① $S_1 = 12.8$ Kip

$S_2 = \cancel{158}$ $5.3$ Kip

$S_3 = 2.8$ Kip

$2.5 \times 0.99 = 2.475$

Axial stress $= \dfrac{2.8}{\frac{\pi}{4} \times 36} = \dfrac{2.8}{28.274}$

Axial stress = 0.0990 Kip

Shear area $= \dfrac{\pi}{4} \times 6^2$

$= 28.274 \text{ in}^2$

Shear area will occur along the faces of $S_1$ & $S_2$

| Stiffener | Max Load | Area |
|---|---|---|
| AB | 20.77 | 6.49 |
| BC | 16.45 | 5.25 |
| AF | 28.95 | 4.09 |
| BG | 12.40 | 6.49 |
| CH | 5.3 | 5.10 |
| DE | 5.3 | 2.23 |
| FG | −2.8 | 6.23 |
| GH | −1.6 | 5.20 |

(2) Shear Flow

$$q = VQ/I \qquad V = 1500mm$$

$$\frac{VQ}{I} = \frac{S}{\# \text{ of Shearplanes}}$$

$$B_1 = 300 + \frac{3 + 400}{6}\left(2 + \frac{\sigma_6}{\sigma_1}\right) + \frac{2 \times 600}{6}\left(2 + \frac{\sigma_2}{\sigma_1}\right)$$

$$B_1 = 300 + \frac{3 * 400}{6}(2 - 1) + \frac{2.0 \times 600}{6}\left(2 + \frac{150}{200}\right)$$

$$B_1 = B_6 = 1050\,mm^2$$

$$B_2 = \frac{t_D b}{6}\left(2 + \frac{\sigma_1}{\sigma_2}\right)$$

$$B_2 = 2 \times 300 + \frac{2.0 \times 600}{6}\left(2 + \frac{\sigma_1}{\sigma_2}\right) + \frac{2.5 \times 300}{6} +$$

$$\left(2 + \frac{\sigma_3}{\sigma_2}\right) + \frac{1.5 \times 600}{6}\left(2 + \frac{\sigma_3}{\sigma_2}\right)$$

$$B_2 = 2\times 300 + \frac{2.0\times 600}{6}\left(2+\frac{200}{150}\right) + \frac{2.5\times 800}{6}(2-1) + \frac{1.5\times 600}{6}\left(2+\frac{100}{150}\right)$$

$$B_2 = (B_5) = 1791.7\,mm^2$$

$$B_3 = 300 + \frac{1.5\times 600}{6}\left(2+\frac{\sigma_2}{\sigma_3}\right) + \frac{2.0\times 200}{6}\left(2+\frac{\sigma_4}{\sigma_3}\right)$$

$$B_3 = 300 + \frac{1.5\times 600}{6}\left(2+\frac{150}{100}\right) + \frac{2.0\times 200}{6}(2-1)$$

$$B_3 = B_4 = 891.7\,mm^2$$

$$I_{xx} = \sum_{i=1}^{n} y_i^2 B_i, \quad I_{yy} = \sum_{i=1}^{n} x_i^2 B_i \;\&$$

$$I_{xy} = \sum_{i=1}^{n} x_i y_i B_i$$

$$B_A = \frac{99\times 2}{6}(2-1) + \frac{199\times 1}{6}(2+1) = 132.5\,mm^2$$

$$B_C = \frac{49\times 1}{6}(2-1) + \frac{181.73}{6}\left(2+\frac{50}{25}\right) = 129.3\,mm^2$$

$$B_B = \frac{199\times 1}{6}(2+1) + \frac{99\times 1}{6}(2-1) + \frac{181.73\times 1}{6}\left(2+\frac{25}{50}\right)$$

$$= 191.7\,mm^2$$

$$I_{xx} = 2\times(132.5\times 50^2) + (191.7\times 50^2) + (129.3\times 25^2)$$

$$= 1.78\times 10^6\,mm^4$$