Bending check - assumed pure flexure			named cell	
M*	kNm	258	mdesign0	
V*	kNm	275	vdesign0	
bv	mm	300	bv	
d	mm2	538	d	
h	mm	600	h	
ast_provided	mm2	2250	astf	
fsy	N/mm2	500	fsy	
fsyf	N/mm2	500	fsyf	
fcprime	N/mm2	50	fcprime	
es	N/mm2	200000	es	
phiv		0.7	phiv	
alpha2		0.850	alpha2	=MIN(MAX(1-0.003*fcprime,0.67),0.85), Eqn 8.1.3(1)
gamma		0.700	gamma	=MIN(MAX(1.05-0.007*fcprime,0.67),0.85), Eqn 8.1.3(2)
d_n	mm	126.05	dn	=fsy*ast_provided/(alpha2*fcprime*bv*gamma)
ku		0.234	ku	=dn/d, to be less than 0.36
ku0		0.234	ku0	
phif		0.85	phif	MIN(0.85,MAX(1.24-13/12*ku0,0.65)), table 2.30.2 (b)
mu	kNm	555.62	mu	=fsy*astf*d*(1-gamma*ku/2)*0.000001
phimu	kNm	472.28	phimu	=phif*mu
phiMu/M*	kNm	1.83	phimu/mdesign0	=fsy*astf*d*(1-gamma*ku/2)*0.000001
dv	mm	484.2	dv	=MAX(0.72*h,0.9*d), Clause 8.2.1.9

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		Doug's values										
Case		1		2		3		4		5		
M*	kNm	400	Doug's	258	M* changed	258		258		258		m_design
V*	kN	275	values	275		275		275		275		v_design
ast_provided	mm2	2250		2250		2250		2250		2250		ast_provided
epsx		1.2234E-03		8.9760E-04		8.9760E-04		8.9760E-04		8.9760E-04		epsx,Eqn 8.2.4.3(1)
is epsx < 0.3e-3 ?		Yes		Yes		Yes		Yes		Yes		IF(epsx<0.003,"Yes","No")
theta_v	deg	37.56		35.28		35.28		35.28		35.28		thetav, Eqn 8.2.4.2(5)
cot(theta_v)		1.3002		1.4132		1.4132		1.4132		1.4132		cotthetav
k_v		0.1411		0.1705		0.1705		0.1705		0.1705		kv, Eqn 8.2.4.2(4)
square root f;c		7.0711		7.0711		7.0711		7.0711		7.0711		sqfc = MIN(8,SQRT(fcprime)) ,Cl 8.2.4.1
v_uc	kN	144.91		175.10		175.10		175.10		175.10		vuc = kv*bv*dv*sqfc/1000, Eqn 8.2.4.1
a_sv	mm2	160.00	2 legs N10	160.00	2 legs N10	220.00	2 legs N12	400.00	2 legs N16	620.00	2 legs N20	asv
s	mm	200.00		200.00		200.00		200.00		200.00		s
asv/s		0.8000		0.8000		1.1000		2.0000		3.1000		asvdivs=asv/s
v_us	kN	251.82		273.71		376.36		684.29		1060.64		vus = asvdivs*dv*fsyf*cotthetav/1000 , Eqn 8.2.5.2(1)
phiv v_uc	kN	101.440		122.571		122.571		122.571		122.571		phivuc
phiv v_us	kN	176.277		191.600		263.450		479.000		742.450		phivus
phi v_u	kN	277.72		314.17		386.02		601.57		865.02		phivu=phi_v*(v_uc+v_us)
v_u.max	kN	1737.38		1695.18		1695.18		1695.18		1695.18		vumax=0.55*(0.9*fcprime*bv*dv*cotthetav)/ (1+cotthetav*cotthetav)/1000, Eqn 8.2.3.3(1)
phi V_umax	kN	1216.16		1186.63		1186.63		1186.63		1186.63		phivumax
Is V* < phi_v V_u.max ?		Yes, okay		Yes, okay		Yes, okay		Yes, okay		Yes, okay		IF(v_design<phivumax, "Yes, okay", "No, not okay")
Del F_td	kN	242.96		253.25		202.48		50.17		0.00		delftd =MAX(cotthetav*(v_design-0.5*phiv*vus),0) Eqn 8.2.7(2), AS 5100.5
z = d_v =	mm	484.20		484.20		484.20		484.20		484.20		zvalue
F_td	kN	1069.06		786.09		735.32		583.01		532.84		ftd =ABS(m_design)/ (zvalue/1000) +delftd
Ast_required	mm2	3054.468		2245.967		2100.909		1665.735		1522.393		ast_required =ttd*1000/phiv/fsy, To satisfy clause 8.2.7
is Ast_prov >= Ast_req (okay) ?		not okay		okay		okay		okay		okay		IF(ast_provided>=ast_required, "okay","not okay")
stress	MPa	1.00		499.10		466.87		370.16		338.31		stress =ttd*1000/phiv/ast_provided
phi_v V_u/V*		1.01		1.14		1.40		2.19		3.15		=phivu/v_design
Ast_provided/ Ast_required		0.74		1.00		1.07		1.35		1.48		=ast_provided/ast_required