

SNS COLLEGE OF TECHNOLOGY (An Autonomous Institution)



DEPARTMENT OF AERONAUTICAL ENGINEERING

Subject Code & Name: 19AST203 Aircraft Structural Mechanics TOPIC: Inter rivet buckling and sheet wrinkling failures- Effective width

Inter Rivet Buckling !-It may occur the fastener, rivert relatively large compare to istiffness thickness In such a case the skin wrinkle between the rivet. But the stiffness flange remains essentially Straight . Sheet Wrinkling :-If the fastener pro vivet pitch is small enough to prevent Inter vivet buckling there is possibility of sheet wringkling failure) In this longer range buckling mode, the skin does not bow away from the stiffner between the fastoner. but these to souce the stiffness flange desorm with it. This intend induces stress in the thickness web possibility leading to local crippling of stiffness. (+) a care and flexural Rigidity of plate or sheet, $\mathcal{D} = \frac{E + 3}{12(1 - 9^2)} \left(\frac{1}{4}\right) = 288 0 = 10^3$ Effective Width : - and borotting & narrow compressive toad The sheet region in istacon the stiffiess buckled right rophol on linu resist compressive (instatistation is and attacked heet region (need) the rive CITED CERT CONTINUES 40 Ovisorgando Juis ant more prefer and state stance great the 107 Jailor DEPRESS

A FINGLER 455 > W0 = 0.85 6 prom IT. TESS > We = 0.60 + Ve engines oprot Elevitores is what wat and a Rola in Crippling Stress:-NILS SHIDING D sheet WY MALLOG. 255 Che factorer 224 ratio provers inter baildmairies Joord's ta The Etz wet , than provided a prior 12 (1-32) b2" and is mort upgin 100 $C_{cr} = KE \frac{t^2}{b^2} b^2$ but these to force the matrice and the strice moust 455 paiking this airent down readont and $\sigma_{cr} = 3.62 E \left(\frac{1}{b}\right)$ workhiss to pailingues fleaderal Rigidity of plate or theet. 2250 $\sigma_{cy} = 0.385 E \left(\frac{t}{b}\right)^{-1}$ E + 3 12(1-9°) when a stiffened sheet is subjected to compressive load The sheet region in between the stiffness buckle first and will no longer resist compressive Load. But the stiffness and adjacen sheet region (near the rivet line) can continues t resist compressive load and yielding occur. The distance from the rivet line, the skin resist compres load is called effectively.

