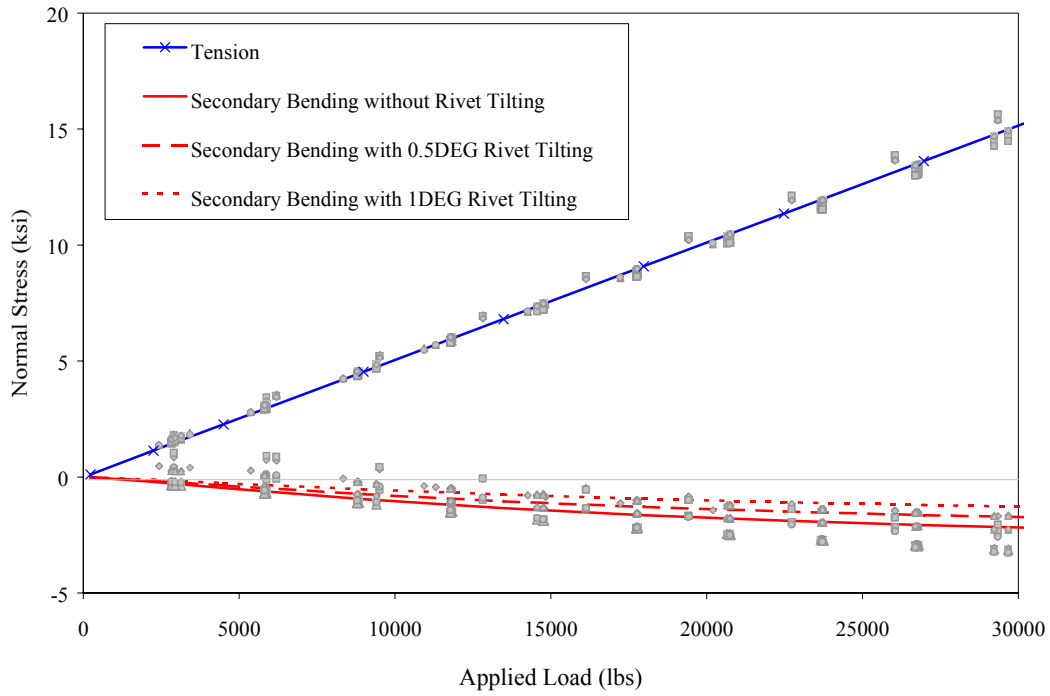


Figure 8 JOINT III: lap-splice joint Secondary bending and Tension stresses

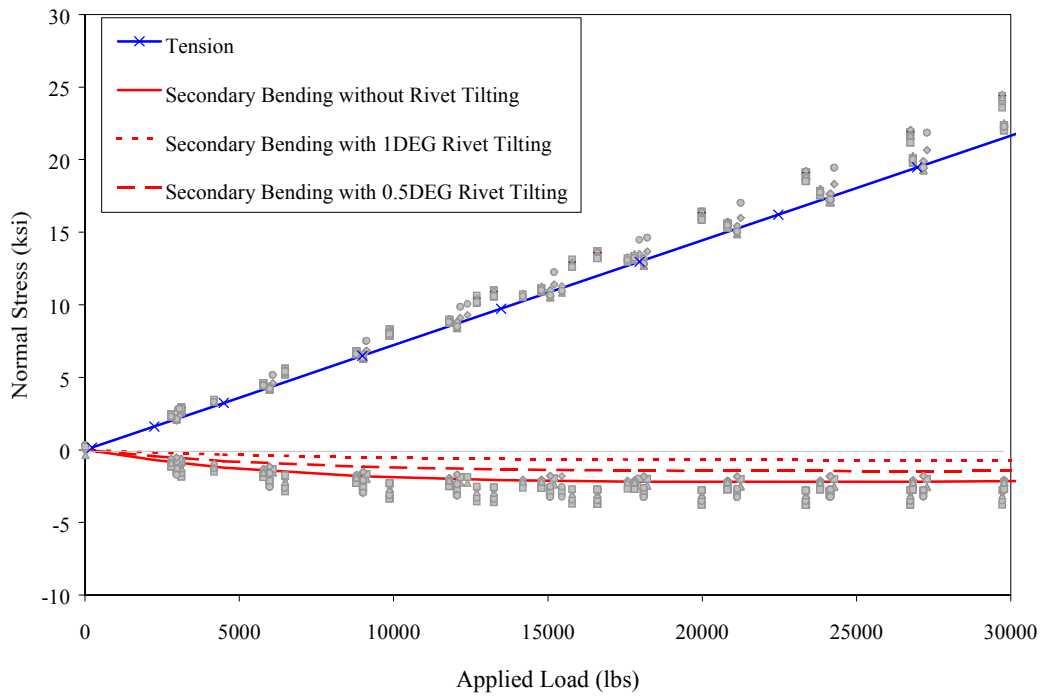


Figure 9 JOINT IV: lap-splice joint Secondary bending and Tension stresses