ANNEX I- SHEAR CELL CALCULATION EXAMPLE AND TABLES

Part I.A: Calculation of c_1,c_2,c_3 and v* of a diaphragm

The same procedure was the used by the Excel file to calculate the values of annex II:

BUILDING

b	mm	Width of the diaphragm. It was considered half of the actual building width	20000
a	mm	Spacing of the building	8000

TYPE AND KIND OF PURLINS

s_{pr}	$\frac{mm}{KN}$	Flexibility of the purlins. Extracted from table 1 of annex I		1.4
F_{pr}	KN	Strength of the purlins. Extracted from table 1 of annex I		4.4
e_{sp}	mm	Spacing between purlins		2000
n_p	-	Number of purlins in the diaphragm width. Approximation going down in case it is not exact (9,2 ->9) security approximation	$n_p = \frac{b}{e_{sp}} + 1$	$n_p = \frac{20000}{2000} + 1 = 11$
A	mm^2	Area of the purlins		900

METAL SHEET DATA

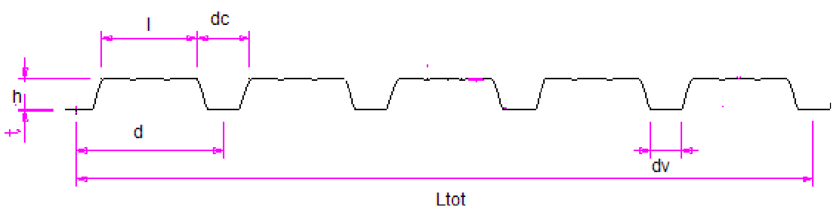


fig A.1

L_{sheet}	mm	Length of the sheet in the direction parallel to the corrugation		10000

L_{tot}	mm	Length of the metal sheet perpendicular to the corrugation		1000
d	mm	See fig. A1		250
l	mm	See fig. A1		135
h	mm	See fig. A1		48.5
d_v	mm	See fig. A1		54
d_c	mm	See fig. A1		-
φ	deg	Angle of the web with valley	$\varphi = a\tan\left\|\frac{2 \cdot h}{(d - l - d_v)}\right\|$	$\varphi = a\tan\left\|\frac{2 \cdot 48.5}{(250 - 135 - 54)}\right\| = 57.84$
θ	deg	Angle of the web with the crest. Value to obtain the K	$\theta = 90 - \varphi$	$\theta = 90 - 57.84 = 32.16$
l/d	-	Value necessary to obtain the K	l/d	$\frac{l}{d} = \frac{135}{250} = 0.54$
h/d	-	Value necessary to obtain the K	h/d	$\frac{h}{d} = \frac{48.5}{250} = 0.19$
K_1	-	Value of the shear rigidity of the metal sheet if every trough is fastened	To obtain from table 6 in annex I	0.082
K_2	-	Value of the shear rigidity of the metal sheet if is fastened every alternate trough	To obtain from table 7 in annex I	0.692
E	$\frac{KN}{mm^2}$	Elasticity modulus of the metal sheet material		210
ν	-	Poisson modulus of steel		0.3
f_{yk}	$\frac{N}{mm^2}$	Yield stress of the metal sheet		320

f_u	$\frac{N}{mm^2}$	Ultimate tensile stress		290
t	mm	Thickness of the metal sheet		0.88
D_x	Nmm	-		10792
D_y	Nmm	-		4592573
n_{fv}	--	Number of valleys		5

TYPE AND NUMBER OF SCREWS

Sheet/purlin				
d_n	mm	Nominal diameter of the screw		6.3
s_p	$\frac{mm}{KN}$	Flexibility of the screw. Extracted from table 3.3 chapter III		0.15
F_p	KN	Strength screw connection in shear	$F_p = 1.9 \cdot f_u \cdot d_n \cdot t$	$F_p = 1.9 \cdot \frac{290}{1000} \cdot 6.3 \cdot 0.88 = 3.05$
Seam fasteners				
d_n	mm	Nominal diameter of the screw		4.8
s_s	$\frac{mm}{KN}$	Flexibility of the screw. Extracted from table 3.3 chapter III		0.25
F_s	KN	Strength screw connection in shear	$2.9 \cdot f_u \cdot d_n \cdot t\sqrt{\frac{t}{d_n \cdot}} \leq 3.8KN$	$2.9 \cdot \frac{290}{1000} \cdot 4.8 \cdot 0.88\sqrt{\frac{0.88}{4.8 \cdot}} = 1.52$
e_s	mm	Spacing between seam fasteners		400
n_s	-	Number of seam fasteners in the diaphragm width.	$n_p = \frac{b}{e_s}$	$n_s = \frac{20000}{400} = 20$
Sheet/shear transmitters				

s_{sc}	$\frac{mm}{KN}$	Flexibility of the screw. Extracted from table 3.3 chapter III		0.15
d_n	mm	Nominal diameter of the screw		6.3
F_{sc}	KN	Strength sheet/transmitter fastener	$F_p = 1.9 \cdot f_u \cdot d_n \cdot t$	$F_p = 1.9 \cdot \frac{290}{1000} \cdot 6.3 \cdot 0.88 = 3.05$
e_{sp}	mm	Spacing of fasteners in the shear transmitter	The length of the shear transmitters Should be smaller than 0.8x e_p	500
n_{sc}	-	Number of fasteners in the diaphragm width.	$n_{sc} = n_p + (n_p - 1) \cdot \frac{0.8 \cdot e_p}{e_{sp}}$	$n_{sc} = 11 + 10 \cdot \frac{0.8 \cdot 2000}{500} = 43$

PARAMETERS OF DISTRIBUTION OF FASTENERS (β)

n_{fa}		Number of fastenings per sheet if alternate fastening pattern	$n_{fa} = \frac{n_f}{2}$ even $n_{fa} = \frac{n_f + 1}{2}$ odd	$n_{fa} = \frac{5+1}{2} = 3$
Every though fastened				
β_1	-	See on table4.3 from annex	With $n_f = n_{fv}$	1.13
β_2	-	See on table4.3 from annex	With $n_f = n_{fv}$	1.25
β_3	-	The metal sheet has the fastenings in the valley (positive)		1
Alternate though fastened				
β_1	-	See on table 4 from annex I	With $n_f = n_{fa}$	1
β_2	-	See on table 4 from annex I	With $n_f = n_{fa}$	1
β_3	-	The metal sheet has the fastenings in the valley (positive)		1

PARAMETERS OF DISTRIBUTION OF PURLINS (α)

n_{psh}		Number of purlins per sheet length	$n_{psh} = \frac{L_{sheet}}{e_p}$	$n_{psh} = \frac{10000}{2000} = 5$
n_b		Number of sheet lengths on diaphragm		2
α_1	-	See on table 3 from annex I	With $n_p = n_{psh}$	0.7
α_2	-	See on table 3 from annex I	With $n_p = n_p$	0.33
α_3	-	See on table 3 from annex I		0.45
α_4		Factor to allow number of sheet lengths	$\alpha_4 = 1 + 0.3 n_b$	$1 + 0.3 \cdot 2 = 1.6$

OTHER PARAMETERS

n_{sh}		Number of sheets per shear cells	$n_{sh} = \frac{a}{L_{tot}}$	$n_{sh} = \frac{8000}{1000} = 8$
p_e			$p = \frac{a}{(n_{fv} - 1) \cdot n_{sh}}$	$p = \frac{8000}{(5-1) \cdot 8} = 250$
p_a	-		$p = \frac{a}{(n_{fa} - 1) \cdot n_{sh}}$	$p = \frac{8000}{(3-1) \cdot 8} = 500$

CALCULATIONS (ELS)

$C_{1.1}$	$\frac{mm}{KN}$	Profile distortion every trough fastened	$c_{1.1} = \frac{a \cdot d^{2.5} \cdot K_1}{E \cdot t^{2.5} \cdot b^2} \cdot \alpha_1 \cdot \alpha_4$	$c_{1.1} = \frac{8000 \cdot 250^{2.5} \cdot 0.097}{210 \cdot 0.88^{2.5} \cdot 20000^2} \cdot 0.15 \cdot 1.6 = 0.012$
	$\frac{mm}{KN}$	Profile distortion alternate trough fastened	$c_{1.1} = \frac{a \cdot d^{2.5} \cdot K_2}{E \cdot t^{2.5} \cdot b^2} \cdot \alpha_1 \cdot \alpha_4$	$c_{1.1} = \frac{8000 \cdot 250^{2.5} \cdot 0.692}{210 \cdot 0.88^{2.5} \cdot 20000^2} \cdot 0.7 \cdot 1.6 = 0.100$
$C_{1.2}$	$\frac{mm}{KN}$	Shear strain on metal sheet	$c_{1.2} = \frac{2a(1+\nu)(1+\frac{2h}{d})}{btE} \cdot \alpha_2$	$c_{1.2} = \frac{2 \cdot 8000 \cdot (1+0.3)(1+\frac{2 \cdot 48.5}{250})}{20000 \cdot 0.88 \cdot 210} \cdot 0.33 = 0.008$

$C_{2.1}$	$\frac{mm}{KN}$	every trough fastened	$c_{2.1} = \frac{2ap}{b^2} \cdot s_p \cdot \alpha_3$	$c_{2.1} = \frac{2 \cdot 8000 \cdot 250}{20000^2} \cdot 0.15 \cdot 0.45 = 0.001$

	$\frac{mm}{KN}$	alternate trough fastened	$c_{2.1}=\frac{2ap}{b^2}\cdot s_p\cdot\alpha_3$	$c_{2.1}=\frac{2\cdot 8000\cdot 500}{20000^2}\cdot 0.15\cdot 0.45=0.002$
$C_{2.2}$	$\frac{mm}{KN}$	every trough fastened	$c_{2.2}=\frac{2\cdot s_s\cdot s_p\cdot(n_{sh}-1)}{2\cdot n_s\cdot s_p+\beta_1\cdot n_p\cdot s_s}$	$c_{2.2}=\frac{2\cdot 0.25\cdot 0.15\cdot(8-1)}{2\cdot 20\cdot 0.15+1.13\cdot 11\cdot 0.25}=0.058$
	$\frac{mm}{KN}$	alternate trough fastened	$c_{2.2}=\frac{2\cdot s_s\cdot s_p\cdot(n_{sh}-1)}{2\cdot n_s\cdot s_p+\beta_1\cdot n_p\cdot s_s}$	$c_{2.2}=\frac{2\cdot 0.25\cdot 0.15\cdot(8-1)}{2\cdot 20\cdot 0.15+1\cdot 11\cdot 0.25}=0.060$
$C_{2.3}$	$\frac{mm}{KN}$	Direct fastening every	$c_{2.3}=2\frac{s_{sc}}{n_{sc}}$	$c_{2.3}=2\frac{0.15}{43}=0.007$
	$\frac{mm}{KN}$	Indirect fastening every	$c_{2.3}=\frac{2}{n_p}\cdot\left(s_{pr}+\frac{s_p}{\beta_2}\right)$	$c_{2.3}=\frac{2}{11}\cdot\left(1.4+\frac{0.15}{1.25}\right)=0.276$
	$\frac{mm}{KN}$	Indirect fastening alternate	$c_{2.3}=\frac{2}{n_p}\cdot\left(s_{pr}+\frac{s_p}{\beta_2}\right)$	$c_{2.3}=\frac{2}{11}\cdot\left(1.4+\frac{0.15}{1}\right)=0.282$

C_3	$\frac{mm}{KN}$	Profile distortion every trough fastened	$c_3=\frac{2\cdot a^3}{3\cdot E\cdot A\cdot b^2}$	$c_3=\frac{2\cdot 8000^3}{3\cdot 210\cdot 900\cdot 20000^2}=0.005$

ULTIMATE STATE

There are 3 possible acceptable ultimate states

V^*_1	KN	Seam line every trough fastened	$V_{ult}=n_s\cdot F_s+\frac{\beta_1}{\beta_3}\cdot n_p\cdot F_p$	$V_{ult}=20\cdot 1.52+\frac{1.13}{1}\cdot 11\cdot 3.05=68$
	KN	Seam line alternate trough fastened	$V_{ult}=n_s\cdot F_s+\frac{\beta_1}{\beta_3}\cdot n_p\cdot F_p$	$V_{ult}=20\cdot 1.52+\frac{1}{1}\cdot 11\cdot 3.05=64$
V^*_2	KN	direct on metal sheet	$V=n_{sc}\cdot F_{sc}$	$V=43\cdot 3.05=131$

	KN	Indirect	$V_{ult} = \beta_2 \cdot n_p \cdot F_p$	$V_{ult} = 1.25 \cdot 11 \cdot 2.68 = 36.85$
	KN	Indirect	$V_{ult} = \beta_2 \cdot n_p \cdot F_p$	$V_{ult} = 1 \cdot 11 \cdot 2.68 = 29.48$
V^*_3	KN	Shear strength of the purlin-rafter connection	$V = n_p \cdot F_{pr}$	$V = 11 \cdot 4.4 = 48.4$

There are 4 possible non acceptable ultimate states

V_1	KN	Sheet purlin/fasteners every trough fastened	$V_{ult} \leq \frac{0.6 \cdot F_p \cdot b}{p \cdot \alpha_3}$	$V_{ult} \leq \frac{0.6 \cdot 3.05 \cdot 20000}{250 \cdot 0.45} = 299$
	KN	Sheet purlin/fasteners alternate trough fastened	$V_{ult} \leq \frac{0.6 \cdot F_p \cdot b}{p \cdot \alpha_3}$	$V_{ult} \leq \frac{0.6 \cdot 3.05 \cdot 20000}{500 \cdot 0.45} = 149$
V_2		End collapse of profile if every though is fastened	$V_{ult} \leq \frac{0.9 \cdot t^{1.5} \cdot b \cdot f_y}{d^{0.5}}$	$V_{ult} \leq \frac{0.9 \cdot 0.88^{1.5} \cdot 20000 \cdot \frac{290}{1000}}{250^{0.5}} = 299$
	KN	End collapse of profile if alternate through is fastened	$V_{ult} \leq \frac{0.3 \cdot t^{1.5} \cdot b \cdot f_y}{d^{0.5}}$	$V_{ult} \leq \frac{0.3 \cdot 0.88^{1.5} \cdot 20000 \cdot \frac{290}{1000}}{250^{0.5}} = 100$
V_3	KN	Global buckling	$V_g = \frac{14.4}{b} D_x^{\frac{1}{4}} D_y^{\frac{3}{4}} (\mathrm{n_p} - 1)^2$	$V_g = \frac{14.4}{20000} 10^{\frac{1}{4}} 45925^{\frac{3}{4}} (11-1)^2 = 409$
	KN	Local buckling	$V_l = 4.83 \cdot E \cdot \left(\frac{t}{l}\right)^2 \cdot \mathrm{bt}$	$V_l = 4.83 \cdot 210 \cdot \left(\frac{0.88}{135}\right)^2 \cdot 20000 \cdot 0.88 = 758$
	KN	Interaction Global-local buckling	$V = \frac{V_g \cdot V_l}{V_g + V_l}$	$V = \frac{758 \cdot 409}{758 + 409} = 256$

	Direct fastening		Indirect fastening	
	Every through fastened	Alternate through fastened	Every through fastened	Alternate through fastened
Flexibility c (mm/KN)	0.090	0.182	0.359	0.457
Maximum shear external shear force V (KN)	68	64	42	32
Maximum shear force in diaphragm S (KN)	27	25.6	16.8	13.4

Part I.B: Data tables

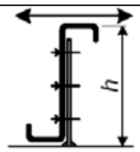
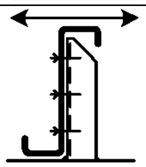
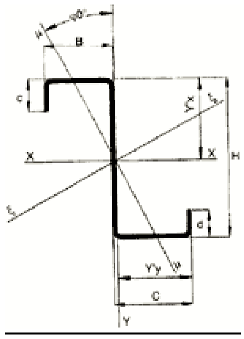
	Flexibility(mm/KN)		Resistance (KN)	
	SBI174	ECCS8	SBI174	ECCS8
	$\frac{4h^3}{Ebt^3}$	1.4	$\frac{f_{yk}bt^2}{6h}$	4.4
	0.3	0.38	8.0	7.2

Table 1: Flexibility and strength of some purlin supports; b=width;h=depth;t=thickness of the cleat

		P1	P2	P3
t	Mm	2	2,5	2,5
H	Mm	200	200	250
B	Mm	66	66	66
E	N/mm2	210000	210000	210000
fyk	KN/mm2	280	280	280
A	cm2	7,19	8,93	10,18

Table 2. Data coming from cold formed Z purlins from arcelor



Total number of purlins per panel(or per sheet length for alfa1)			
np	α_1	α_2	α_3
2	1	1	1
3	1	1	1
4	0,85	0,75	0,9
5	0,7	0,67	0,8
6	0,6	0,55	0,71
7	0,6	0,5	0,64
8	0,6	0,44	0,58
9	0,6	0,4	0,53
10	0,6	0,36	0,49
11	0,6	0,33	0,45
12	0,6	0,3	0,42
13	0,6	0,29	0,39
14	0,6	0,27	0,37
15	0,6	0,25	0,35
16	0,6	0,23	0,33
17	0,6	0,22	0,31
18	0,6	0,21	0,3
19	0,6	0,2	0,28
20	0,6	0,19	0,27
21	0,6	0,18	0,26
22	0,6	0,17	0,25
23	0,6	0,17	0,24
24	0,6	0,16	0,23
25	0,6	0,15	0,22
26	0,6	0,15	0,21
27	0,6	0,14	0,21

Table 3. Parameters α_1 to α_3

total number of fasteners per sheet width			
	beta1		beta2
nf	Sheeting	Decking	
2	0,13	1	1
3	0,3	1	1
4	0,44	1,04	1,11
5	0,58	1,13	1,25
6	0,71	1,22	1,4
7	0,84	1,33	1,56

Table 4. Parameters beta

Comments C.32

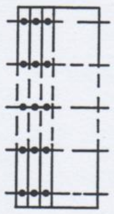
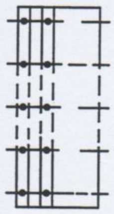
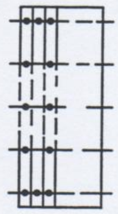
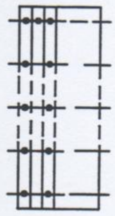
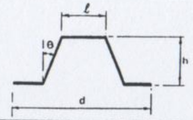
Table 5.8	Factor α_4 to allow for the number of sheet lengths in the depth of a diaphragm			
	fastener positions			
	every corrugation	alternate corrugations	every corrugation at both sheet ends	every corrugation at one sheet end
one sheet length for full depth of diaphragm	 $K = K_1$ α_1 from table 5.4 $\alpha_4 = 1$ (1)	 $K = K_2$ α_1 from table 5.4 $\alpha_4 = 1$ (2)	 $K = K_1$ $\alpha_1 = 1$ $\alpha_4 = 1$ (3)	 $K = K_2$ $\alpha_1 = 0.5$ $\alpha_4 = 1$ (4)
n_b sheet lengths in depth of diaphragm	 $K = K_1$ α_1 from table 5.4 for number of purlins per sheet length $\alpha_4 = (1+0.3n_b)$ (5)	 $K = K_2$ α_1 from table 5.4 for number of purlins per sheet length $\alpha_4 = (1+0.3n_b)$ (6)	 $K = K_1$ $\alpha_1 = 1$ $\alpha_4 = (1+0.3n_b)$ (7)	 $K = K_2$ α_1 from table 5.4 for number of purlins per sheet length $\alpha_4 = (1+0.3n_b)(1-\frac{1}{n_b})$ (8)

Table 5. Parameters to define the different fastening patterns. Extracted from [21]

Comments C.30

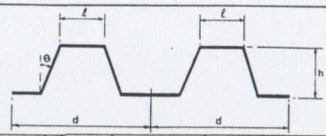
Table 5.6 Values for K_1 for fasteners in every trough



θ	ℓ/d --> h/d ↓	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0°	0.1	0.013	0.030	0.041	0.041	0.046	0.050	0.066	0.103	0.193
	0.2	0.042	0.096	0.131	0.142	0.142	0.153	0.199	0.311	0.602
	0.3	0.086	0.194	0.264	0.285	0.283	0.302	0.388	0.601	1.188
	0.4	0.144	0.323	0.438	0.473	0.468	0.494	0.629	0.972	1.935
	0.5	0.216	0.438	0.654	0.703	0.695	0.729	0.922	1.420	2.837
	0.6	0.302	0.674	0.911	0.980	0.965	1.008	1.266	1.938	3.892
	0.7	0.402	0.895	1.208	1.300	1.277	1.329	1.661	2.536	5.098
	0.8	0.516	1.146	1.546	1.662	1.631	1.692	2.107	3.208	6.453
5°	0.1	0.014	0.031	0.041	0.044	0.044	0.049	0.066	0.107	0.205
	0.2	0.050	0.099	0.128	0.134	0.132	0.146	0.198	0.336	0.652
	0.3	0.107	0.202	0.253	0.260	0.254	0.280	0.386	0.681	1.548
	0.4	0.188	0.338	0.413	0.417	0.404	0.448	0.629	1.158	2.639
	0.5	0.295	0.507	0.604	0.601	0.578	0.648	0.934	1.783	
	0.6	0.429	0.706	0.823	0.806	0.772	0.877	1.306	2.586	
	0.7	0.591	0.935	1.066	1.028	0.983	1.135	1.756	3.605	
	0.8	0.780	1.191	1.328	1.264	1.208	1.423	2.299	4.838	
10°	0.1	0.016	0.031	0.040	0.042	0.042	0.048	0.065	0.111	0.221
	0.2	0.056	0.101	0.123	0.125	0.123	0.139	0.200	0.366	0.873
	0.3	0.125	0.204	0.238	0.233	0.226	0.264	0.402	0.786	
	0.4	0.222	0.338	0.375	0.356	0.345	0.418	0.689	1.445	
	0.5	0.349	0.494	0.526	0.486	0.473	0.605	1.082	2.428	
	0.6	0.502	0.668	0.682	0.615	0.608	0.837	1.607		
	0.7	0.677	0.851	0.834	0.736	0.752	1.128	2.308		
	0.8	0.869	1.035	0.975	0.844	0.907	1.494	3.200		
15°	0.1	0.017	0.031	0.040	0.041	0.041	0.047	0.066	0.115	0.241
	0.2	0.062	0.102	0.118	0.115	0.113	0.134	0.209	0.403	
	0.3	0.139	0.202	0.218	0.204	0.200	0.254	0.440	0.945	
	0.4	0.244	0.321	0.325	0.293	0.294	0.414	0.796		
	0.5	0.370	0.448	0.426	0.371	0.396	0.636	1.329		
	0.6	0.508	0.568	0.508	0.434	0.513	0.941			
	0.7	0.646	0.668	0.561	0.483	0.664	1.349			
	0.8	0.768	0.735	0.578	0.527	0.861				
20°	0.1	0.018	0.032	0.039	0.039	0.039	0.046	0.066	0.111	0.276
	0.2	0.068	0.101	0.111	0.106	0.104	0.131	0.221	0.452	
	0.3	0.148	0.193	0.194	0.174	0.177	0.255	0.492		
	0.4	0.249	0.289	0.267	0.230	0.259	0.444	0.931		
	0.5	0.356	0.372	0.315	0.270	0.364	0.725			
	0.6	0.448	0.420	0.326	0.303	0.512				
	0.7	0.509	0.423	0.301	0.346					
	0.8	0.521	0.372	0.259	0.413					
25°	0.1	0.019	0.032	0.038	0.038	0.038	0.045	0.068	0.126	0.313
	0.2	0.072	0.099	0.103	0.095	0.095	0.129	0.236	0.513	
	0.3	0.151	0.178	0.166	0.144	0.160	0.268	0.557		
	0.4	0.238	0.244	0.204	0.176	0.247	0.494			
	0.5	0.306	0.272	0.203	0.204	0.376				
	0.6	0.333	0.248	0.172	0.241					
	0.7	0.300	0.174	0.142						
	0.8	0.204	0.081							
30°	0.1	0.020	0.032	0.037	0.036	0.036	0.044	0.070	0.133	
	0.2	0.075	0.095	0.094	0.084	0.087	0.132	0.256		
	0.3	0.148	0.157	0.135	0.116	0.152	0.291			
	0.4	0.208	0.186	0.139	0.139	0.253				
	0.5	0.226	0.161	0.112	0.176					
	0.6	0.180	0.089	0.093						
	0.7	0.077								
35°	0.1	0.021	0.032	0.036	0.034	0.034	0.043	0.072	0.142	
	0.2	0.076	0.089	0.083	0.072	0.082	0.137	0.281		
	0.3	0.137	0.130	0.102	0.093	0.151				
	0.4	0.162	0.119	0.082	0.120					
	0.5	0.123	0.059							
	0.6	0.032								
40°	0.1	0.023	0.032	0.034	0.032	0.032	0.043	0.075	0.155	
	0.2	0.075	0.081	0.070	0.060	0.077	0.146			
	0.3	0.116	0.096	0.068	0.078					
	0.4	0.100	0.053	0.048						
	0.5	0.024								
45°	0.1	0.024	0.031	0.032	0.029	0.030	0.043	0.079		
	0.2	0.071	0.069	0.056	0.050	0.073				
	0.3	0.086	0.057	0.041						
	0.4	0.032								

Table 6. Values of the parameters K1 Extracted from [21]

Table 5.7 Values for K_2 for fasteners in alternate troughs



θ	h/d ↓ \ ℓ/d -->	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0°	0.1	0.014	0.025	0.036	0.046	0.054	0.061	0.070	0.108	0.211
	0.2	0.031	0.065	0.099	0.129	0.151	0.169	0.206	0.318	0.649
	0.3	0.054	0.123	0.192	0.252	0.294	0.328	0.402	0.608	1.269
	0.4	0.084	0.202	0.316	0.414	0.482	0.535	0.653	0.968	2.056
	0.5	0.123	0.299	0.468	0.614	0.712	0.790	0.958	1.410	3.006
	0.6	0.169	0.415	0.649	0.846	0.982	1.090	1.318	1.928	4.113
	0.7	0.222	0.549	0.855	1.108	1.286	1.433	1.730	2.525	5.383
	0.8	0.284	0.699	1.086	1.398	1.623	1.818	2.196	3.198	6.811
5°	0.1	0.089	0.138	0.184	0.228	0.269	0.311	0.359	0.432	0.590
	0.2	0.300	0.433	0.564	0.690	0.810	0.934	1.091	1.358	2.046
	0.3	0.627	0.872	1.113	1.345	1.569	1.806	2.125	2.710	4.441
	0.4	1.076	1.453	1.826	2.187	2.535	2.910	3.446	4.498	8.057
	0.5	1.644	2.171	2.694	3.205	3.703	4.244	5.058	6.761	12.94
	0.6	2.280	2.961	3.639	4.313	4.999	5.797	6.971	9.571	
	0.7	2.961	3.803	4.620	5.443	6.347	7.479	9.206	13.01	
	0.8	3.802	4.838	5.788	6.612	7.701	9.257	11.76	17.20	
10°	0.1	0.091	0.140	0.186	0.229	0.270	0.312	0.362	0.440	0.627
	0.2	0.312	0.446	0.575	0.699	0.817	0.943	1.112	1.425	2.472
	0.3	0.665	0.907	1.144	1.370	1.589	1.835	2.204	2.979	
	0.4	1.156	1.529	1.891	2.239	2.578	2.984	3.655	5.251	
	0.5	1.793	2.313	2.819	3.305	3.782	4.397	5.519	7.872	
	0.6	2.533	3.206	3.858	4.509	5.192	6.096	7.875		
	0.7	3.334	4.148	4.949	5.780	6.737	8.112	10.82		
	0.8	4.236	5.170	6.051	7.066	8.404	10.47	12.59		
15°	0.1	0.093	0.142	0.188	0.231	0.271	0.313	0.364	0.448	0.682
	0.2	0.325	0.458	0.586	0.707	0.824	0.953	1.140	1.523	
	0.3	0.703	0.942	1.174	1.393	1.610	1.874	2.316	3.411	
	0.4	1.237	1.602	1.953	2.285	2.624	3.089	3.981		
	0.5	1.937	2.443	2.926	3.379	3.869	4.640	6.256		
	0.6	2.778	3.428	4.058	4.664	5.366	6.581			
	0.7	3.692	4.488	5.273	6.081	7.138	8.902			
	0.8	4.648	5.570	6.516	7.628	9.910				
20°	0.1	0.096	0.144	0.190	0.232	0.273	0.315	0.368	0.459	0.680
	0.2	0.339	0.472	0.597	0.716	0.832	0.966	1.177	1.659	
	0.3	0.743	0.978	1.204	1.416	1.633	1.927	2.481		
	0.4	1.317	1.673	2.009	2.325	2.679	3.246	3.840		
	0.5	2.075	2.559	3.011	3.436	3.993	4.969			
	0.6	3.006	3.625	4.194	4.752	5.588				
	0.7	4.042	4.789	5.494	6.272					
	0.8	5.122	6.013	6.883	7.861					
25°	0.1	0.098	0.147	0.192	0.234	0.274	0.317	0.373	0.475	0.665
	0.2	0.355	0.485	0.609	0.725	0.840	0.983	1.226	1.566	
	0.3	0.784	1.015	1.233	1.437	1.660	2.000	2.589		
	0.4	1.398	1.740	2.057	2.359	2.753	3.427			
	0.5	2.205	2.659	3.064	3.490	4.114				
	0.6	3.199	3.752	4.218	4.797					
	0.7	4.318	4.941	5.480						
	0.8	5.487	6.132							
30°	0.1	0.101	0.150	0.194	0.236	0.276	0.319	0.378	0.495	
	0.2	0.372	0.500	0.621	0.734	0.850	1.005	1.298		
	0.3	0.827	1.051	1.260	1.456	1.697	2.098			
	0.4	1.477	1.801	2.092	2.393	2.830				
	0.5	2.319	2.727	3.075	3.499					
	0.6	3.320	3.738	4.041						
	0.7	4.378								
35°	0.1	0.105	0.153	0.197	0.238	0.278	0.322	0.385	0.525	
	0.2	0.390	0.516	0.634	0.744	0.862	1.035	1.329		
	0.3	0.872	1.088	1.284	1.476	1.741				
	0.4	1.553	1.849	2.105	2.412					
	0.5	2.400	2.713							
	0.6	3.278								
40°	0.1	0.109	0.156	0.200	0.241	0.280	0.325	0.394	0.569	
	0.2	0.411	0.538	0.647	0.753	0.878	1.077			
	0.3	0.919	1.122	1.301	1.496					
	0.4	1.614	1.859	2.085						
	0.5	2.376								
45°	0.1	0.114	0.160	0.203	0.243	0.282	0.329	0.409		
	0.2	0.434	0.553	0.661	0.764	0.899				
	0.3	0.965	1.148	1.306						
	0.4	1.634								

Table 7. Values of the parameters K2 Extracted from [21]