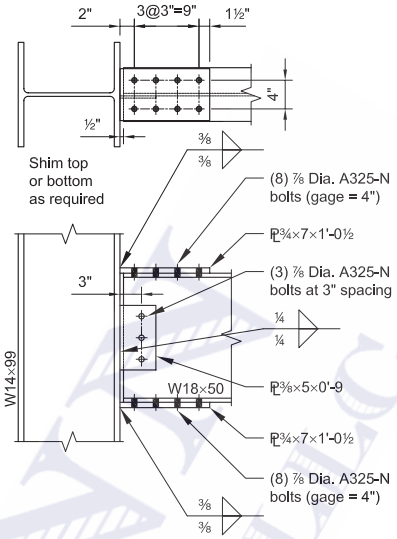

$$\frac{F_y}{F_u} = \frac{50 \text{ ksi}}{65 \text{ ksi}}$$
$$= 0.769 \le 0.8, \text{ therefore } Y_t = 1.0.$$

$$F_u A_{fn} = 65 \text{ ksi}\left(3.14 \text{ in.}^2\right)$$
$$= 204 \text{ kips}$$

$$Y_t F_y A_{fg} = 1.0\left(50 \text{ ksi}\right)\left(4.28 \text{ in.}^2\right)$$
$$= 214 \text{ kips} > 204 \text{ kips}$$

Therefore the nominal flexural strength, M_n, at the location of the holes in the tension flange is not greater than:

$$M_n = \frac{F_u A_{fn}}{A_{fg}} S_x \qquad \text{(}Spec\text{. Eq. F13-1)}$$
$$= \frac{65 \text{ ksi}\left(3.14 \text{ in.}^2\right)}{4.28 \text{ in.}^2}\left(88.9 \text{ in.}^3\right)$$
$$= 4{,}240 \text{ kip-in. or } 353 \text{ kip-ft}$$

LRFD	ASD
$\phi_b = 0.90$ $\phi_b M_n = 0.90\left(353 \text{ kip-ft}\right)$ $= 318 \text{ kip-ft} > 252 \text{ kip-ft}$ **o.k.**	$\Omega_b = 1.67$ $\frac{M_n}{\Omega_b} = \frac{353 \text{ kip-ft}}{1.67}$ $= 211 \text{ kip-ft} > 168 \text{ kip-ft}$ **o.k.**

Note: The available flexural strength of the beam may be less than that determined based on AISC *Specification* Equation F13-1. Other applicable provisions in AISC *Specification* Section F should be checked to possibly determine a lower value for the available flexural strength of the beam.

Single-Plate Web Connection

Try a PL⅜×5×0′-9″, with three ⅞-in.-diameter ASTM A325-N bolts and ¼-in. fillet welds.

LRFD	ASD
Shear strength of bolts from AISC *Manual* Table 7-1: $\phi r_n = 24.3$ kips/bolt Bearing strength of bolts: Bearing on the plate controls over bearing on the beam web. Vertical edge distance = 1.50 in. $l_c = 1.50 \text{ in.} - \frac{15/16 \text{ in.}}{2}$ $= 1.03 \text{ in.}$	Shear strength of bolts from AISC *Manual* Table 7-1: $r_n/\Omega = 16.2$ kips/bolt Bearing strength of bolts: Bearing on the plate controls over bearing on the beam web. Vertical edge distance = 1.50 in. $l_c = 1.50 \text{ in.} - \frac{15/16 \text{ in.}}{2}$ $= 1.03 \text{ in.}$