Beam Loading Formulas

$W = TL * TW$
$TL = DL + LL$
$R1 = W*L/2$
$M = (WL^2)/8$
$Fb = Fy*.66$
$Sz = M/Fb$
$Ad = (L/360)$
$M = F*D$
$Af = TL/Sb$

Variables

Ad = Allowable Deflection (Amount it can bend) - Must be in inches
Af = Area Footing
D = Distance
DL = Dead Load
TL = Total Load
F = Force
Fb = Allowable Bending Stress
Fy = Constant to calculate Fb (Pressure)
L = Length
LL = Live Load
M = Tendency of force to cause body to rotate around a point. (Force * Perpendicular Distance)
R1 = Reaction 1
R2 = Reaction 2
Sb = Soil Bearing Capacity
Sz = Sizing of section module required
TL = Total Load
TW = Tributary Width
W = Beam Loading (Applied force a specific area)