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CE 405: Design of Steel Structures Ae equals the actual net area An and compute the tensile design strength of the member. b b a a 5 x ? in. bar Gusset plate 7/8 in. diameter bolt Example 3.2 A single angle tension member, L 4 x 4 x 3/8 in. made from A36 steel is connected

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CE 405: Design of Steel Structures – Prof. Dr. A. Varma Example 3b.2 Design a double angle tension member and connection system to carry a factored load of 250 kips. Solution Step I. Assume material properties □ Assume 36 ksi steel for designing the member and the gusset plates. □ Assume E70XX electrode for the fillet welds.

CE 405: Design of Steel Structures – Prof. Dr. A. Varma 5.3 DESIGN PROVISIONS FOR BOLTED SHEAR CONNECTIONS • In a simple connection, all bolts share the load equally. T T T/n T/n T/n T/n T/n T/n • In a bolted shear connection, the bolts are subjected to shear and the connecting / connected plates are subjected to bearing stresses. Bolt in shear

CE 405: Design of Steel Structures – Prof. Dr. A. Varma 2.2 Flexural Deflection of Beams – Serviceability Steel beams are designed for the factored design loads. The moment capacity, i.e., the factored moment strength ($\phi_b M_n$) should be greater than the moment (M_u) caused by the factored loads.

[CHAPTER 3. COMPRESSION MEMBER DESIGN 3.1 INTRODUCTORY CONCEPTS](#)

CE 405: Design of Steel Structures – Prof. Dr. A. Varma The governing slenderness ratio is the larger of ($K_x L_x / r_x$, $K_y L_y / r_y$) $K_y L_y / r_y$ is larger and the governing slenderness ratio; $\lambda_c = E F_r K L_y y y y \pi = 1.085 \lambda_c < 1.5$; Therefore, $F_{cr} = ()^2 0.658 \lambda_c F_y$ Therefore, $F_{cr} = 21.99$ ksi Design column strength = $\phi_c P_n = 0.85 (A_g F_{cr}) = 0.85 (21.8$ in

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