

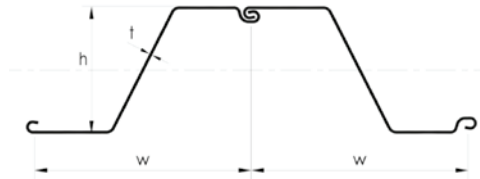
# SHEET PILE TECHNICAL SPECIFICATION

www.escsteel.com



An affiliate of:

## ESC-CRZ SERIES



Interlocking Clutch



\*excludes internal section of interlock

SECTION	WIDTH	HEIGHT	THICKNESS		CROSS SECTIONAL AREA	WEIGHT		ELASTIC SECTION MODULUS	MOMENT OF INERTIA	COATING AREA *(both side per pile)
	(w)	(h)	Flange (t <sub>f</sub> )	Web (t <sub>w</sub> )		Per Pile	Per Wall			
	in	in	in	in	in <sup>2</sup> /ft	lb/ft	lb/ft <sup>2</sup>	in <sup>3</sup> /ft	in <sup>4</sup> /ft	ft <sup>2</sup> /ft
	mm	mm	mm	mm	cm <sup>2</sup> /m	kg/m	kg/m <sup>2</sup>	cm <sup>3</sup> /m	cm <sup>4</sup> /m	m <sup>2</sup> /m
ESC-CRZ6-600	23.62 600	9.84 250	0.252 6.4	0.252 6.4	4.02 85.0	26.88 40.0	13.66 66.7	11.25 605	55.38 7,562	5.22 1.59
ESC-CRZ6-800	31.5 800	11.81 300	0.236 6.0	0.236 6.0	3.65 77.2	32.59 48.5	12.7 62.0	11.87 638	69.60 9,505	6.3 1.92
ESC-CRZ7-725	28.54 725	11.81 300	0.236 6.0	0.236 6.0	3.74 79.1	30.24 45.0	12.37 60.4	13.58 730	78.55 10,727	5.84 1.78
ESC-CRZ8-725	28.54 725	10.67 271	0.276 7.0	0.276 7.0	4.32 91.4	34.94 52.0	14.69 71.7	15.74 846	84.51 11,540	5.79 1.76
ESC-CRZ11-812	32.0 812.8	12.20 310	0.374 9.5	0.374 9.5	5.89 124.7	53.46 79.55	20.05 97.9	20.11 1,081	122.69 16,755	6.99 2.13
ESC-CRZ12-770	30.31 770	14.17 360	0.343 8.7	0.343 8.7	5.67 120.1	48.78 72.6	19.31 94.3	23.12 1,243	164.32 22,439	6.99 2.13
ESC-CRZ13-770	30.31 770	14.17 360	0.354 9.0	0.354 9.0	5.89 124.6	50.6 75.3	20.03 97.8	24.03 1,292	170.47 23,279	6.99 2.13
ESC-CRZ14	30.31 770	13.39 340	0.382 9.7	0.382 9.7	6.34 134.1	54.5 81.1	21.57 105.3	25.78 1,386	172.79 23,596	6.99 2.13
ESC-CRZ14-770	30.31 770	14.17 360	0.374 9.5	0.374 9.5	6.19 131.1	53.29 79.3	21.08 102.9	25.24 1,357	178.98 24,441	6.99 2.13
ESC-CRZ14-770-10.0	30.31 770	13.58 345	0.394 10.0	0.394 10.0	6.54 138.5	56.27 83.74	22.28 108.8	26.36 1,417	178.99 24,443	7.05 2.15
ESC-CRZ15-750	29.53 750	18.48 469.5	0.305 7.75	0.305 7.75	5.31 112.5	44.52 66.25	18.09 88.34	28.33 1,523	261.81 35,753	7.18 2.19
ESC-CRZ17-700-8.0	27.56 700	16.46 418	0.315 8.0	0.315 8.0	5.94 125.8	46.43 69.1	18.78 91.7	30.89 1,661	254.15 34,706	6.73 2.05
ESC-CRZ17-700-8.7	27.56 700	17.91 455	0.343 8.7	0.343 8.7	6.26 132.5	48.92 72.8	21.3 104.0	32.27 1,735	289.29 39,505	6.99 2.13
ESC-CRZ18-700	27.56 700	17.72 450	0.358 9.1	0.358 9.1	6.54 138.5	51.14 76.1	22.26 108.7	34.22 1,840	304.15 41,534	6.99 2.13
ESC-CRZ18-850	33.46 850	18.50 470	0.374 9.5	0.374 9.5	6.42 135.8	60.88 90.6	21.83 106.6	33.91 1,823	314.04 42,885	7.43 2.27
ESC-CRZ19-700	27.56 700	16.54 420	0.382 9.7	0.382 9.7	6.97 147.6	54.5 81.1	23.73 115.85	35.12 1,888	290.53 39,675	6.99 2.13
ESC-CRZ20-700	27.56 700	16.18 411	0.402 10.2	0.402 10.2	7.34 155.4	57.37 85.37	24.99 122.0	36.33 1,953	294.39 40,202	6.99 2.13
ESC-CRZ20-850	33.46 850	18.50 470	0.394 10.0	0.394 10.0	6.8 143.9	64.51 96.0	23.12 112.9	37.2 2,000	343.16 46,862	7.0 2.28
ESC-CRZ21-660	26.0 660.4	18.11 460	0.374 9.5	0.374 9.5	7.25 153.4	53.46 79.55	24.67 120.45	39.36 2,116	356.54 48,689	6.99 2.13
ESC-CRZ21-700	27.56 700	16.22 412	0.425 10.8	0.425 10.8	7.8 165.2	61.0 90.78	26.56 129.7	38.80 2,086	314.98 43,013	7.02 2.14

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SECTION	WIDTH	HEIGHT	THICKNESS		CROSS SECTIONAL AREA	WEIGHT		ELASTIC SECTION MODULUS	MOMENT OF INERTIA	COATING AREA *(both side per pile)
	(w)	(h)	Flange (t <sub>f</sub> )	Web (t <sub>w</sub> )		Per Pile	Per Wall			
	in mm	in mm	in mm	in mm		in <sup>2</sup> /ft cm <sup>2</sup> /m	lb/ft kg/m			
ESC-CRZ22-559	22.01 559	9.84 250	0.374 9.5	0.374 9.5	6.46 136.8	40.32 60	22.0 107.4	18.62 1,001	91.79 12,535	5.28 1.61
ESC-CRZ24-609	24.0 609.6	19.69 500	0.374 9.5	0.374 9.5	7.85 166.2	53.46 79.55	26.73 130.49	46.0 2,473	452.87 61,843	6.99 2.13
ESC-CRZ24-700	27.56 700	18.5 470	0.425 10.8	0.425 10.8	8.23 174.1	64.31 95.7	28.0 136.7	45.27 2,434	418.94 57,210	7.41 2.26
ESC-CRZ26-700	27.56 700	19.29 490	0.457 11.6	0.457 11.6	8.85 187.3	69.15 102.9	30.11 147	48.77 2,622	470.65 64,271	7.41 2.26
ESC-CRZ26-700	27.56 700	19.29 490	0.469 11.9	0.469 11.9	9.08 192.1	70.96 105.6	30.89 150.8	49.89 2,682	481.45 65,746	7.41 2.26
ESC-CRZ26-711	28.0 711.2	17.32 440	0.48 12.2	0.48 12.2	9.26 196.1	73.55 109.46	31.52 153.9	49.55 2,664	429.3 58,624	7.51 2.29
ESC-CRZ27-457	17.99 457	12.99 330	0.374 9.5	0.374 9.5	7.9 167.3	40.32 60	26.89 131.3	30.3 1,629	196.93 26,893	5.28 1.61
ESC-CRZ28-686	27.0 685.8	17.72 450	0.48 12.2	0.48 12.2	9.6 203.3	73.55 109.46	32.69 159.6	53.23 2,862	471.64 64,407	7.51 2.29
ESC-CRZ28-700	27.56 700	19.29 490	0.488 12.4	0.488 12.4	9.45 200.1	73.92 110	32.18 157.1	51.89 2,790	500.44 68,339	7.41 2.26
ESC-CRZ28-700	27.56 700	18.5 470	0.512 13	0.512 13	9.91 209.8	77.48 115.3	33.73 164.7	52.68 2,832	487.45 66,565	7.41 2.26
ESC-CRZ31-660	26.0 660.4	18.5 470	0.48 12.2	0.48 12.2	9.97 211.1	73.55 109.46	33.95 165.75	57.51 3,092	532.23 72,681	7.51 2.29
ESC-CRZ33-635	25.0 635	19.29 490	0.48 12.2	0.48 12.2	10.37 219.6	73.55 109.46	35.31 172.38	61.94 3,330	597.6 81,607	7.51 2.29
ESC-CRZ33-700	27.56 700	19.69 500	0.472 12.0	0.472 12.0	6.60 139.6	51.54 76.7	33.39 163.0	61.1 3,285	607.28 82,929	8.1 2.45
ESC-CRZ36-700N	27.56 700	22.05 560	0.48 12.2	0.48 12.2	10.12 214.3	79.16 117.8	34.45 168.2	67.13 3,609	740.12 101,070	8.07 2.46
ESC-CRZ38-700	27.56 700	22.44 570	0.52 13.2	0.52 13.2	10.95 231.8	85.6 127.4	37.28 182	71.83 3,862	806.6 110,154	8.07 2.46
ESC-CRZ40-700N	27.56 700	22.83 580	0.543 13.8	0.543 13.8	11.45 242.4	89.5 133.2	38.98 190.3	74.64 4,013	853.0 116,486	8.07 2.46
ESC-CRZ42-700N	27.56 700	22.83 580	0.575 14.6	0.575 14.6	12.11 256.4	94.7 140.9	41.23 201.3	78.34 4,212	895.0 122,215	8.07 2.46
ESC-CRZ44-700N	27.56 700	21.26 540	0.567 14.4	0.567 14.4	12.83 271.5	100.3 149.2	43.65 213.1	82.66 4,444	879.6 120,120	8.66 2.64
ESC-CRZ46-700N	27.56 700	22.83 580	0.571 14.5	0.571 14.5	12.67 268.2	99.0 147.35	43.11 210.5	85.99 4,623	981.82 134,076	8.6 2.62
ESC-CRZ48-700	27.56 700	23.23 590	0.591 15.0	0.591 15.0	13.44 284.4	105.0 156.27	45.71 223.2	89.88 4,832	1,046.04 142,846	8.79 2.68

\*excludes internal section of interlock

### ESC STEEL LLC

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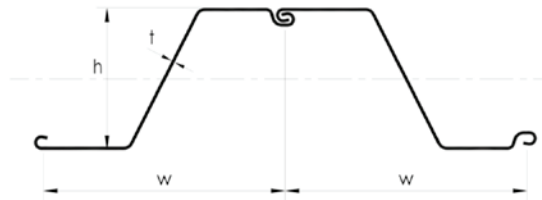
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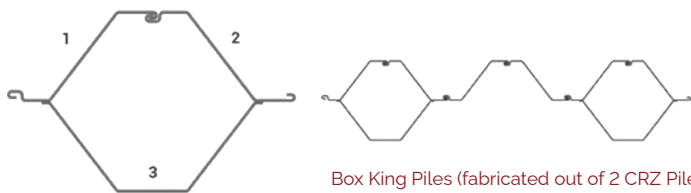
## Interlocking Clutch



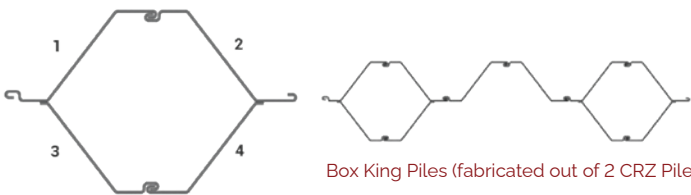
SECTION	WIDTH		HEIGHT		THICKNESS		CROSS SECTIONAL AREA		WEIGHT		ELASTIC SECTION MODULUS	MOMENT OF INERTIA	COATING AREA *(both side per pile)
	(w) in mm	(h) in mm	Flange (t <sub>f</sub> ) in mm	Web (t <sub>w</sub> ) in mm	in <sup>2</sup> /ft cm <sup>2</sup> /m	Per Pile lb/ft kg/m	Per Wall lb/ft <sup>2</sup> kg/m <sup>2</sup>	in <sup>3</sup> /ft cm <sup>3</sup> /m	in <sup>4</sup> /ft cm <sup>4</sup> /m	ft <sup>2</sup> /ft m <sup>2</sup> /m			
ESC-CRZ48-580-14.5	22.83 580	21.26 540	0.571 14.5	0.571 14.5	14.43 305.5	93.5 139.1	49.11 239.8	89.99 4,838	957.54 130,760	8.1 2.47			
ESC-CRZ50-580-14.0	22.83 580	22.83 580	0.551 14.0	0.551 14.0	13.92 294.6	90.1 134.13	47.37 231.3	93.69 5,037	1025.23 140,004	8.1 2.47			
ESC-CRZ50-700	27.56 700	22.05 560	0.63 16.0	0.63 16.0	14.1 298.5	110.2 164.0	48.0 234.3	93.37 5,020	1,029.43 140,578	8.56 2.61			
ESC-CRZ52-700	27.56 700	21.65 550	0.63 16.0	0.63 16.0	14.42 305.2	112.69 167.7	49.07 239.6	97.2 5,226	1,052.6 143,742	8.86 2.7			

\*excludes internal section of interlock

## OTHER CONFIGURATIONS



Box King Piles (fabricated out of 2 CRZ Piles & 1 Cold Formed U Pile)

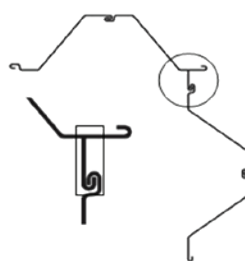


Box King Piles (fabricated out of 2 CRZ Piles)

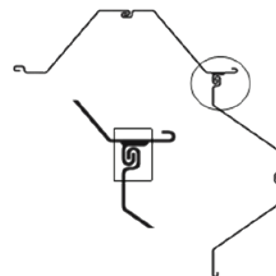


## CORNER PILES

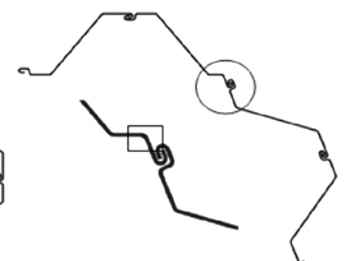
ESC is able to offer 3 options for Corner Pile configurations in the ESC-CRZ Series. Option 1 is frequently used when the installation contractor prefers to create their own corner piles on site depending on the as-driven layout. However this produces wastage on the offcut pile. Option 2 allows welding at the mill or on site and provides the installation contractor with more flexibility on corner pile location. Option 3 provides an option where no welding is required. Option 3 provides increased accuracy at corners that are deviated from the typical 90° corner.



OPTION 1  
Cut & weld on section from  
CRZ Sheet Pile



OPTION 2  
ESC CR Interlock welded



OPTION 3  
Cold Form bending of flange

## STEEL GRADES & MANUFACTURING TOLERANCES

### COLD ROLLED & COLD FORMED SHEET PILES

#### MANUFACTURING TOLERANCES

COMPONENT	BS EN1024-9	ASTM A6	NOMINAL THICKNESS	TOLERANCE
Mass	± 5%	±2.5%	0.197" / 5mm	± 0.0114" / 0.29mm
Length	± 2.0" / 50mm	+ 5.0" / 127mm	0.236" / 6mm	± 0.0122" / 0.31mm
Height (≤ 7.87" / 200mm)	± 0.157" / 4.0mm		0.315" / 8mm	± 0.0138" / 0.35mm
Height (> 7.87" / 200mm & ≤ 11.8" / 300mm)	± 0.236" / 6.0mm		0.354" / 9mm	± 0.0157" / 0.40mm
Height (> 11.8" / 300mm & ≤ 15.8" / 400mm)	± 0.315" / 8.0mm		0.393" / 10mm	± 0.0157" / 0.40mm
Height (> 15.8" / 400mm)	± 0.394" / 10.0mm		0.472" / 12mm	± 0.0169" / 0.43mm
Width of Single Pile	± 2% of width		0.512" / 13mm	± 0.0181" / 0.46mm
Width of Double Z or Wide U	± 3% of width		0.591" / 15mm	± 0.0181" / 0.46mm
Squareness of Ends	2% of width		N/A	
Straightness	±0.2% of the length			
Squareness of Ends	± 2% of the width			



#### SHEET PILE MARKING

ESC is able to apply adhesive stickers to its products to provide useful information such as destination, order number, project identifier, client name and others. To enable good traceability, material heat number & pile specification is included as standard.



#### STEEL GRADES

CLASSIFICATION		MECHANICAL PROPERTIES					CHEMICAL COMPOSITION % (MAX)					
		MINIMUM YIELD STRENGTH		ULTIMATE TENSILE STRENGTH		MINIMUM ELONGATION	IMPACT STRENGTH (CHARPY)	C	Si	Mn	P	S
		ksi	MPa	ksi	MPa	%						
ASTM A36-14	A36	36	250	58-80	400-550	23	-	0.26	0.40	-	0.040	0.050
ASTM A572-2013a	A572 Gr.42	42	290	≥ 60	≥415	20	-	0.21	0.40	1.35	0.040	0.050
	A572 Gr.50	50	345	≥ 65	≥450	18	-	0.23	0.40	1.30	0.040	0.050
	A572 Gr.55	55	380	≥ 60	≥485	17	-	0.25	0.40	1.35	0.030	0.030
	A572 Gr.60	60	413	≥ 75	≥517	16	-	0.26	0.40	1.35	0.040	0.050
	A572 Gr.65	65	450	≥ 80	≥550	15	-	0.23	0.40	1.35	0.030	0.030
ASTM A588	A588 Gr.50A	50	345	≥ 70	≥485	18	-	0.19	0.30-0.65	0.80-1.25	0.040	0.050
	A588 Gr.50B	50	345	≥ 70	≥485	18	-	0.20	0.15-0.50	0.75-1.35	0.040	0.050
ASTM A690	A690 Gr.50	50	345	≥ 70	>485	21	-	0.22	0.40	0.60-0.90	0.08-.015	0.040
ASTM A871	A871 Gr.60 Type I	60	415	≥ 75	>520	16	15ft-lb [20J] @ 0°F [-18°C] for t≤0.5" [12mm] 15ft-lb [20J] @ -20°F [-29°C] for t>0.5" [12mm]	0.19	0.30-0.65	0.8-1.35	0.030	0.030
	A871 Gr.60 Type II	60	415	≥ 75	>520	16		0.20	0.15-0.50	0.75-1.35	0.030	0.030
	A871 Gr.60 Type IV	60	415	≥ 75	>520	16		0.17	0.25-0.50	0.50-1.20	0.030	0.030
	A871 Gr.65 Type I	65	450	≥ 80	>550	15	15ft-lb [20J] @ 0°F [-18°C] for t≤0.5" [12mm] 15ft-lb [20J] @ -20°F [-29°C] for t>0.5" [12mm]	0.19	0.30-0.65	0.80-1.35	0.030	0.030
	A871 Gr.65 Type II	65	450	≥ 80	>550	15		0.20	0.15-0.50	0.75-1.35	0.030	0.030
	A871 Gr.65 Type IV	65	450	≥ 80	>550	15		0.17	0.25-0.50	0.50-1.20	0.030	0.030
ASTM A1018	A1018 Gr.50 Class1	50	340	≥ 65	>450	16	-	0.23	-	1.50	0.040	0.040
	A1018 Gr.50 Class2	50	340	≥ 60	>410	16	-	0.15	-	1.50	0.040	0.040
	A1018 Gr.60 Class1	60	410	≥ 75	>520	14	-	0.26	-	1.50	0.040	0.040
	A1018 Gr.60 Class2	60	410	≥ 70	>480	14	-	0.15	-	1.50	0.040	0.040
	A1018 Gr.70 Class1	70	480	≥ 85	>590	10	-	0.26	-	1.65	0.040	0.040
	A1018 Gr.70 Class2	70	480	≥ 80	>550	10	-	0.15	-	1.65	0.040	0.040
	A1018 Gr.80	80	550	≥ 90	>620	10	-	0.15	-	1.65	0.025	0.035

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