State of the Art Design and Construction of Steel Sheet Piled Bridge Structures

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Sheet Pile Solutions for Port Construction

Note:

Only the introductory slides of this presentation are included on the web site.

The presentation in full is available from the engineering department at Skyline Steel LLC. Please contact us on the

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our team of engineers will be glad to assist.

Sheet Pile Solutions for Bridge Construction

Item 1	AZ & HZ product range
Item 2	Subway or Underpass construction using sheet piling
Item 3	Conventional bridge abutment construction
Item 4	Innovative bridge abutment construction
Item 5	Examples of sheet piled bridge abutments
Item 6	Sheet piling installation
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Item 8	Steel grades
Item 9	Durability calculation method

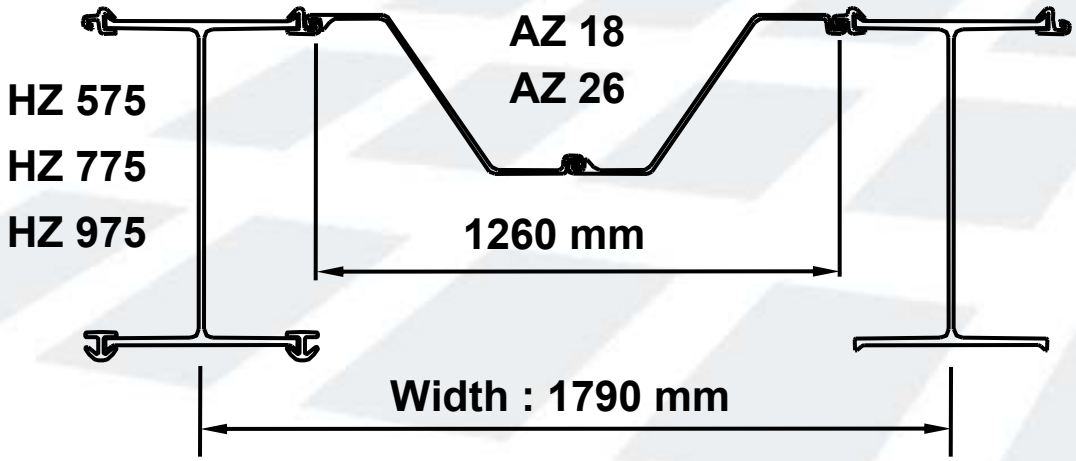
The AZ Sheet Pile Range

Section	Width (w) in (mm)	Height (h) in (mm)	Flange Thickness (t_f) in (mm)	Web Thickness (t_w) in (mm)	Cross Sectional Area in²/ft (cm²/m)	Weight		Section Modulus in³/ft (cm³/m)	Moment of Inertia in⁴/ft (cm⁴/m)	Coating Area Both Sides ft²/ft of single (m²/m)	Coating Area ft²/ft² (m²/m²)
						Pile lb/ft (kg/m)	Wall lb/ft² (kg/m²)				
AZ 13	26.38 670	11.93 303.0	0.375 9.50	0.375 9.50	6.47 137	48.38 72.00	21.92 107.00	**24.18** 1300	144.26 19700	5.45 1.66	1.24 1.24
AZ 18	24.80 630	14.96 380.0	0.375 9.50	0.375 9.50	7.09 150	49.99 74.40	24.17 118.00	**33.48** 1800	250.45 34200	5.64 1.72	1.37 1.37
AZ 26	24.80 630	16.81 427.0	0.512 13.00	0.480 12.20	9.35 198	65.72 97.80	31.75 155.00	**48.36** 2600	406.50 55510	5.87 1.79	1.42 1.42
AZ 36	24.80 630	18.11 460.0	0.709 18.00	0.551 14.00	11.67 247	82.11 122.20	39.73 194.00	**66.96** 3600	606.34 82800	6.10 1.86	1.48 1.48
AZ 48	22.83 580	18.98 482.0	0.748 19.00	0.591 15.00	14.48 306.5	93.81 139.60	49.28 240.60	**89.28** 4800	847.05 115670	6.23 1.90	1.64 1.64

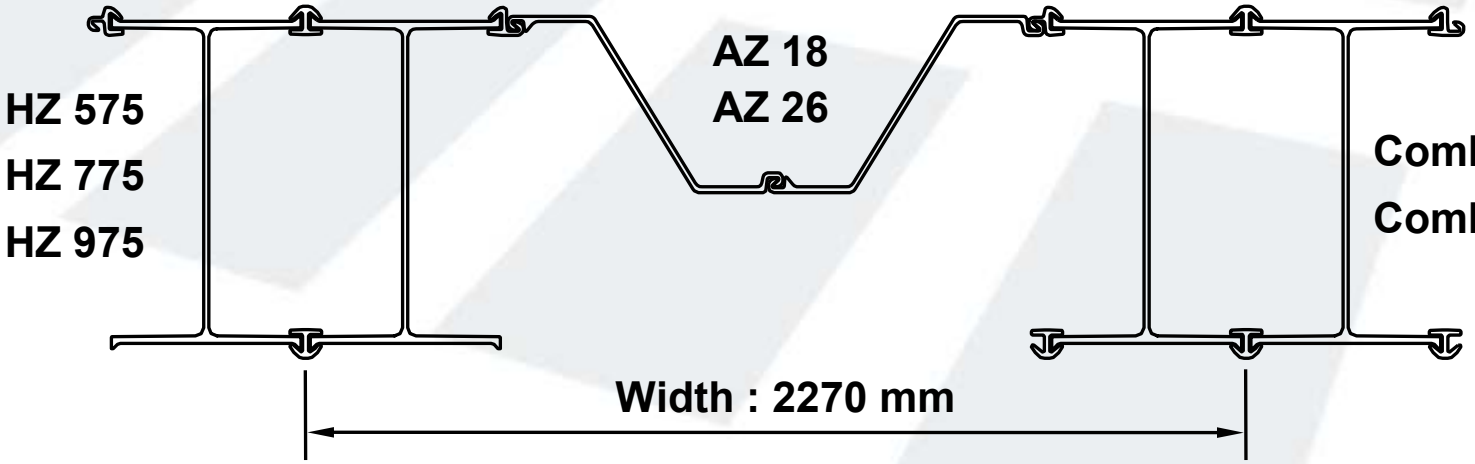
The range of AZ sheet piles shown above has been expanded to 15 sizes to give greater choice to the designer. (see next page)

Section	Width (w) in	Height (h) in	Flange Thickness (t_f) in	Web Thickness (t_w) in	Cross Sectional Area in^2/ft	Weight		Section Modulus in^3/ft	Moment Inertia in^4/ft
						Pile lb/ft	Wall lb/ft^2		
AZ 12	**26.38**	11.89 302.0	0.335 8.50	0.335 8.50	5.94 125.7	44.42 66.10	20.22 98.70	**22.32**	132.84
AZ 13	**26.38**	11.93 303.0	0.375 9.50	0.375 9.50	6.47 137	48.38 72.00	21.92 107.00	**24.18**	144.26
AZ 14	**26.38**	11.97 304.0	0.413 10.50	0.413 10.50	7.03 148.9	52.62 78.30	23.94 116.90	**26.04**	155.98
AZ 17	**24.80**	14.92 379.0	0.335 8.50	0.335 8.50	6.53 138.3	45.96 68.40	22.24 108.60	**30.97**	231.26
AZ 18	**24.80**	14.96 380.0	0.375 9.50	0.375 9.50	7.09 150	49.99 74.40	24.17 118.00	**33.48**	250.45
AZ 19	**24.80**	15.00 381.0	0.413 10.50	0.413 10.50	7.74 163.8	54.43 81.00	26.34 128.60	**36.08**	270.80
AZ 25	**24.80**	16.77 426.0	0.472 12.00	0.441 11.20	8.74 185	61.49 91.50	29.74 145.20	**45.66**	382.63
AZ 26	**24.80**	16.81 427.0	0.512 13.00	0.480 12.20	9.35 198	65.72 97.80	31.75 155.00	**48.36**	406.50
AZ 28	**24.80**	16.85 428.0	0.551 14.00	0.520 13.20	9.97 211.1	70.15 104.40	33.94 165.70	**51.24**	431.62
AZ 34	**24.80**	18.07 459.0	0.669 17.00	0.512 13.00	11.03 233.5	77.61 115.50	37.54 183.30	**63.80**	576.32
AZ 36	**24.80**	18.11 460.0	0.709 18.00	0.551 14.00	11.67 247	82.11 122.20	39.73 194.00	**66.96**	606.34
AZ 38	**24.80**	18.15 461.0	0.748 19.00	0.591 15.00	12.33 261	86.75 129.10	41.97 204.90	**70.31**	637.69
AZ 46	**22.83**	18.94 481.0	0.709 18.00	0.551 14.00	13.76 291.2	89.10 132.60	46.82 228.60	**85.47**	808.83
AZ 48	**22.83**	18.98 482.0	0.748 19.00	0.591 15.00	14.48 306.5	93.81 139.60	49.28 240.60	**89.28**	847.05
AZ 50	**22.83**	19.02 483.0	0.787 20.00	0.630 16.00	15.22 322.2	98.58 146.70	51.80 252.90	**93.28**	886.52

The HZ – AZ Wall System

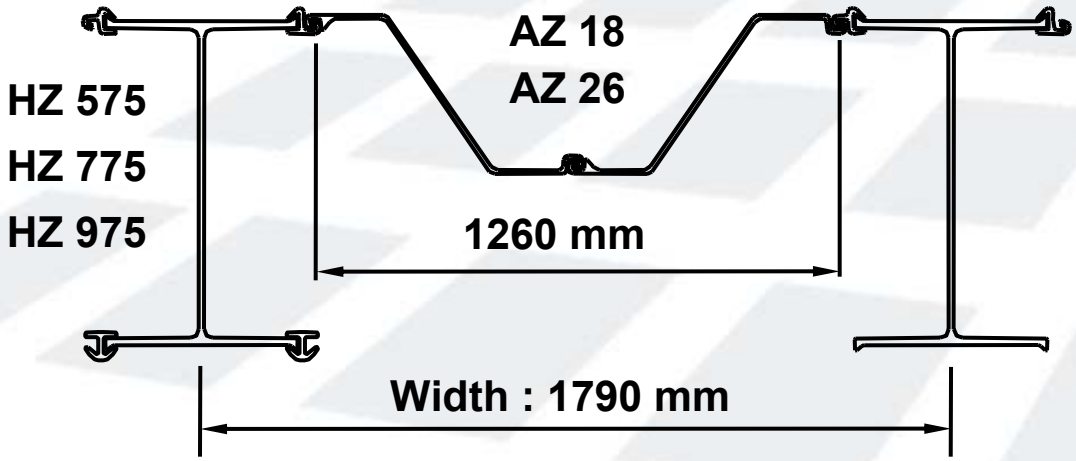


Combination 12
Combination 14



Combination 24
Combination 26

The HZ – AZ Wall System



Combination 12
Combination 14

1. Section Modulus from 54 ins3/ft – 507 ins3/ft
2. Inertia (stiffness) from 700 ins4/ft - 10480 ins4/ft
3. Up to 160 combinations of HZ wall

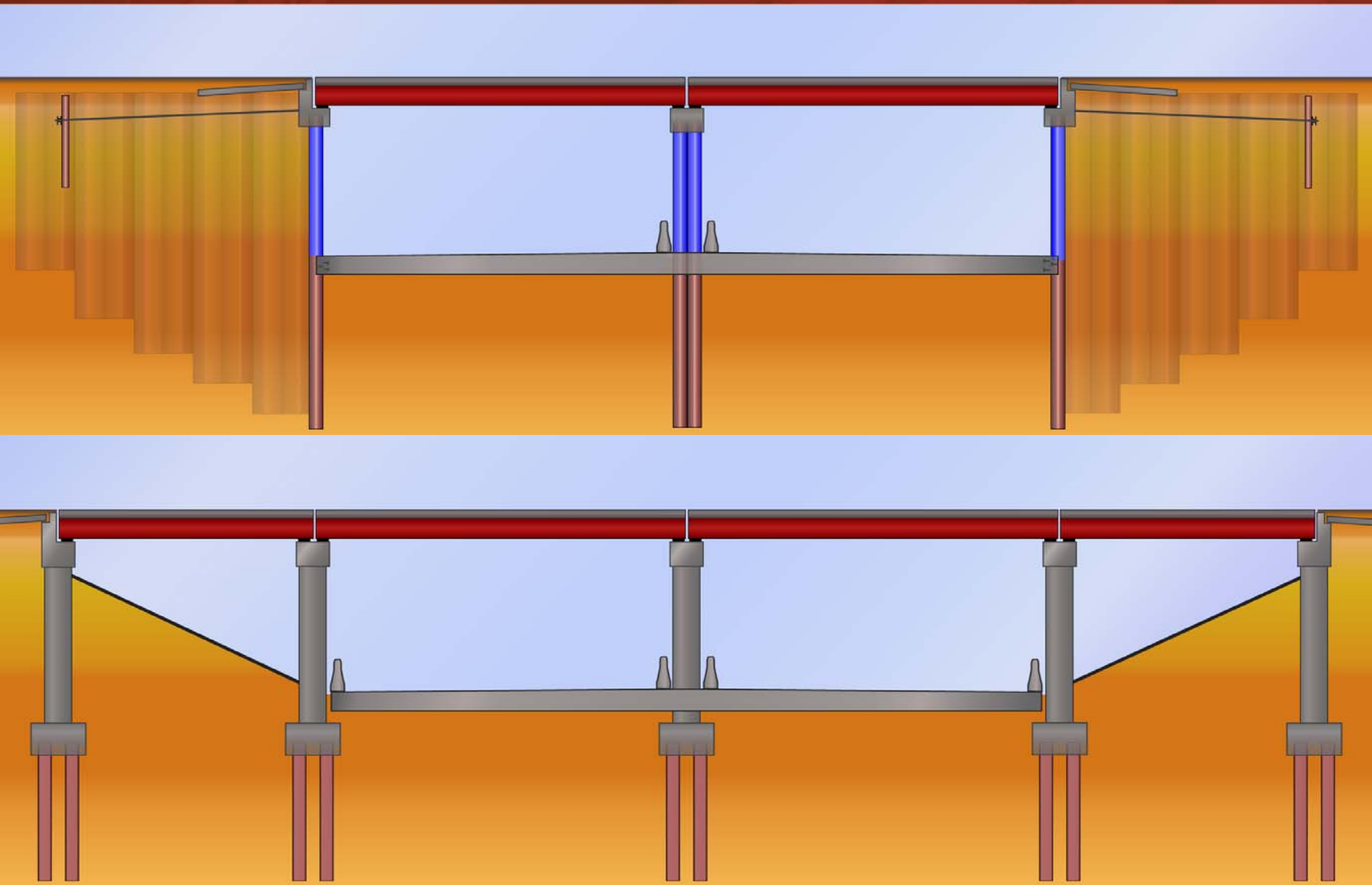
Subway and Bridge Abutment Construction

1. Alternative Top Down build method using sheet piling to reduce traffic disruption

2. Conventional build using sheet piling for temporary excavation support, foundation piling followed by concrete abutment

3. Alternative build using sheet piling to replace complexity of conventional build, reduce disruption period and construction time

Bridge Abutment Comparison



Sheet Piled Abutment and Approach Walls

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Note:
Detail of the construction methods for these
methods of build is available in the complete presentation.

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