



Transformed Section

----- REGIONS -----

Area: 3169.5878
Perimeter: 905.6629
Bounding box: X: -62.4700 -- 62.4700
Y: -46.6103 -- 61.9897
Centroid: X: 0.0000
Y: 0.0000
Moments of inertia: X: 4759812.1461
Y: 4273050.3887
Product of inertia: XY: 0.0024
Radii of gyration: X: 38.7519
Y: 36.7170
Principal moments and X-Y directions about centroid:
I: 4273050.3887 along [0.0000 1.0000]
J: 4759812.1461 along [-1.0000 0.0000]

Steel	Steel	Es	210000.00 N/mm2	
	Area	As	838.6911 mm2	
	Centroid	Xs	12.8505 mm	
	Inertia	Is	2.327E+05 mm4	
Concrete	Concrete	Ec	20000.00 N/mm2	
	Area	Ac	6305.4288 mm2	
	Centroid	Xc	59.1315 mm	
	Inertia	Ic	5.334E+06 mm4	
Glass	Glass	Eg	70000.00 N/mm2	
	Area	Ag	5200.0000 mm2	
	Centroid	Xg	58.6000 mm	
	Inertia	Ig	8.173E+06 mm4	
Modular Ratio	Concrete	n_c	0.0952 Into Steel	
	Glass	n_g	0.3333 Into Steel	<i>I had an error here</i>
Calculation of Neutral Axis				
<i>Moments about base of Flange</i>				
	Steel		1.078E+04 mm3	Centroid x Area
	Concrete		3.550E+04 mm3	$n_c \times \text{Centroid} \times \text{Area}$
	Glass		1.016E+05 mm3	$n_g \times \text{Centroid} \times \text{Area}$
	Sum of Moments		1.478E+05 mm3	
	Sum of Areas		3.172E+03 mm2	$As + n_c Ac + n_g Ag$
Position of N.A.	N.A. Offset	h	46.6047 mm	Moments/Areas
	AutoCAD		46.6103	<i>Corrected transorms</i>
Calculation of Moment of Inertia	Steel		1.188E+06 mm4	$Is + As(N.A.-Xs)^2$
	Concrete		6.020E+05 mm4	$n_c[Ic + Ac(N.A.-Xc)^2]$
	Glass		2.974E+06 mm4	$n_g[Ig + Ag(N.A.-Xg)^2]$
				AutoCAD results in red
Checks	Transformed I	It	4.764E+06 mm4	4.760E+06
	Transformed A	At	3172.13 mm	3169.59

Length Check	Steel	2.10	2.10	2.1
	Concrete	32.50	3.094	3.094
		30.40	2.89408	2.8941
	Glass	90.00	29.997	29.97
		10.00	3.333	0.33