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ANALYTICAL AND EXPERIMENTAL INVESTIGATION

OF

S- AND Z-BEAMS WITH FIXED SUPPORTS

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NOTATION

- $b$  = width of beam section.  
 $C$  = torsional constant for rectangular section.  
 $E$  = modulus of elasticity of beam material.  
 $G$  = modulus of rigidity of beam material.  
 $I$  = moment of inertia of beam section.  
 $J$  = polar moment of inertia of beam section.  
 $k$  = Z-beam length ratio  
 $= \frac{L_1}{L_2}$ .  
 $L_1$  = length of each longitudinal part of Z-beam.  
 $L_2$  = length of transverse part of Z-beam.  
 $M$  = bending moment.  
 $M_A$  = bending moment at support.  
 $M_O$  = redundant bending moment at centre-span.  
 $m$  = ratio of flexural rigidity to torsional rigidity  
 $= \frac{EI}{GJ}$ .  
 $P$  = fictitious vertical concentrated load.  
 $R$  = radius of curve of S-beam.  
 $T$  = torsional moment.  
 $T_A$  = torsional moment at support.  
 $T_O$  = redundant torsional moment at centre-span.  
 $t$  = thickness of beam.  
 $V_A$  = shearing force at support.  
 $w$  = intensity of uniform line load.



NOTATION (Cont'd)

$x$  = longitudinal variable distance.

$y$  = transverse variable distance.

$\Delta_0$  = vertical deflection at centre-span.

$\alpha$  = variable angle.

$\theta$  = variable angle measured from centre-span.

$\phi$  = subtending angle measured from centre-span to support.

$\psi_0$  = rotation at centre-span.

$\tau_0$  = angle of twist of beam section at centre-span.

$\mu$  = Poisson's ratio.

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