Helicoidal Stairs ®

Instructior
Input Data
Output Da

C- **25** fcd= **11.33** S- **400** Fyd= **347.83**

E/G= **2.4** q= **0.70** ¢= **1.08** μ,poison's ratio= **0.2**

H= **3500** mm Rint= **3390** Rext= **4740** mm

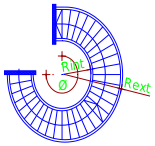
ø= **80** Full subtended angle in (degrees) Ø/2= **0.70** rad.

b= **1350** €=b²/12R = **44.80** ← load eccentricity

Rc= **4109.80** load cen.radius Rcenter= **4065.00**

Let D= **150** mm: trial depth riser, r= **170**

Dead load= **8.18**
Live load= **3** → Pd= **15.43**



$P_d*R_c^2$= **260.60**

	Moment	Torsion	Design M
span	**19.96**	0	**19.96**
fixed ends	**-45.68**	**-1.59**	**46.72**

Shear due to torsion= **1.89**

Shear due toV.loading= **22.98**

Total transverse Shear = **24.87** KN → **0.14** MPA

Design V **-0.39**

Stirrups area/step	
$2*a_s$=	**No need**

Check depth for M_{dsup} But,Vc= **0.53** MPA

d_{req}= **101.71** < d_{aval}= **129** → **depth ok!**

D_{req}= **131.71** < D_{aval}= **150**

As req= **1159.75** @support
463.78 @span

							As provided		
b(mm)	d(mm)	M(kn.m)	As ,mm2	Ø (mm)	# of Bars	Spacing	Ø	c/c	# of bars
1350	**129**	**46.72**	**1159.75**	**12**	**10.25**	**131.65**	**12**	**130**	**12**
1350	**129**	**19.96**	**463.78**	**12**	**4.10**	**329.21**	**12**	**320**	**6**

ns
a: ***Green Cells***
ta: ***Orange Cells***