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Single slide rail system Linear shoring

1

⬆ *Single-rail linear shoring with U-type and rectangular roller unit*

Module length	2,13 m - 6,38 m
Length slide rail	4,13 m
Panel height	1,32 m / 2,32 m
Pipe culvert height	variable

Linear shoring - no comparison

With Linear shoring the soil on either side of the trench remains untouched, while there are no adverse effects on building foundations, not even if they are in the immediate vicinity of the excavation. No impairment of traffic flow, not even it if is moving right alongside the trench. Until the invention of Linear shoring such feats were considered unattainable.

Linear shoring combines tried-and-tested functional principles with unconventional, innovative ideas to create a revolutionary new shoring system. A feature of the Linear shoring system is the replacement of the permanently positioned hinged spreaders, due to the ingeneous use

of rigid boogie cars that act on the shoring panels in such way that the trench width is completely uniform troughout all stages of the installation.

Vertically mobile, horizontally adjustable.

The boogie cars mounted in the supports of the shoring system can be adjusted in height to match the increasing depth of the trench. The width of the frame is adapted by the spreader system to the desired trench width.

A right to right angles.

The mobile frame accurately ensures right angles in the trench. Everything is linearly aligned, always at exactly the same distance from the opposite side. In all phases of construction. That is the key to success. Because this means you can work more efficiently, faster and to a higher standard of quality whilst at the same time cutting costs appreciably.

Single slide rail system Linear shoring
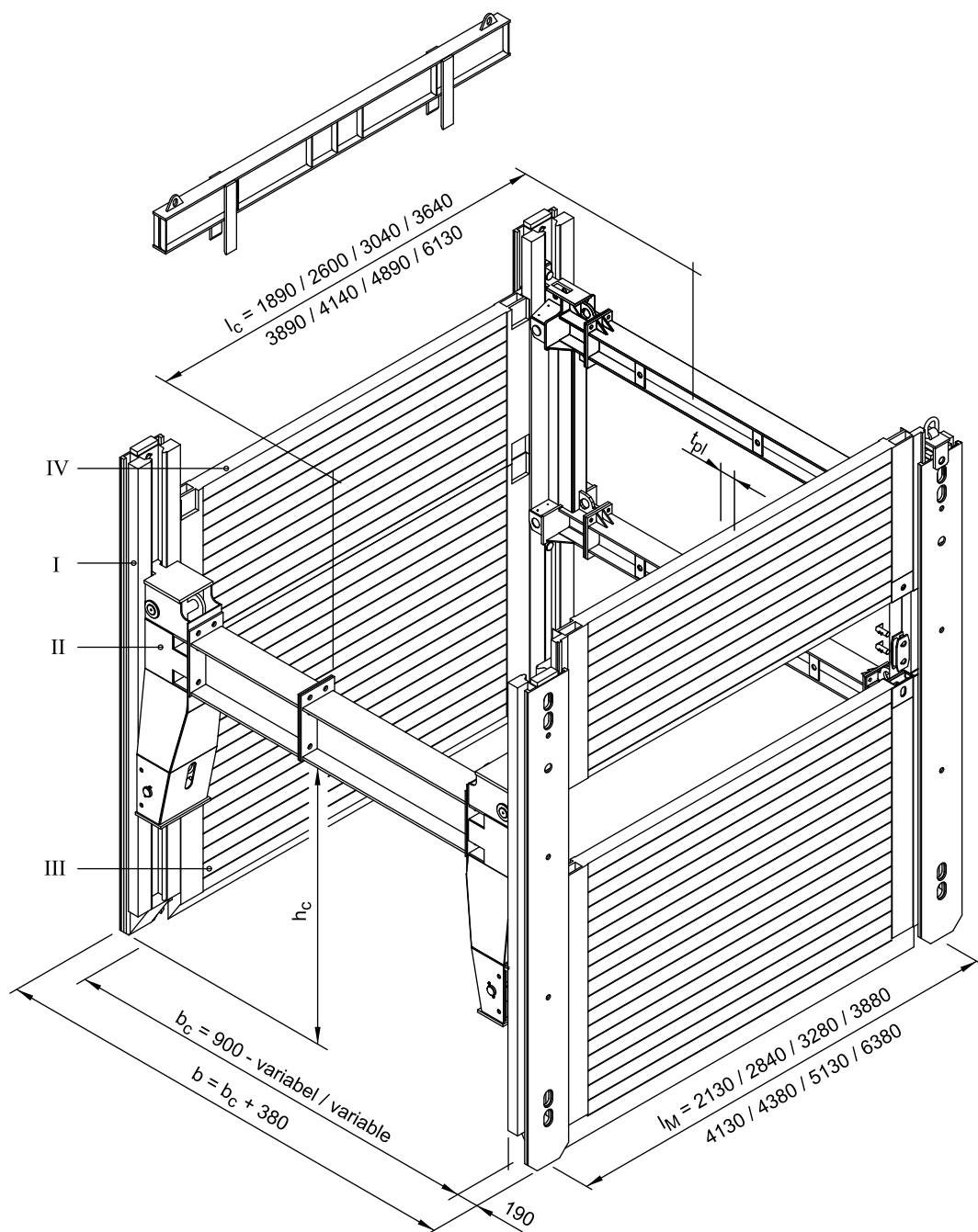
$l_c = 1890 / 2600 / 3040 / 3640$
$3890 / 4140 / 4890 / 6130$

t_{pl}

IV

I

II

III

h_c

$b_c = 900$ - variabel / variable

$b = b_c + 380$

$l_M = 2130 / 2840 / 3280 / 3880$
$4130 / 4380 / 5130 / 6380$

190

I	Linear shoring support	l_c	Pipe culvert length
II	Boogie car	b	Shoring / trench width
III	Base panel	b_c	Inner width
IV	Top panel	h_c	Pipe culvert height
l_M	Module length	t_{pl}	Thickness

⬆ *Single-rail linear shoring with U-type or rectangular roller unit*

(All dimensions in mm. The details of length of pipe opening l_c refer to the rectangular roller unit.)

Single slide rail system Linear shoring

Linear shoring support

Art. No.	Short description	l [m]	G [kg]
820 935	Linear shoring support, single slide rail	**4,13**	715,0

Linear shoring boogie car

Art. No.	Short description	l [m]	G [kg]
832 200	Rectangular roller unit	**2,00**	420,0
832 205	Linear shoring U-type boogie car	**2,00**	550,0

Base panels -inside- (height 2.32 m)

Art. No.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	eh [kN/m²]
821 120	**1,89**	2,13	0,11	1,89	516,0	4,38	176,00
821 160	**2,60**	2,84	0,11	2,60	650,0	6,03	90,00
821 250	**3,04**	3,28	0,11	3,04	730,0	7,05	65,50
821 610	**3,64**	3,88	0,11	3,64	840,0	8,44	45,20
821 850	**3,89**	4,13	0,11	3,89	965,0	9,02	39,40
821 855	**4,14**	4,38	0,15	4,14	1.185,0	9,58	81,00
821 860	**4,89**	5,13	0,15	4,89	1.505,0	11,34	58,10
821 861	**6,13**	6,38	0,15	6,13	1.880,0	14,22	36,60

Top panels -inside- (height 1.32 m)

Art. No.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	eh [kN/m²]
822 060	**1,89**	2,13	0,11	1,89	355,0	2,49	176,00
821 180	**2,60**	2,84	0,11	2,60	445,0	3,43	90,00
822 120	**3,04**	3,28	0,11	3,04	500,0	4,01	65,50
822 620	**3,64**	3,88	0,11	3,64	570,0	4,80	45,20
822 760	**3,89**	4,13	0,11	3,89	635,0	5,13	39,40
822 783	**4,14**	4,38	0,15	4,14	870,0	5,45	81,00
822 800	**4,89**	5,13	0,15	4,89	1.090,0	6,45	58,10
822 801	**6,13**	6,38	0,15	6,13	1.370,0	8,09	36,60

Top panels -inside- (height 2.30 m)

Art. No.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	eh [kN/m²]
822 065	**1,89**	2,13	0,11	1,89	530,0	4,35	176,00
822 155	**2,60**	2,84	0,11	2,60	660,0	5,98	90,00
822 180	**3,04**	3,28	0,11	3,04	740,0	6,99	65,50
822 680	**3,64**	3,88	0,11	3,64	845,0	8,37	45,20
822 780	**3,89**	4,13	0,11	3,89	975,0	8,95	39,40
822 785	**4,14**	4,38	0,15	4,14	1.409,0	9,50	81,00

Base panels -inside- with injection pipe (height 2.32 m)

Art. No.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	eh [kN/m²]
821 251	**3,04**	3,28	0,12	3,04	810,0	7,05	63,00
821 615 A	**3,64**	3,88	0,12	3,64	890,0	8,44	43,50
821 827 A	**3,89**	4,13	0,12	3,89	980,0	9,02	43,90

Top panels -inside- with injection pipe (height 1.32 m)

Art. No.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	eh [kN/m²]
822 130	**3,04**	3,28	0,12	3,04	572,0	4,01	63,00
822 660	**3,64**	3,88	0,12	3,64	670,0	4,80	43,50

(The details of length of pipe opening l_c refer to the rectangular roller unit.)

Single slide rail system Linear shoring

Combinations of height

Base panel

2,32 m

Trench depth ca. 2,30 m

Top panel

1,32 m

Base panel

2,32 m

Trench depth ca. 3,60 m

Top panel

2,30 m

Base panel

2,32 m

Trench depth ca. 4,60 m
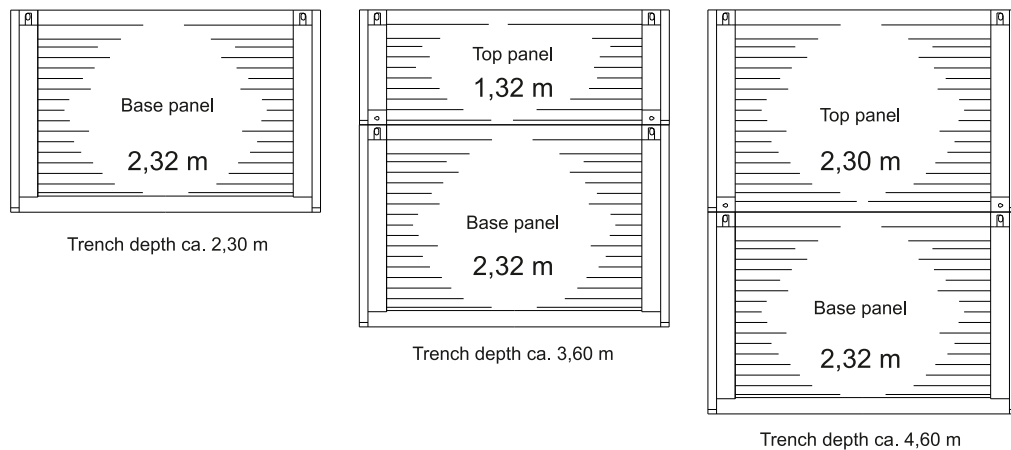
The shoring wall height can be adapted to the necessary trench depth with different panel combinations. Please note that, up to the maximum height, reduced shoring depths can be obtained by overlapping the inner and outer panels.

Extension bars for rectangular roller unit

Art. No.	Short description	l [m]	G [kg]
830 005	Extension bar HEB 220	0,140	38,0
830 010	Extension bar HEB 220	0,275	50,0
830 011	Extension bar HEB 220	0,350	55,0
830 012	Extension bar HEB 220	0,375	57,0
830 015	Extension bar HEB 220	0,412	60,0
830 020	Extension bar HEB 220	0,550	70,0
830 030	Extension bar HEB 220	1,100	110,0
830 075	Extension bar HEB 220	1,650	152,0
830 125	Extension bar HEB 220	2,200	192,0
830 300	Extension bar HEB 220	3,300	278,0
830 305	Extension bar HEB 220	4,400	358,0

Extension bars for U-type roller unit

Art. No.	Short description	l [m]	G [kg]
831 503	Extension bar HEA 450	0,140	77,0
831 500	Extension bar HEA 450	0,275	95,0
831 507	Extension bar HEA 450	0,375	115,0
831 510	Extension bar HEA 450	0,550	130,0
831 520	Extension bar HEA 450	1,100	207,0
831 530	Extension bar HEA 450	1,650	286,0
831 540	Extension bar HEA 450	2,200	362,0

l	Length	A	Area
l_M	Module length	G	Weight
l_c	Pipe culvert length	G / VP	Weight per shoring panel
b	Shoring / trench width	d	Diameter
b_c	Inner width	eh	Earth pressure max.
t_{pl}	Thickness		

Single slide rail system Linear shoring

Trench widths

Length extension bar	b_c	b
[m]	[m]	[m]
without extension bar	0,900	1,280
0,140	1,040	1,420
0,275	1,175	1,555
0,350	1,250	1,630
0,375	1,275	1,655
0,412	1,312	1,692
0,550	1,450	1,830
1,100	2,000	2,380
1,650	2,550	2,930
2,200	3,100	3,480
3,300	4,200	4,580
4,400	5,300	5,680

Other trench widths possible by combining different extension bar lengths.
Larger trench widths available on request.

Accessories / Spares

Art. No.	Short description	l [m]	G [kg]	d [m]	Standard
842 758	**Adapter for DKU piling frame, corner shoring, h = 0.50 m KDIV**		47,0		
842 752	**Adapter for DKU piling frame, corner shoring, h = 0.50 m KDVI**		55,0		
842 753	**Adapter for DKU piling frame, corner shoring, h = 1.00 m KDVI**		94,0		
842 749	**Adapter for DKU piling frame, h = 0.50 m KDVI (single slide rail, E+S)**		45,0		
842 759	**Adapter for DKU piling frame, h = 1.00 m KDIV (single slide rail, E+S)**		40,0		
842 751	**Adapter for DKU piling frame, h = 1.00 m KDVI (single slide rail)**		75,5		
834 080	**Adapter for EGS / DGS (LV)**		105,0		
336 960	**Bearing claw for DKU piling frame element**		40,0		
862 200	**Connector**		6,9		
834 100	**Cover panel for in-situ concrete DG -base panel-**	0,750	7,9		
834 110	**Cover plate for in-situ concrete DG -top plate-**	1,000	9,9		
842 099	**DKU piling frame guide frame**	2,27	105,0		
842 100	**DKU piling frame guide frame**	3,81	175,0		
IA 0150F	**Nut M 24**		0,1		DIN 934
IA 0210F	**Nut M 36**		0,4		DIN 934
832 230	**Pin**	0,150	1,4	0,035	
862 100	**Pin (for connector)**	0,110	0,8	0,035	
832 246	**Pin for roller unit (deep Linear shoring)**	0,300	4,6	0,05	
832 245	**Pin, Linear shoring (double slide rail)**	0,300	3,2	0,04	
850 720	**Pin, Linear shoring (single slide rail)**		2,5		
861 075	**Pressure beam (boxes, slide rail)**	4,60	425,0		
861 085	**Pressure beam (boxes, slide rail)**	5,80	525,0		
861 076	**Pressure beam (Medium, Magnum shoring, KS 100, GLS)**	1,60	175,5		
861 074	**Pressure beam (Medium, Magnum shoring, KS 100, GLS)**	2,35	236,0		
861 070	**Pressure beam (Medium, Magnum shoring, KS 100, GLS)**	2,80	271,0		
861 071	**Pressure beam (Medium, Magnum shoring, KS 100, GLS)**	3,40	318,0		
834 015	**Pressure plate for boogie car**		12,4		
834 060	**Pull adapter double slide rail**		43,6		
834 057	**Pull adapter single slide rail**		30,8		
IB 0470F	**Screw M 24 x 80**		0,4		DIN 933
IB 0614F	**Screw M 36 x 80**		1,0		DIN 933
HE 0050 F	**Spring cotter 6 mm**		0,03	0,006	DIN 11024
HE 0060F	**Spring cotter 8 mm**		0,1	0,008	DIN 11024

Single slide rail system Linear shoring

Accessories / Spares (contd.)

Art. No.	Short description	l [m]	G [kg]	d [m]	Standard
821 100	**Suspension chain KL-13-8**	**5,000**	25,7		
842 704	**Waling for DKU piling frame, module length 2.84 m (single slide rail, E+S)**	**2,60**	300,0		
842 705	**Waling for DKU piling frame, module length 3.88 m (single slide rail, E+S)**	**3,64**	402,0		
842 710	**Waling for DKU piling frame, module length 4.13 m (single slide rail, E+S)**	**3,89**	420,0		
842 711	**Waling for DKU piling frame, module length 4.38 m (single slide rail, E+S)**	**4,14**	445,0		

Double slide rail system Linear shoring

1

⬆ *Double slide rail system Linear shoring with U-type boogie car*

Module length	2,25 m - 6,50 m
Length slide rail	5,13 m - 9,13 m
Panel height	1,32 m / 2,32 m
Pipe culvert height	variabel

Linear shoring - no comparison
With Linear shoring the soil outside the trench remains untouched – no adverse effects on buildings and traffic flow. Instead of permanently positioned hinged spreaders, the non-bending roller units of the linear shoring system hold the supports and thus keep the shoring panels in the trench apart. This way, the trench width remains completely uniform throughout all stages of the project. With the optional E+S U boogie car, even larger vertical pipe clearances can be achieved.

Vertically mobile, horizontally adjustable.
The boogie cars mounted in the supports of the shoring system can be adjusted in height to match the increasing depth of the trench. The width of the roller frame is adapted by the spreader system to the desired trench width.

Linear shoring is suitable for cast-in-place concrete and can thus be flexibly used in all construction projects.

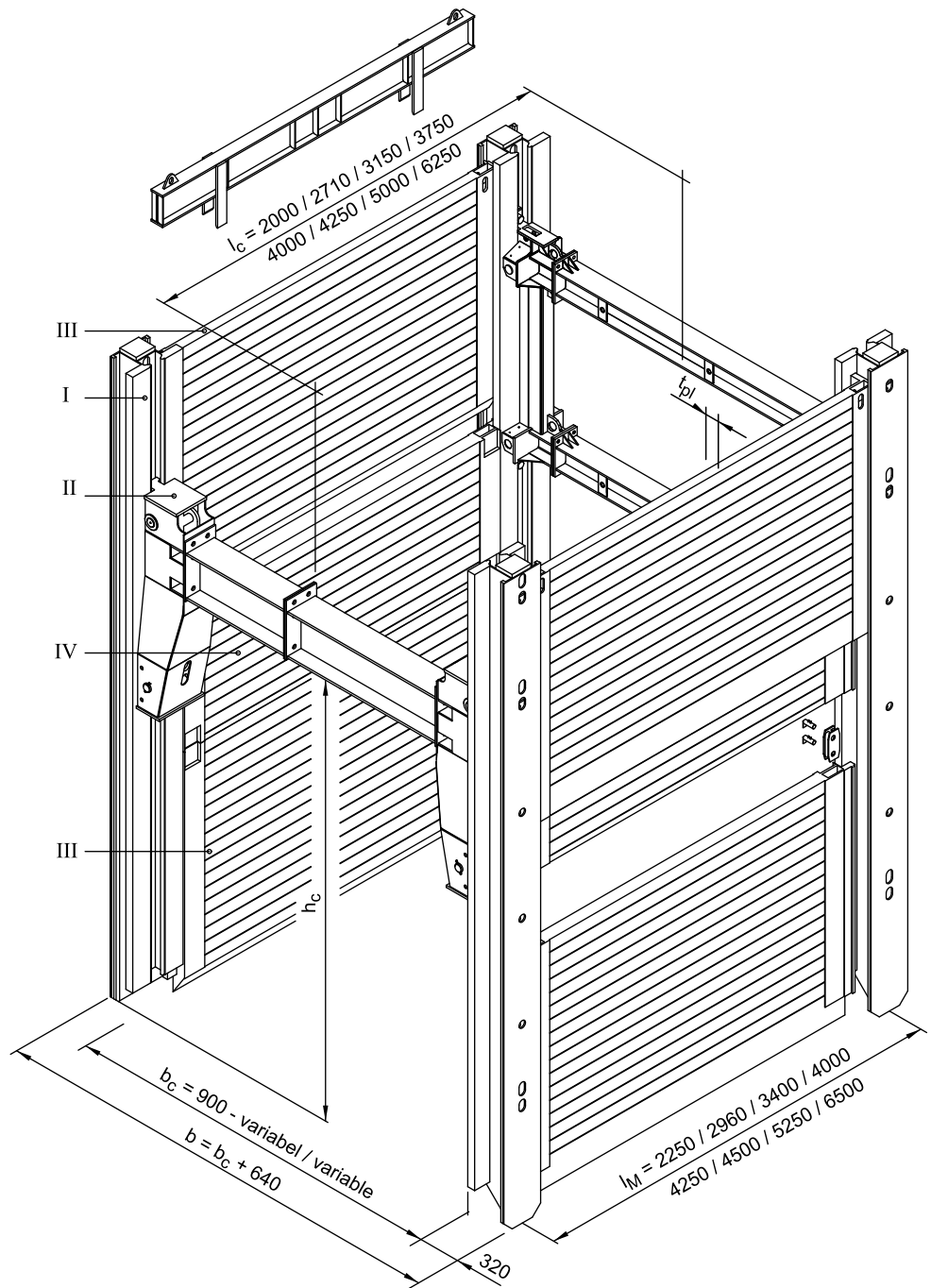### Tall panels can now be fitted in spite of overhead cables.
With other systems the panels have to be inserted in a complicated procedure from above. For the first time ever it is now possible to swing shoring panels into position from the sides. Because the shoring panels are swung at ground level from the side into the supports and not lowered from a great height, overhead cables such as tram contact lines are no longer an obstacle. This represents a huge step forward in many inner-city applications.

Advantages that count.
Linear shoring yields extremely good soil compaction values during extraction. The overall efficiency of the system particularly in deep trenches is enhanced even further by the fact that the forces released during extraction are considerably lower than on most other shoring systems. And that is an assurance of a high overall pipe-laying rate.

Double slide rail system Linear shoring

$l_c = 2000 / 2710 / 3150 / 3750$
$4000 / 4250 / 5000 / 6250$

III

I

II

IV

III

t_{pl}

h_c

$b_c = 900$ - variabel / variable

$b = b_c + 640$

$l_M = 2250 / 2960 / 3400 / 4000$
$4250 / 4500 / 5250 / 6500$

320

I	Linear shoring support	l_c	Pipe culvert length
II	Boogie car	b	Shoring / trench width
III	Base panel	b_c	Inner width
IV	Top panel	h_c	Pipe culvert height
l_M	Module length	t_{pl}	Thickness

⬆ *Overlapping linear shoring with U-type or rectangular roller unit*

(All dimensions in mm. The details of length of pipe opening l_c refer to the rectangular roller unit.)

1

Double slide rail system Linear shoring

Linear shoring support

Art. No.		l [m]	G [kg]
820 912		**5,13**	995,0
820 915		**6,13**	1.200,0
820 920		**7,13**	1.410,0
820 924		**8,13**	1.865,0
820 929		**9,13**	2.348,0

Linear shoring support with injection pipe

Art. No.		l [m]	G [kg]
820 913		**5,13**	1.111,3
820 916		**6,13**	1.265,0
820 921		**7,13**	1.522,5
820 922		**7,63**	1.575,0
820 926		**8,13**	1.775,4

Linear shoring boogie car

Art. No.	Short description	l [m]	G [kg]
832 200	Rectangular roller unit	2,00	420,0
832 215	Linear shoring rectangular roller unit	2,20	465,0
832 205	Linear shoring U-type boogie car	2,00	550,0

Base panel -outside- (Height 2,32 m)

Art. No.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	eh [kN/m²]
821 150	**2,00**	2,25	0,11	2,00	540,0	4,64	149,00
821 170	**2,71**	2,96	0,11	2,71	670,0	6,29	80,00
821 310	**3,15**	3,40	0,11	3,15	755,0	7,31	59,00
821 770	**3,75**	4,00	0,11	3,75	865,0	8,70	49,00
821 910	**4,00**	4,25	0,11	4,00	985,0	9,28	41,40
821 913	**4,25**	4,50	0,15	4,25	1.225,0	9,86	75,00
821 912	**5,00**	5,25	0,15	5,00	1.545,0	11,60	54,50
821 916	**6,25**	6,50	0,15	6,25	1.910,0	14,50	34,70

Top panel -outside- (Height 1,32 m)

Art. No.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	eh [kN/m²]
822 075	**2,00**	2,25	0,11	2,00	365,0	2,64	149,00
821 190	**2,71**	2,96	0,11	2,71	450,0	3,58	80,00
822 310	**3,15**	3,40	0,11	3,15	510,0	4,16	59,00
822 710	**3,75**	4,00	0,11	3,75	580,0	4,95	49,00
822 810	**4,00**	4,25	0,11	4,00	640,0	5,28	41,40
822 813	**4,25**	4,50	0,15	4,25	900,0	5,61	75,00
822 815	**5,00**	5,25	0,15	5,00	1.130,0	6,60	54,50
822 830	**6,25**	6,50	0,15	6,25	1.400,0	8,25	34,70

Top panel -outside- (Height 2,30 m)

Art. No.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	eh [kN/m²]
822 820	**5,00**	5,25	0,15	5,00	1.700,0	11,50	54,50

Base panels -inside- (height 2.32 m)

Art. No.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	eh [kN/m²]
821 120	**1,89**	2,25	0,11	2,00	516,0	4,38	176,00
821 160	**2,60**	2,96	0,11	2,71	650,0	6,03	90,00
821 250	**3,04**	3,40	0,11	3,15	730,0	7,05	65,50
821 610	**3,64**	4,00	0,11	3,75	840,0	8,44	45,20
821 850	**3,89**	4,25	0,11	4,00	965,0	9,02	39,40
821 855	**4,14**	4,50	0,15	4,25	1.185,0	9,58	81,00

Double slide rail system Linear shoring

Base panels -inside- (height 2.32 m) (contd.)

Art. No.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	eh [kN/m²]
821 860	**4,89**	5,25	0,15	5,00	1.505,0	11,34	58,10
821 861	**6,13**	6,50	0,15	6,25	1.880,0	14,22	36,60

The details of length of pipe opening l_c refer to the rectangular roller unit.

Top panels -inside- (height 1.32 m)

Art. No.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	eh [kN/m²]
822 060	**1,89**	2,25	0,11	2,00	355,0	2,49	176,00
821 180	**2,60**	2,96	0,11	2,71	445,0	3,43	90,00
822 120	**3,04**	3,40	0,11	3,15	500,0	4,01	65,50
822 620	**3,64**	4,00	0,11	3,75	570,0	4,80	45,20
822 760	**3,89**	4,25	0,11	4,00	635,0	5,13	39,40
822 783	**4,14**	4,50	0,15	4,25	870,0	5,45	81,00
822 800	**4,89**	5,25	0,15	5,00	1.090,0	6,45	58,10
822 801	**6,13**	6,50	0,15	6,25	1.370,0	8,09	36,60

Top panels -inside- (height 2.30 m)

Art. No.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	eh [kN/m²]
822 065	**1,89**	2,25	0,11	2,00	530,0	4,35	176,00
822 155	**2,60**	2,96	0,11	2,71	660,0	5,98	90,00
822 180	**3,04**	3,40	0,11	3,15	740,0	6,99	65,50
822 680	**3,64**	4,00	0,11	3,75	845,0	8,37	45,20
822 780	**3,89**	4,25	0,11	4,00	975,0	8,95	39,40
822 785	**4,14**	4,50	0,15	4,25	1.409,0	9,50	81,00

Base panels -inside-, reinforced (height 2.32 m)

Art. No.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	eh [kN/m²]
821 249	**3,04**	3,40	0,15	3,15	982,0	7,05	154,40
821 248	**3,64**	4,00	0,15	3,75	1.125,0	8,44	106,50

Top panels, inner, reinforced (height 2.30 m)

Art. No.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	eh [kN/m²]
822 181	**3,04**	3,40	0,15	3,15	1.080,0	6,99	154,40
822 182	**3,64**	4,00	0,15	3,75	1.220,0	8,37	106,50

Base panels -inside- with injection pipe (height 2.32 m)

Art. No.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	eh [kN/m²]
821 251	**3,04**	3,40	0,12	3,15	810,0	7,05	63,00
821 615 A	**3,64**	4,00	0,12	3,75	890,0	8,44	43,50
821 827 A	**3,89**	4,25	0,12	4,00	980,0	9,02	43,90

Top panels -inside- with injection pipe (height 1.32 m)

Art. No.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]	eh [kN/m²]
822 130	**3,04**	3,40	0,12	3,15	572,0	4,01	63,00
822 660	**3,64**	4,00	0,12	3,75	670,0	4,80	43,50

The details of length of pipe opening l_c refer to the rectangular roller unit.

Double slide rail system Linear shoring

Combinations of height

Base panel
-outside-

2,32 m

Base panel
-inside-

2,32 m

Trench depth ca. 4,60 m

Base panel
-outside-

2,32 m

Top panel
-inside-

1,32 m

Base panel
-inside-

2,32 m

Trench depth ca. 6,00 m

Top panel
-outside-

1,32 m

Base panel
-outside-

2,32 m

Top panel
-inside-

1,32 m

Base panel
-inside-

2,32 m

Trench depth ca. 7,30 m

Top panel
-outside-

1,32 m

Base panel
-outside-

2,32 m

Top panel
-inside-

2,30 m

Base panel
-inside-

2,32 m

Trench depth ca. 8,30 m
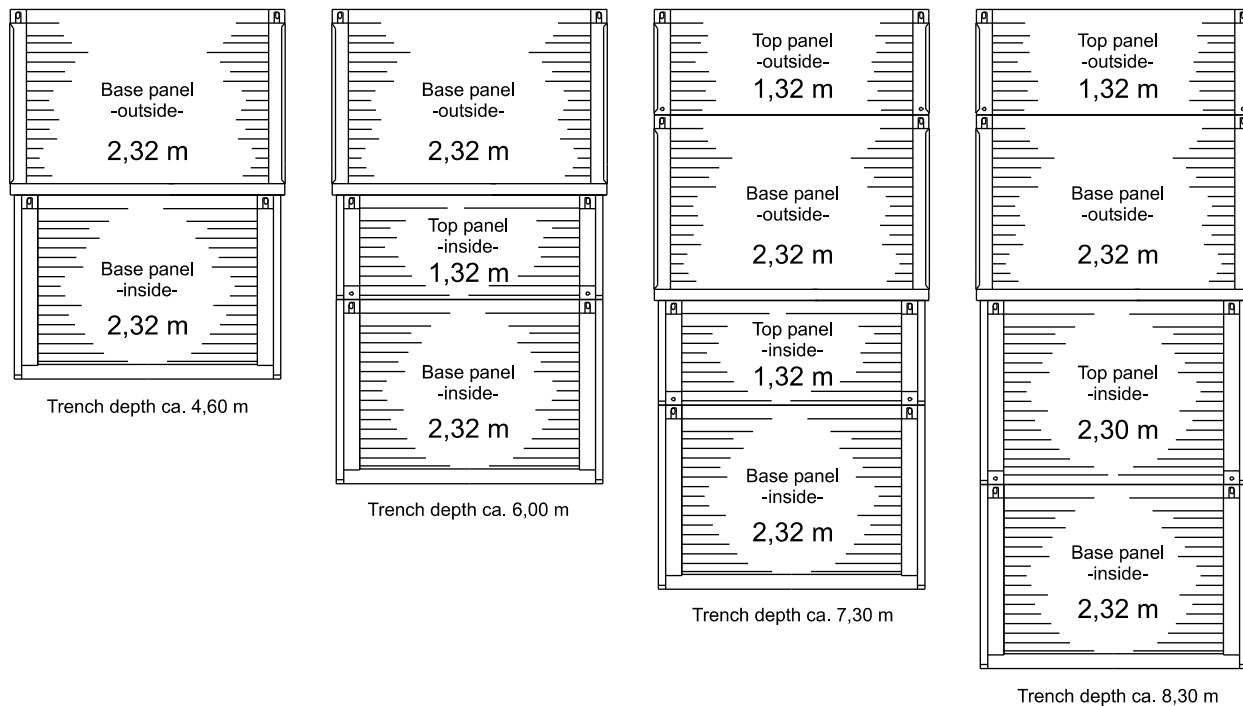
The shoring wall height can be adapted to the necessary trench depth with different panel combinations. Please note that, up to the maximum height, reduced shoring depths can be obtained by overlapping the inner and outer panels.

Extension bars for rectangular roller unit

see Single slide rail system Linear shoring (page 5)

Extension bars for U-type roller unit

see Single slide rail system Linear shoring (page 5)

Trench widths

Length extension bar	b_c	b
[m]	[m]	[m]
without extension bar	0,900	1,540
0,140	1,040	1,680
0,275	1,175	1,815
0,350	1,250	1,890
0,375	1,275	1,915
0,412	1,312	1,952
0,550	1,450	2,090
1,100	2,000	2,640
1,650	2,550	3,190
2,200	3,100	3,740
3,300	4,200	4,840
4,400	5,300	5,940

Other trench widths possible by combining different extension bar lengths.
Larger trench widths available on request.

Deep Linear shoring
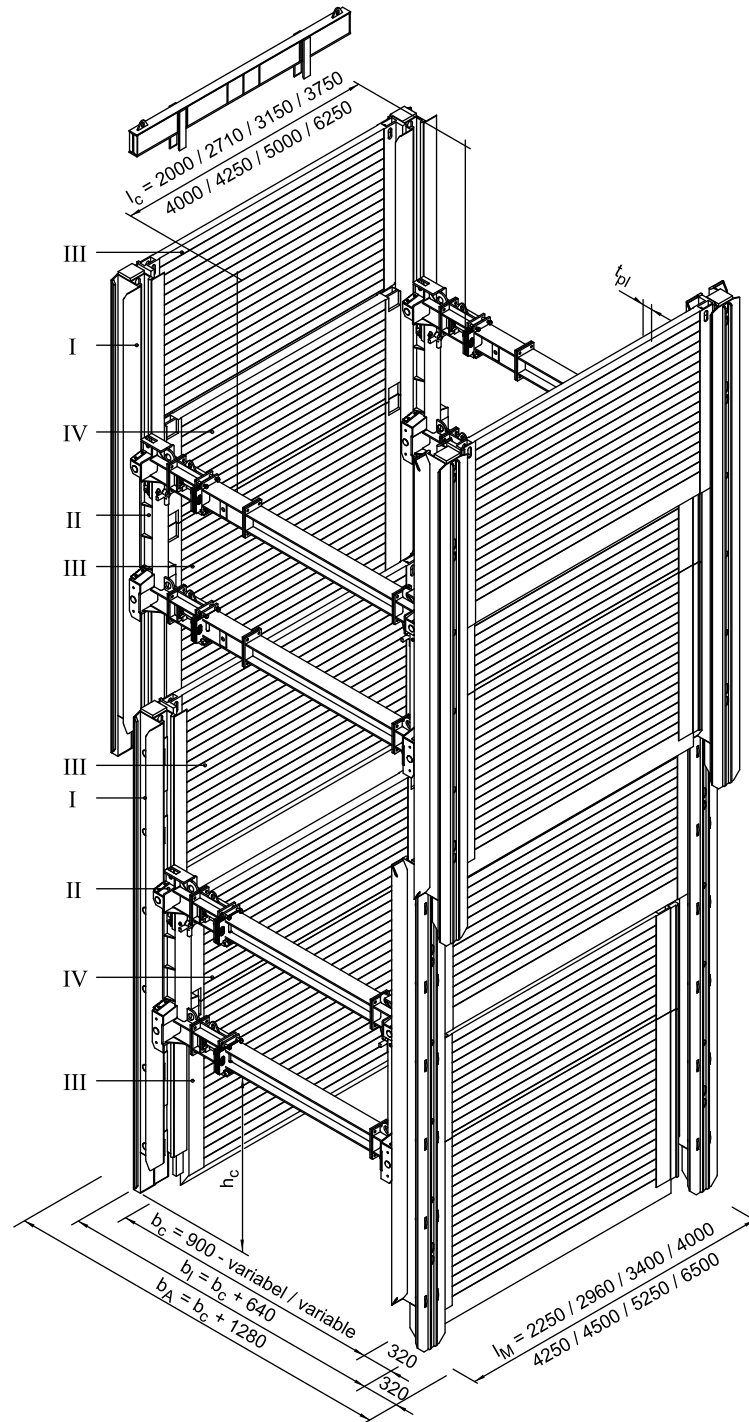
⬆ *Deep Linear shoring*

Module length	2,25 m - 6,50 m
Length slide rail	variabel
Panel height	1,32 m / 2,32 m
Pipe culvert height	variabel

The deep linear shoring is a further development of the known powerful linear shoring where two units of linear trench support are connected with each other. When finally installed, the two supporting modules, the components of which are of the same length, complement each other, dealing independently with the pressure of the soil, while ensuring the required enormous excavation of around 14 m which can be reached using this method. Due to its high performance, this new method constitutes a really big step forward in shoring technology.

The scope of application of this new shoring method are deeper building pits for sewer line construction, shafts and press pits up to a depth of 14 m, depending on the surface properties. With extremely poor, cohesive and "sticky" grounds with great friction forces to be overcome between the individual shoring elements and the ascending ground, application of this newly developed deeper linear shoring can be economic already for depths ranging from 7 to 10 m since, here, deployment of a traditional linear shoring – especially its demolition – can be exhausting and time-consuming due to the high friction forces involved.

Deep Linear shoring

I	Linear shoring support	b_A	Shoring / trench width (outer rail)
II	Linear shoring boogie car	b_I	Shoring / trench width (inner rail)
III	Base panel	b_c	Inner width
IV	Top panel	h_c	Pipe culvert height
l_M	Module length	t_{pl}	Thickness
l_c	Pipe culvert length		

⬆ *Deep Linear shoring*

(All dimensions in mm)

Deep Linear shoring

Linear shoring support -outside-

Art. No.	Short description	l [m]	G [kg]
820 951	Linear shoring support -outside-	**5,13**	1.265,0
820 947	Linear shoring support -outside-	**6,13**	1.265,0
820 953	Linear shoring support -outside-	**7,13**	1.475,0

Linear shoring support -inside-

Art. No.	Short description	l [m]	G [kg]
820 952	Linear shoring support -inside-	**5,13**	1.195,0
820 948	Linear shoring support -inside-	**6,13**	1.300,0
820 954	Linear shoring support -inside-	**7,13**	1.550,0

Linear shoring boogie car

Art. No.	Short description	l [m]	G [kg]
832 224	Linear shoring boogie car (Deep linear shoring)	**2,20**	505,0

Shoring panels

see Double slide rail innercity linear shoring (page 10)

Extension bars for deep Linear shoring roller unit

see Single slide rail system Linear shoring (page 5)

Extension bars

Art. No.	Short description	l [m]	G [kg]
830 026	Extension bar HEB 220	0,640	75,0
830 310	Extension bar HEB 220, TLV, hydraulically adjustable	0,412 - 0,530	156,0

Trench widths

Length of extension bar	b_c	b_I	b_A
[m]	[m]	[m]	[m]
without extension bar	0,900	1,540	2,180
0,275	1,175	1,815	2,455
0,550	1,450	2,090	2,730
1,100	2,000	2,640	3,280
1,650	2,550	3,190	3,830
2,200	3,100	3,740	4,380

Other trench widths possible by combining different extension bar lengths.
Larger trench widths available on request.

Accessories / Spares

see Single slide rail system Linear shoring (page 6)

l	Length		b_c	Inner width
b_A	Shoring / trench width (outer rail)		G	Weight
b_I	Shoring / trench width (inner rail)			

Single slide rail innercity shoring

⬆ *Single slide rail innercity shoring*

Module length	2,84 m / 4,38 m
Length slide rail	4,13 m
Height sheet pile element	1,00 m
Length sheet piles (KD VI/8)	variable

Pipelines inside, traffic outside.
During inner-city trenching operations, attention has to be paid to the numerous supply lines crossing the trench. At the same time it is essential that no vibrations are transmitted to the soil outside the trench because of housing close by and roads and rails often running alongside the trench.
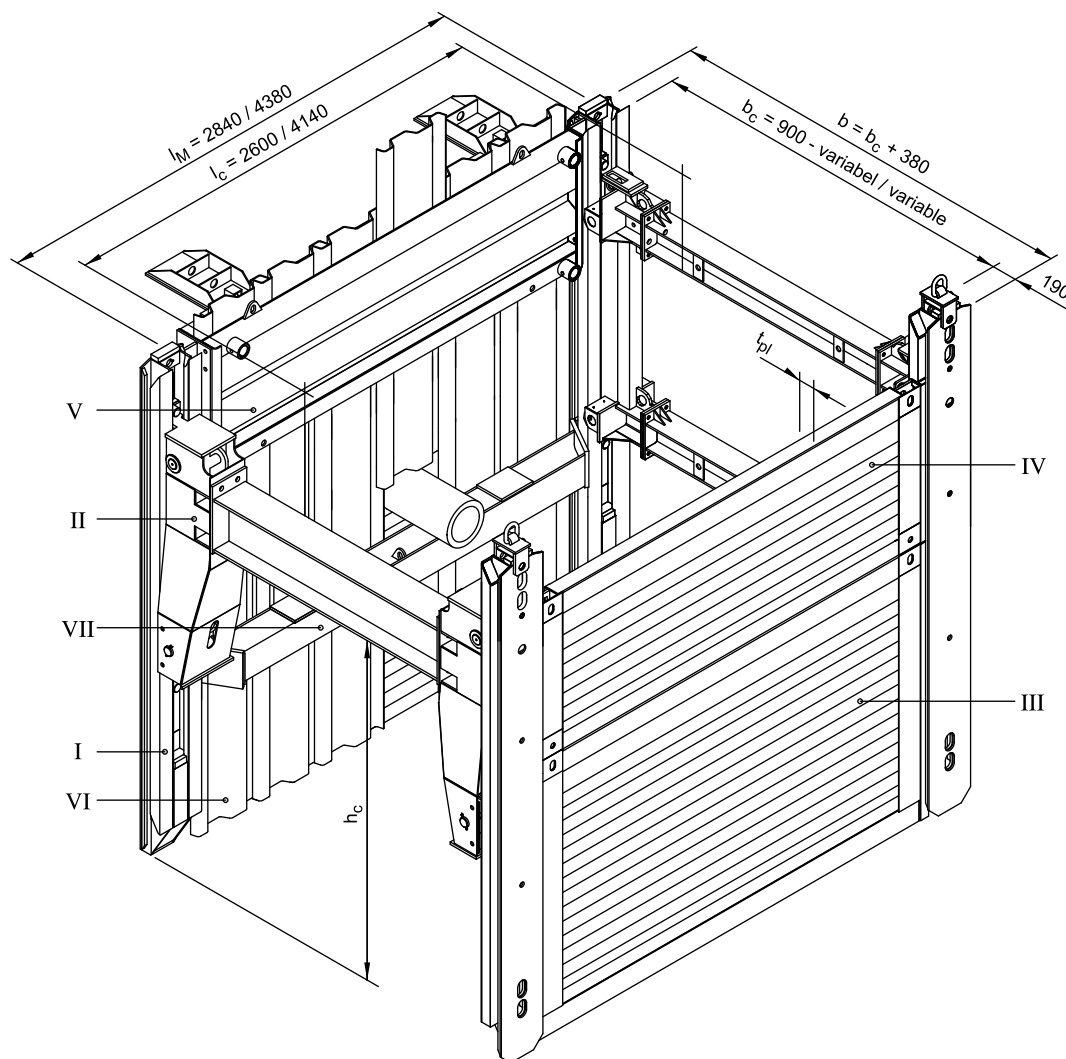
Large-area support prevented by small supply lines.
Large-area support systems are out of the question - in spite of their other advantages - for use in trench sections crossed by numerous supply lines, if only for functional reasons.

Unlimited combinations.
The new inner-city linear shoring piling frame system can be combined with the components of the linear shoring system from E+S - with supports, boogie cars and large support panels. Consequently, the advantages of inner-city linear shoring can be combined with those on a single site. This offers you totally new scope for cost estimation and efficiency.

Single slide rail innercity shoring

I	Linear shoring support	l_M	Module length
II	Boogie car	l_c	Pipe culvert length
III	Base panel	b	Shoring / trench width
IV	Top panel	b_c	Inner width
V	Sheet pile element DKU	h_c	Pipe culvert height
VI	Sheet pile	t_{pl}	Thickness
VII	Waling		

⬆ *Single-rail inner-city linear shoring with U-type or rectangular roller unit*

(All dimensions in mm. The details of length of pipe opening l_c refer to the rectangular roller unit.)

Original - Since 1949

Single slide rail innercity shoring

Linear shoring support

Art. No.	Short description	l [m]	G [kg]
820 935	Linear shoring support, single slide rail	**4,13**	715,0

Linear shoring boogie car

Art. No.	Short description	l [m]	G [kg]
832 200	Rectangular roller unit	**2,00**	420,0
832 205	Linear shoring U-type boogie car	**2,00**	550,0

Universal DKU piling frame element (height 1.00 m)

Art. No.	Short description	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]
842 671	Universal DKU piling frame element	**2,27**	2,84	0,31	1,75	510,0
842 674	Universal DKU piling frame element	**3,81**	4,38	0,31	3,29	785,0

You can find further piling frame elements in lengths 3.64 m and 3.89 m at our website www.es-verbau.com

Shoring panels

see Single slide rail system Linear shoring (page 4)

Waling

Art. No.	Short description	l [m]	l_M [m]	G [kg]
842 704	Waling for DKU piling frame, module length 2.84 m (single slide rail, E+S)	**2,60**	2,84	300,0
842 711	Waling for DKU piling frame, module length 4.38 m (single slide rail, E+S)	**4,14**	4,38	445,0

Extension bars

see Single slide rail system Linear shoring (page 5)

Trench widths

see Single slide rail system Linear shoring (page 6)

Accessories / Spares

see Single slide rail system Linear shoring (page 6)

l	Length		A	Area
l_M	Module length		G	Weight
l_c	Pipe culvert length		G / VP	Weight per shoring panel
t_{pl}	Thickness			

The details of length of pipe opening l_c refer to the rectangular roller unit.

Double slide rail innercity shoring

⬆ *Double slide rail innercity shoring*

Module length	3,70 m
Length slide rail	5,13 m - 9,13 m
Height sheet pile element	1,00 m
Length sheet piles (KD VI/8)	variable

The first overlapping inner-city slide-rail shoring. Progress through innovation.
As one of the world's leading specialists in high-perform-ance steel-shoring systems, E+S has addressed itself to the problem of high-depth inner-city shoring. The solution, overlapping inner-city linear shoring, is another milestone in an impressive series of innovative system developments from E+S.

Depths up to 7 m in the centre of towns.
This E+S innovation makes inroads into a new perform-ance dimension. For the first time, inner-city trench shor-ing with numerous transversing pipelines is possible up to a depth of 7 m without any vibration or impact force.

The surrounding ground remains unaffected.
Shoring is installed and removed entirely without vibration. Even right next to the trench, there are no significant ad-verse effects on the soil, residential buildings or the road system. There is no horizontal soil displacement with our special overlapping inner-city shoring system.

Underground overlap
In terms of function, overlapping inner-city linear shoring is comparable to modern overlapping large-area shoring. The short piles are guided in overlapping pile frames. The pile frames are held in special supports that are already in successful use in E+S linear shoring. The result is two overlapping walls of piling that can be pulled independ-ently of one another.

Double slide rail innercity shoring
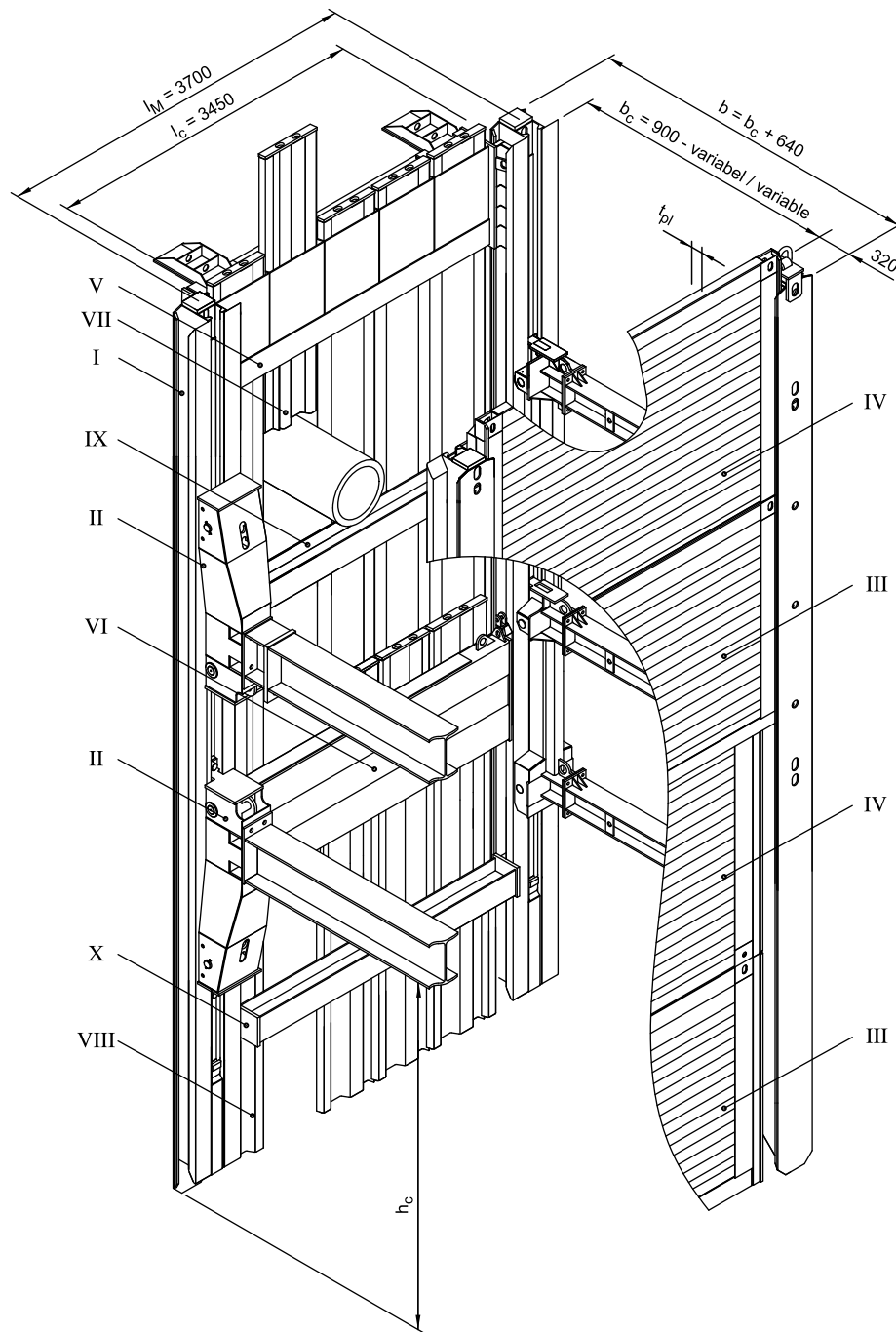
I	Linear shoring support	IX	Waling (outside belt)
II	Boogie car	X	Waling (inside belt)
III	Base panel	l_M	Module length
IV	Top panel	l_c	Pipe culvert length
V	Sheet pile element (outside belt)	b	Shoring / trench width
VI	Sheet pile element (inside belt)	b_c	Inner width
VII	Sheet piles (outside belt)	h_c	Pipe culvert height
VIII	Sheet piles (inside belt)	t_{pl}	Thickness

⬆ *Overlapping inner-city linear shoring with U-type or rectangular roller unit*

(All dimensions in mm. The details of length of pipe opening l_c refer to the rectangular roller unit.)

Double slide rail innercity shoring

Linear shoring support

Art. No.	l [m]	G [kg]
820 912	**5,13**	995,0
820 915	**6,13**	1.200,0
820 920	**7,13**	1.410,0
820 924	**8,13**	1.865,0
820 929	**9,13**	2.348,0

Linear shoring boogie car

Art. No.	Short description	l [m]	G [kg]
832 200	Rectangular roller unit	2,00	420,0
832 215	Linear shoring rectangular roller unit	2,20	465,0
832 205	Linear shoring U-type boogie car	2,00	550,0

Sheet pile elements -outer belt- (height 1.00 m)

Art. No.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G [kg]
820 980	**3,45**	3,70	0,30	3,45	1.330,0

Sheet pile elements -inner belt- (height 1.00 m)

Art. No.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G [kg]
821 000	**3,34**	3,70	0,30	3,45	1.217,0

Base panel -outside- (Height 2,32 m)

Art. No.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]
821 320	**3,45**	3,70	0,11	3,45	805,0	8,00

Top panel -outside- (Height 1,32 m)

Art. No.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]
822 410	**3,45**	3,70	0,11	3,45	560,0	4,55

Base panels -inside- (height 2.32 m)

Art. No.	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]
821 255	**3,34**	3,70	0,11	3,45	785,0	7,75

Top panel -inside-

Art. No.	l [m]	l_M [m]	h [m]	t_{pl} [m]	l_c [m]	G / VP [kg]	A [m²]
822 140	**3,34**	3,70	1,32	0,11	3,45	550,0	4,41
822 145	**3,34**	3,70	2,30	0,11	3,45	795,0	7,68

The details of length of pipe opening l_c refer to the rectangular roller unit.

Waling (piling frame element, double slide rail

Art. No.	Short description	l [m]	l_M [m]	G [kg]
821 002	Waling -inside- (double slide rail, E+S)	**3,30**	3,70	254,0
821 003	Waling -outside- (double slide rail, E+S)	**3,46**	3,70	374,0

Extension bars / trench widths / accessories / spares

For extension bars, see single-rail Linear shoring (p. 5)
For trench widths, see overlapping Linear shoring (p. 12)
For accessories/spares, see single-rail Linear shoring (p. 6)

Single slide rail system corner post

⬆ *Single slide rail system corner post*
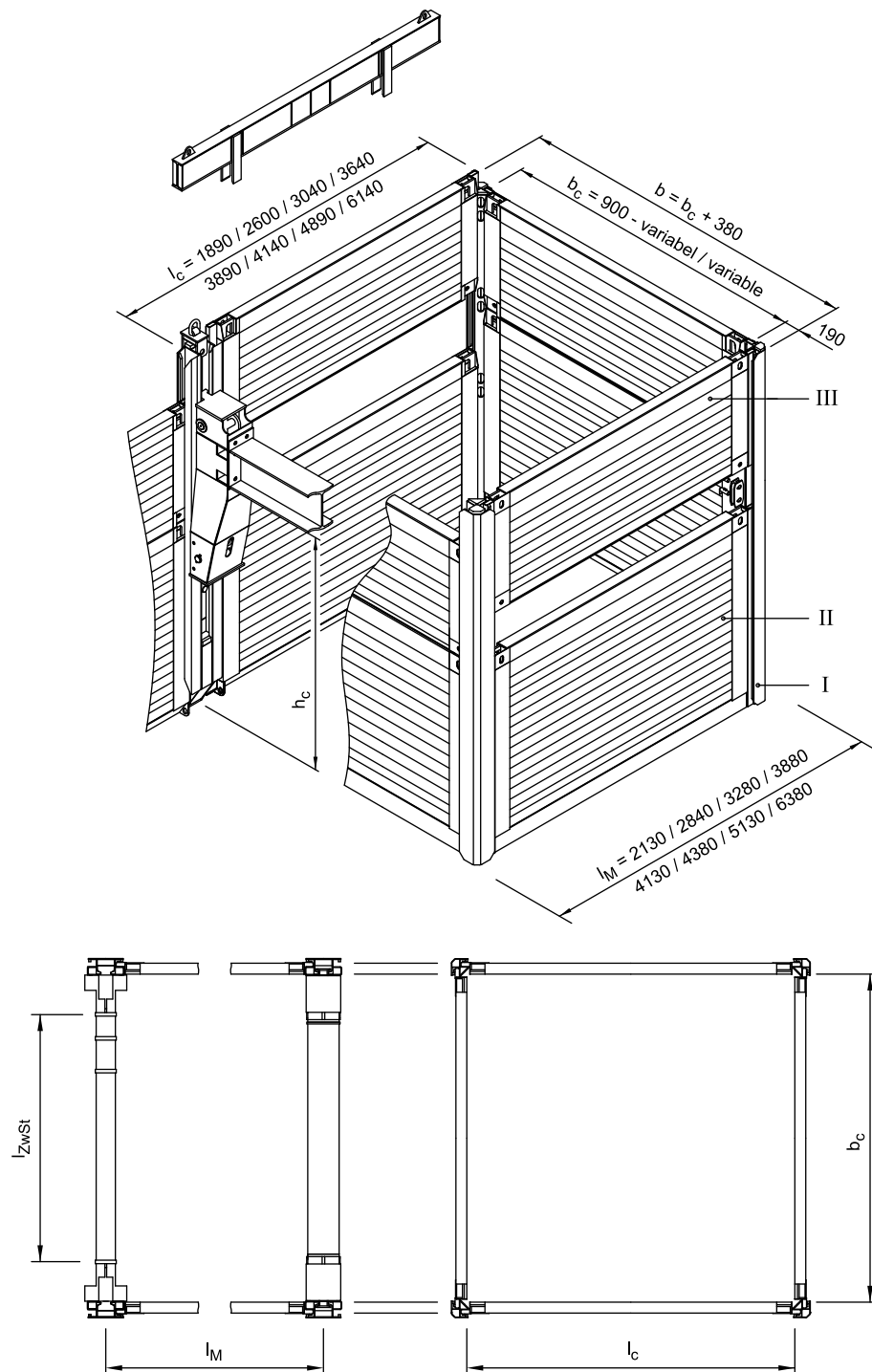
Module length	2,13 m - 6,38 m
Length slide rail	4,13 m
Panel height	1,32 m / 2,32 m
Shoring width	1,75 m - 6,00 m

Corner rail shoring is a special shoring solution for shaft structures. It usually consists of 4 slide-rail panels and 4 corner rail supports. It does without special bracing systems. All forces are discharged by the shoring panels. Corner rail shoring can take the form of single-rail or overlapping shoring, depending on the supports employed.

Since the panels of various lengths are used in pairs, rectangular pits of different sizes are possible. Because of the particular design of this system, its use depends essentially on the soil conditions.

Single slide rail system corner post

$l_c = 1890 / 2600 / 3040 / 3640$
$3890 / 4140 / 4890 / 6140$

$b_c = 900$ - variabel / variable

$b = b_c + 380$

190

III

II

I

h_c

$l_M = 2130 / 2840 / 3280 / 3880$
$4130 / 4380 / 5130 / 6380$

l_{ZwSt}

l_M

b_c

l_c

I	Corner post	b	Shoring / trench width
II	Base panel	b_c	Inner width
III	Top panel	h_c	Pipe culvert height
l_M	Module length	L_{ZwSt}	Length extension bar
l_c	Pipe culvert length		

⬆ *Single slide rail system corner post*

(All dimensions in mm)

Single slide rail system corner post

Corner post

Art. No.	Short description	l [m]	G [kg]
835 129	Corner post	**2,30**	170,0
835 130	Corner post	**4,13**	357,5

Shoring panels

see Single slide rail system Linear shoring (page 4)

Ways of installation

long side of shoring

Module length [m] l_M	6,38	5,13	4,38	4,13	3,88	3,28	2,84	2,13
GLS panel length [m] l_{pl}	6,14	4,89	4,14	3,89	3,64	3,04	2,60	1,89

l_M l_{pl} — inner length (long side of shoring) l_c [mm] — Extension bar combination

inner width (head side of shoring) b_c [mm]

head side of shoring

l_M / l_{pl}								Extension bar combination
6,38 / 6,14	l_c=6000 b_c=6000	l_c=4750 b_c=6000	l_c=4000 b_c=6000	l_c=3750 b_c=6000	l_c=3500 b_c=6000	l_c=2900 b_c=6000	l_c=2460 b_c=6000	l_c=1750 b_c=6000	▶ **5090** (2200+1650+1100+140)
5,13 / 4,89	l_c=6000 b_c=4750	l_c=4750 b_c=4750	l_c=4000 b_c=4750	l_c=3750 b_c=4750	l_c=3500 b_c=4750	l_c=2900 b_c=4750	l_c=2460 b_c=4750	l_c=1750 b_c=4750	▶ **3850** (2200 + 1650)
4,38 / 4,14	l_c=6000 b_c=4000	l_c=4750 b_c=4000	l_c=4000 b_c=4000	l_c=3750 b_c=4000	l_c=3500 b_c=4000	l_c=2900 b_c=4000	l_c=2460 b_c=4000	l_c=1750 b_c=4000	▶ **3100** (2200 + 550 + 350)
4,13 / 3,89	l_c=6000 b_c=3750	l_c=4750 b_c=3750	l_c=4000 b_c=3750	l_c=3750 b_c=3750	l_c=3500 b_c=3750	l_c=2900 b_c=3750	l_c=2460 b_c=3750	l_c=1750 b_c=3750	▶ **2850** (2200 + 375 + 275)
3,88 / 3,64	l_c=6000 b_c=3500	l_c=4750 b_c=3500	l_c=4000 b_c=3500	l_c=3750 b_c=3500	l_c=3500 b_c=3500	l_c=2900 b_c=3500	l_c=2460 b_c=3500	l_c=1750 b_c=3500	▶ **2612** (2200 + 412)
3,28 / 3,04	l_c=6000 b_c=2900	l_c=4750 b_c=2900	l_c=4000 b_c=2900	l_c=3750 b_c=2900	l_c=3500 b_c=2900	l_c=2900 b_c=2900	l_c=2460 b_c=2900	l_c=1750 b_c=2900	▶ **2000** (1650 + 350)
2,84 / 2,60	l_c=6000 b_c=2460	l_c=4750 b_c=2460	l_c=4000 b_c=2460	l_c=3750 b_c=2460	l_c=3500 b_c=2460	l_c=2900 b_c=2460	l_c=2460 b_c=2460	l_c=1750 b_c=2460	▶ **1555** (1100 + 275 + 140 + 40)
2,13 / 1,89	l_c=6000 b_c=1750	l_c=4750 b_c=1750	l_c=4000 b_c=1750	l_c=3750 b_c=1750	l_c=3500 b_c=1750	l_c=2900 b_c=1750	l_c=2460 b_c=1750	l_c=1750 b_c=1750	▶ **845** (550 + 275 + 20)

Example:

Trench-end shoring module length = 3.28 m

-> Required extension bar combination for roller unit in linear shoring bay: 2000 mm

l	Length	l_{pl}	Panel length	
l_M	Module length	b_c	Inner width	
l_c	Pipe culvert length	G	Weight	

Double slide rail for corner post

⬆ *Double slide rail for corner post*

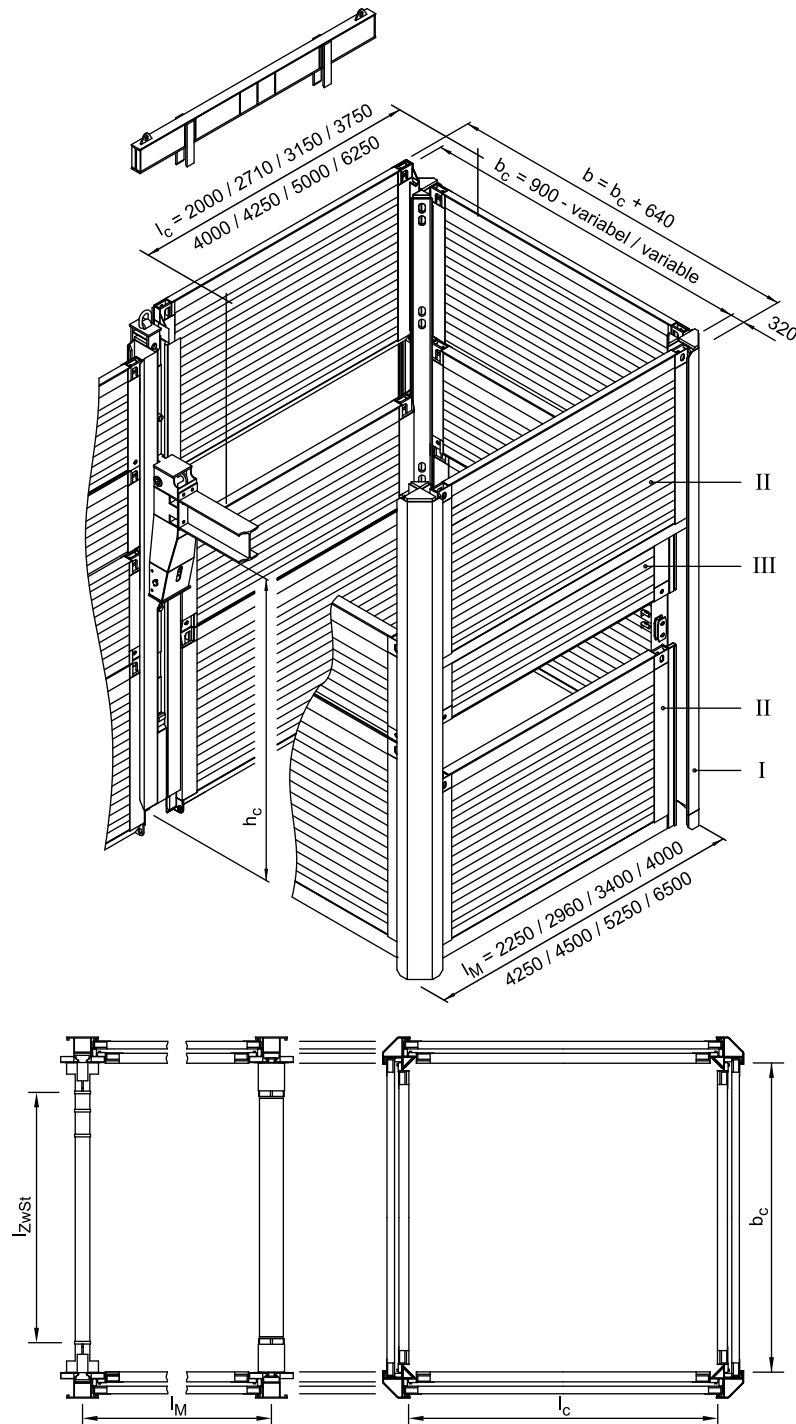| Module length	2,25 m - 6,50 m
Length slide rail	5,13 m / 6,13 m
Panel height	1,32 m / 2,32 m
Shoring width	1,89 m - 6,14 m

Corner rail shoring is a special shoring solution for shaft structures. It usually consists of 4 slide-rail panels and 4 corner rail supports. It does without special bracing systems. All forces are discharged by the shoring panels. Corner rail shoring can take the form of single-rail or overlapping shoring, depending on the supports employed.

Since the panels of various lengths are used in pairs, rectangular pits of different sizes are possible. Because of the particular design of this system, its use depends essentially on the soil conditions.

Double slide rail for corner post

$l_c = 2000 / 2710 / 3150 / 3750$
$4000 / 4250 / 5000 / 6250$

$b_c = 900$ - variabel / variable

$b = b_c + 640$

320

h_c

$l_M = 2250 / 2960 / 3400 / 4000$
$4250 / 4500 / 5250 / 6500$

II
III
II
I

l_{ZwSt}

l_M

b_c

l_c

I	Corner post	b	Shoring / trench width
II	Base panel	b_c	Inner width
III	Top panel	h_c	Pipe culvert height
l_M	Module length	l_{ZwSt}	Length extension bar
l_c	Pipe culvert length		

⬆ *Double slide rail for corner post*

(All dimensions in mm)

Double slide rail for corner post

Corner post

Art. No.	Short description	l [m]	G [kg]
835 100	Corner post	**5,13**	720,0
835 120	Corner post	**6,13**	900,0

Shoring panels

see Double slide rail innercity linear shoring (page 10)

Ways of installation

long side of shoring

Module length [m]	l_M	6,50	5,25	4,50	4,25	4,00	3,40	2,96	2,25
GLS panel length [m]	l_{Apl}	6,25	5,00	4,25	4,00	3,75	3,15	2,71	2,00
GLS panel length [m]	l_{lpl}	6,14	4,89	4,14	3,89	3,64	3,04	2,60	1,89

inner length (long side of shoring) l_c [mm] → Extension bar combination

l_M	l_{Apl}	l_{lpl}	inner width (head side of shoring) b_c [mm]								Extension bar combination
6,50	6,25	6,14	l_c=6140 / b_c=6140	l_c=4890 / b_c=6140	l_c=4140 / b_c=6140	l_c=3890 / b_c=6140	l_c=3640 / b_c=6140	l_c=3040 / b_c=6140	l_c=2600 / b_c=6140	l_c=1890 / b_c=6140	▶ **5225** (2200 + 2200 + 550 + 275)
5,25	5,00	4,89	l_c=6140 / b_c=4890	l_c=4890 / b_c=4890	l_c=4140 / b_c=4890	l_c=3890 / b_c=4890	l_c=3640 / b_c=4890	l_c=3040 / b_c=4890	l_c=2600 / b_c=4890	l_c=1890 / b_c=4890	▶ **3990** (2200 + 1100 + 550 + 140)
4,50	4,25	4,14	l_c=6140 / b_c=4140	l_c=4890 / b_c=4140	l_c=4140 / b_c=4140	l_c=3890 / b_c=4140	l_c=3640 / b_c=4140	l_c=3040 / b_c=4140	l_c=2600 / b_c=4140	l_c=1890 / b_c=4140	▶ **3240** (2200 + 550 + 350 + 140)
4,25	4,00	3,89	l_c=6140 / b_c=3890	l_c=4890 / b_c=3890	l_c=4140 / b_c=3890	l_c=3890 / b_c=3890	l_c=3640 / b_c=3890	l_c=3040 / b_c=3890	l_c=2600 / b_c=3890	l_c=1890 / b_c=3890	▶ **2990** (2200 + 375 + 275 + 140)
4,00	3,75	3,64	l_c=6140 / b_c=3640	l_c=4890 / b_c=3640	l_c=4140 / b_c=3640	l_c=3890 / b_c=3640	l_c=3640 / b_c=3640	l_c=3040 / b_c=3640	l_c=2600 / b_c=3640	l_c=1890 / b_c=3640	▶ **2750** (2200 + 550)
3,40	3,15	3,04	l_c=6140 / b_c=3040	l_c=4890 / b_c=3040	l_c=4140 / b_c=3040	l_c=3890 / b_c=3040	l_c=3640 / b_c=3040	l_c=3040 / b_c=3040	l_c=2600 / b_c=3040	l_c=1890 / b_c=3040	▶ **2140** (1100 + 550 + 350 + 140)
2,96	2,71	2,60	l_c=6140 / b_c=2600	l_c=4890 / b_c=2600	l_c=4140 / b_c=2600	l_c=3890 / b_c=2600	l_c=3640 / b_c=2600	l_c=3040 / b_c=2600	l_c=2600 / b_c=2600	l_c=1890 / b_c=2600	▶ **1700** (1650 + 48)
2,25	2,00	1,89	l_c=6140 / b_c=1890	l_c=4890 / b_c=1890	l_c=4140 / b_c=1890	l_c=3890 / b_c=1890	l_c=3640 / b_c=1890	l_c=3040 / b_c=1890	l_c=2600 / b_c=1890	l_c=1890 / b_c=1890	▶ **990** (550 + 440)

head side of shoring

Example:

Trench-end shoring module length = 3.40 m

-> Required extension bar combination for roller unit in linear shoring bay: 2140 mm

|				
l	Length		l_{lpl}	Inner panel length
l_M	Module length		b_c	Inner width
l_c	Pipe culvert length		G	Weight
l_{Apl}	Outer panel length			

Head shoring with sheet piles

⬆ *Head shoring with sheet piles*

This end-of-trench shoring is necessary if the width of the shored pipe trench will no longer accommodate any standard end-of-trench panels.
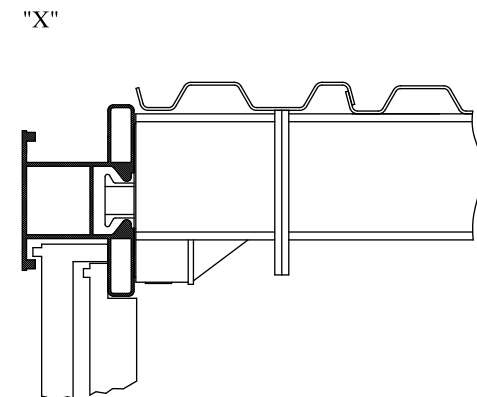
Since the piles must never be supported by the spreader system of our shoring, the loads of the placed / driven sheet piles are discharged with special extendable cross girders mounted in the vertical shoring rail. This end-of-trench shoring is recommended particularly in pressing pits. The sheet piles serve here as the abutments for the driving machine and also create an opening for the insertion of the pipe.

Head shoring with sheet piles
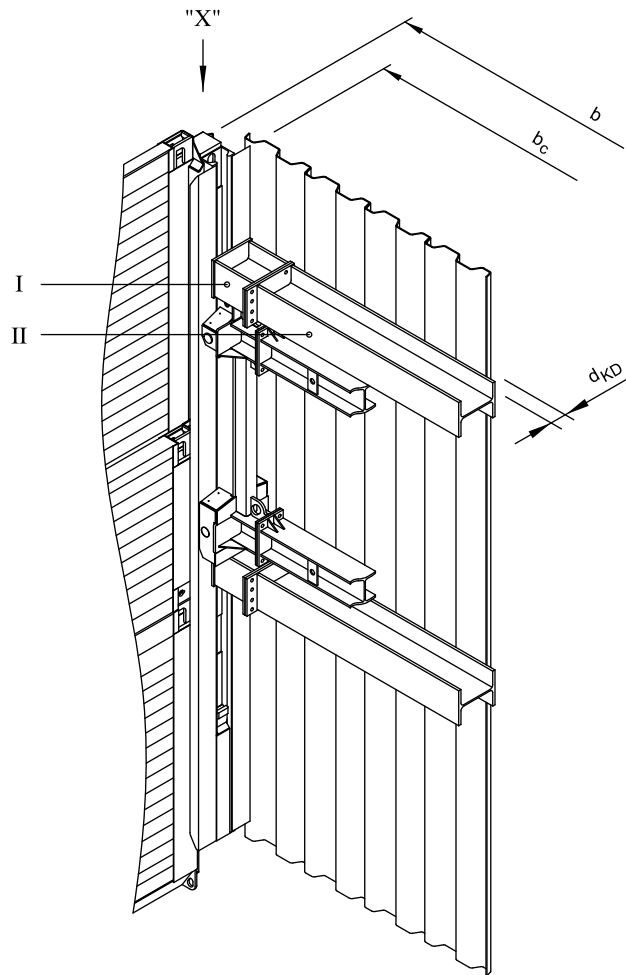
I	Adapter for head shoring		b_c	Inner width
II	Extension bar		d_{KD}	Thickness sheet pile
b	Shoring / trench width			

⬆ *Head shoring with sheet piles*

(All dimensions in mm)

Head shoring with sheet piles

Adapter for end shoring

Art. No.		l [m]	G [kg]
899 994		**0,45**	132,0

Extension bars for end shoring

Art. No.	Short description	l [m]	b_c [m]	G [kg]
830 801	Extension bar HEA 360	**0,140**	1,040	65,0
830 802	Extension bar HEA 360	**0,275**	1,175	85,0
830 803	Extension bar HEA 360	**0,375**	1,275	95,0
830 804	Extension bar HEA 360	**0,415**	1,315	100,0
830 800	Extension bar HEA 360	**0,550**	1,450	114,0
830 806	Extension bar HEA 360	**1,100**	2,000	175,0
830 810	Extension bar HEA 360	**1,650**	2,550	240,0
830 830	Extension bar HEA 360	**2,200**	3,100	304,0
830 833	Extension bar HEA 360	**2,475**	3,375	340,0
830 835	Extension bar HEA 360	**3,100**	4,000	412,0
830 834	Extension bar HEA 360	**3,162**	4,062	420,0
830 836	Extension bar HEA 360	**3,300**	4,200	436,0
830 837	Extension bar HEA 360	**3,400**	4,300	447,0
830 840	Extension bar HEA 360	**3,575**	4,475	468,0
830 843	Extension bar HEA 360	**3,715**	4,615	485,0
830 845	Extension bar HEA 360	**3,850**	4,750	500,0
830 850	Extension bar HEA 360	**4,400**	5,300	561,0
830 855	Extension bar HEA 360	**4,950**	5,850	626,0
830 857	Extension bar HEA 360	**5,500**	6,400	693,0
830 860	Extension bar HEA 360	**6,050**	6,950	758,0
830 880	Extension bar HEA 360	**7,700**	8,600	948,0

Accessories / Spares

see Single slide rail system Linear shoring (page 6)

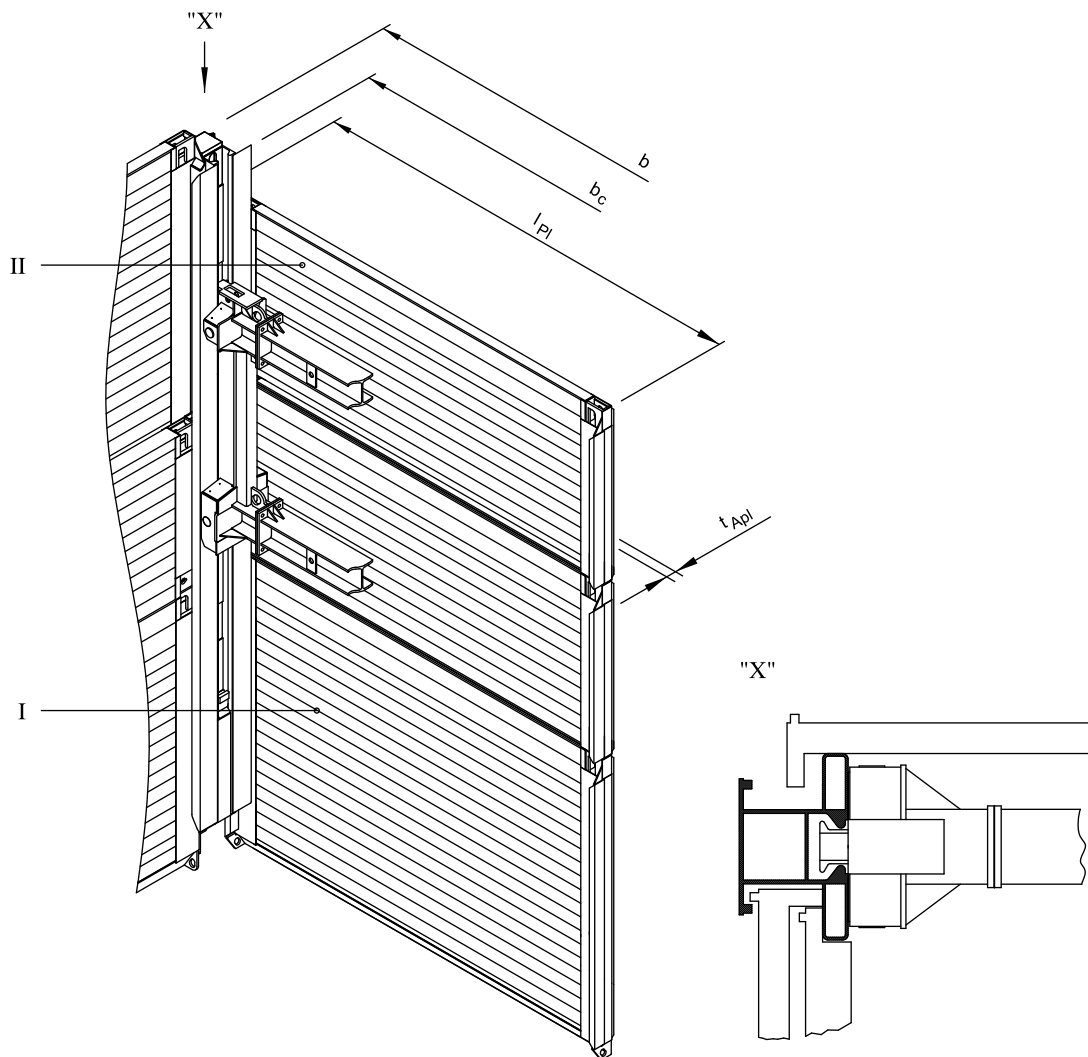| l	Length	b_c	Inner width
b	Shoring / trench width	G	Weight

End-of-trench shoring with slide-rail panels

⬆ *End-of-trench shoring with slide-rail panels*

This is end-of-trench shoring made of standard sliding rail panels which, in accordance with the existing cone of slope, are employed as late as possible with the placement and lowering method. The panels are braced against the vertical shoring rail and are guided in the transverse direction by the bulb of the outer panels.

End-of-trench shoring with slide-rail panels

I	Base panel	b	Shoring / trench width
II	Top panel	b_c	Inner width
l_{pl}	Panel length	t_{Apl}	Thickness outside panel

⬆ *Kopfverbau mit Gleitschienenplatten*

(All dimensions in mm)

Shoring panels

see Double slide rail innercity linear shoring (page 10)

Trench widths

Art. No.	l_{pl}	l_M	min. b_c	Extension bar combinations	max. b_c	Extension bar combinations
	[m]	[m]	[m]	[mm]	[m]	[mm]
821 150	2,00	2,25	1,490	2*20 / 550	1,725	275 / 550
821 170	2,71	2,96	2,180	2*20 / 140 / 1100	2,412	412 / 1100
821 310	3,15	3,40	2,690	140 / 1650	2,825	275 / 1650
821 770	3,75	4,00	3,240	140 / 2200	3,475	375 / 2200
821 910	4,00	4,25	3,475	375 / 2200	3,750	275 / 375 / 2200
821 913	4,25	4,50	3,790	140 / 550 / 2200	3,925	275 / 550 / 2200
821 912	5,00	5,25	4,475	275 / 1100 / 2200	4,612	412 / 1100 / 2200

Single slide rail system, parallel shoring, EG PV

⬆ *Single slide rail system, parallel shoring, EG PV*

Shoring depth	max. 4,00 m
Pipe culvert height	variable
Earth pressure max.	32,70 - 125,00 kN
Panel length	2,00 m - 7,00 m
Height base panel	2,32 m
Height top panel	1,30 m

Parallel shoring is the logical refinement of the famous KRINGS slide rail system and is able to guarantee optimum performance and reliability, even in the most difficult of ground conditions. Cracking and soil substinence are both dramatically reduced.

High strength, system flexibility and user friendliness are the main features and instead of the fixed in position threaded spindels the double and triple parallel slide rails are connected by a heavy duty sliding frame, that slides up and down within the slide rails. This design has the advantage of increased system strength and a dramatic reduction of soil subsidence which could otherwise cause damage to roads and nearby structures.

Single slide rail system, parallel shoring, EG PV
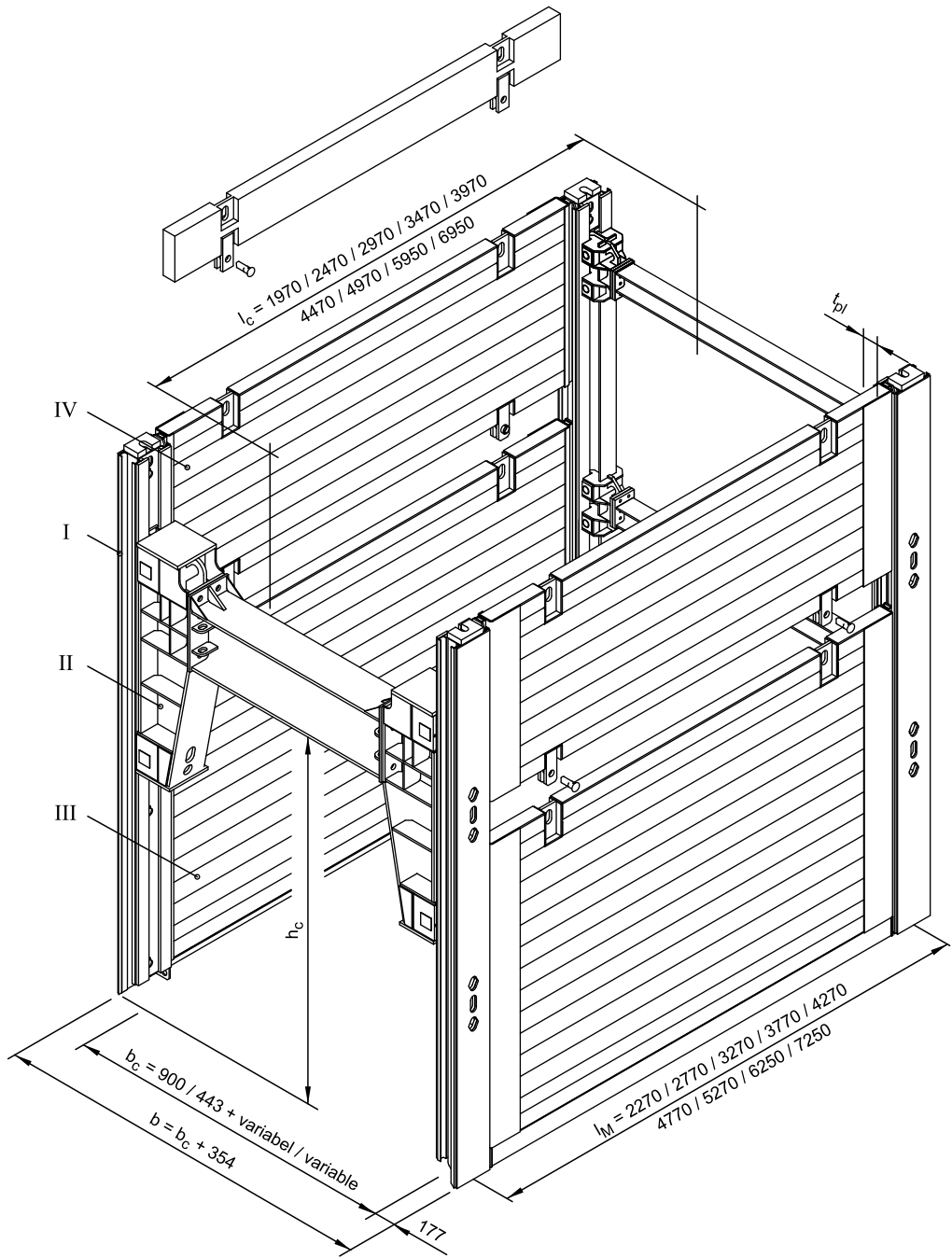
$l_c = 1970 / 2470 / 2970 / 3470 / 3970$
$4470 / 4970 / 5950 / 6950$

$b_c = 900 / 443 + \text{variabel} / \text{variable}$

$b = b_c + 354$

$l_M = 2270 / 2770 / 3270 / 3770 / 4270$
$4770 / 5270 / 6250 / 7250$

t_{pl}

h_c

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I	Slide rail	l_c	Pipe culvert length
II	Boogie car	b	Shoring / trench width
III	Base panel	b_c	Inner width
IV	Top panel	h_c	Pipe culvert height
l_M	Module length	t_{pl}	Thickness

⬆ *Single slide-rail, parallel shoring, EG PV with U-type or rectangular roller unit*

(All dimensions in mm. The details of length of pipe opening l_c refer to the rectangular roller unit.)

Single slide rail system, parallel shoring, EG PV

Slide rail

Art. No.	Short description	l [m]	G [kg]
156 060	Single slide rail system, parallel shoring, EG PV	**4,00**	489,0

Boogie car

Art. No.	Short description	G [kg]
159 280	Rectangular roller unit	171,4
832 204	U-type boogie car	450,0

Extension bars for rectangular roller unit, parallel shoring, 2112 x 260 mm

Art. No.	Short description	l [m]	G [kg]
159 810	Extension bar HEB 240	**0,500**	24,9
159 570	Extension bar HEB 240	**1,000**	52,0
159 575	Extension bar HEB 240	**1,500**	72,0
159 690	Extension bar HEB 240	**2,000**	78,0

Extension bars are available in all lengths on request and can be combined.

Extension bars for U-type roller unit, parallel shoring, 1700 x 450 mm

Art. No.	Short description	l [m]	G [kg]
831 500	Extension bar HEA 450	**0,275**	95,0
831 510	Extension bar HEA 450	**0,550**	130,0
831 520	Extension bar HEA 450	**1,100**	207,0
831 530	Extension bar HEA 450	**1,650**	286,0
831 540	Extension bar HEA 450	**2,200**	362,0

Shoring widths for rectangular roller unit, parallel shoring, 2112 x 260 mm

Length extension bar [m]	Shoring panel KRI 2,00 - 3,50 b_c [m]	b [m]	Shoring panel KRU 2,00 - 3,50 b_c [m]	b [m]	Shoring panel KRI 4,00 - 5,00 b_c [m]	b [m]	Shoring panel KRU 4,00 - 5,00 b_c [m]	b [m]	Shoring panel KRI 6,00 - 7,00 b_c [m]	b [m]	Shoring panel KRA 6,00 - 7,00 b_c [m]	b [m]
without extension bar	0,540	0,760	0,465	0,685	0,540	0,790	0,435	0,685	0,405	0,705	0,520	0,820
0,500	1,040	1,260	0,965	1,185	1,040	1,290	0,935	1,185	0,905	1,205	1,020	1,320
1,000	1,540	1,760	1,465	1,685	1,540	1,790	1,435	1,685	1,405	1,705	1,520	1,820
1,500	2,040	2,260	1,965	2,185	2,040	2,290	1,935	2,185	1,905	2,205	2,020	2,320
2,000	2,540	2,760	2,465	2,685	2,540	2,790	2,435	2,685	2,405	2,705	2,520	2,820

Shoring widths for U-type roller unit, parallel shoring, 1700 x 450 mm

Lenth extension bar [m]	Shoring panel KRI 2,00 - 3,50 b_c [m]	b [m]	Shoring panel KRU 2,00 - 3,50 b_c [m]	b [m]	Shoring panel KRI 4,00 - 5,00 b_c [m]	b [m]	Shoring panel KRU 4,00 - 5,00 b_c [m]	b [m]	Shoring panel KRI 6,00 - 7,00 b_c [m]	b [m]	Shoring panel KRA 6,00 - 7,00 b_c [m]	b [m]
without extension bar	0,995	1,215	0,925	1,145	0,995	1,245	0,895	1,145	0,865	1,165	0,975	1,275
0,275	1,270	1,490	1,200	1,420	1,270	1,520	1,170	1,420	1,140	1,440	1,250	1,550
0,550	1,545	1,765	1,475	1,695	1,545	1,795	1,445	1,695	1,415	1,715	1,525	1,825
1,100	2,095	2,315	2,025	2,245	2,095	2,345	1,995	2,245	1,965	2,265	2,075	2,375
1,650	2,645	2,865	2,575	2,795	2,645	2,895	2,545	2,795	2,515	2,815	2,625	2,925
2,200	3,195	3,415	3,125	3,345	3,195	3,445	3,095	3,345	3,065	3,365	3,175	3,475

Single slide rail system, parallel shoring, EG PV

Accessories / Spares

Art. No.	Short description	l [m]	G [kg]	d [m]	Standard
842 752	**Adapter for DKU piling frame, corner shoring, h = 0.50 m KDVI**		55,0		
842 753	**Adapter for DKU piling frame, corner shoring, h = 1.00 m KDVI**		94,0		
842 760	**Adapter for DKU piling frame, h = 0.50 m KDIV (single slide rail, Krings)**		38,0		
842 757	**Adapter for DKU piling frame, h = 0.50 m KDVI (single slide rail, Krings)**		30,0		
842 754	**Adapter for DKU piling frame, h = 1.00 m KDVI (single slide rail, Krings)**		60,0		
336 960	**Bearing claw for DKU piling frame element**		40,0		
842 099	**DKU piling frame guide frame**	**2,27**	105,0		
842 100	**DKU piling frame guide frame**	**3,81**	175,0		
139 045	**Nut M 16**		0,1		DIN 6915
IA 0150F	**Nut M 24**		0,1		DIN 934
IA 0210F	**Nut M 36**		0,4		DIN 934
159 030	**Pin (single/double slide rail)**	**0,110**	2,6	0,080	
159 050	**Pin d = 50, connector (slide rail)**	**0,125**	1,1	0,043	
861 075	**Pressure beam (boxes, slide rail)**	**4,60**	425,0		
861 085	**Pressure beam (boxes, slide rail)**	**5,80**	525,0		
861 076	**Pressure beam (Medium, Magnum shoring, KS 100, GLS)**	**1,60**	175,5		
861 074	**Pressure beam (Medium, Magnum shoring, KS 100, GLS)**	**2,35**	236,0		
861 070	**Pressure beam (Medium, Magnum shoring, KS 100, GLS)**	**2,80**	271,0		
861 071	**Pressure beam (Medium, Magnum shoring, KS 100, GLS)**	**3,40**	318,0		
100 950	**Pulling lug 170 x 150**		6,0		
139 035	**Screw M 16 x 70**		0,1		DIN 6914
IB 0470F	**Screw M 24 x 80**		0,4		DIN 933
IB 0614F	**Screw M 36 x 80**		1,0		DIN 933
159 160	**Spring cotter 42 x 6**	**0,042**	0,1	0,006	
821 100	**Suspension chain KL-13-8**	**5,000**	25,7		
842 712	**Waling for DKU piling frame, module length 2.77 m (single slide rail, Krings)**	**2,524**	209,0		
842 713	**Waling for DKU piling frame, module length 3.77 m (single slide rail, Krings)**	**3,524**	355,0		
842 714	**Waling for DKU piling frame, module length 4.27 m (single slide rail, Krings)**	**4,024**	400,0		
139 110	**Wire rope 4-legs, 1800 x 20**	**1,80**	40,0		
139 120	**Wire rope 4-legs, 2800 x 20**	**2,80**	46,0		

l	Length	b_c	Inner width	
l_M	Module length	G	Weight	
l_c	Pipe culvert length	d	Diameter	
b	Shoring / trench width			

Double slide rail system, parallel shoring, DG PV

⬆ *Double slide rail system, parallel shoring, DG PV*

Shoring depth	max. 7,00 m
Pipe culvert height	variable
Earth pressure max.	32,70 - 125,00 kN/m²
Panel length	2,00 m - 7,00 m
Height base panel	2,32 m
Height top panel	1,33 m

Parallel shoring is the logical refinement of the famous KRINGS slide rail system and is able to guarantee optimum performance and reliability, even in the most difficult of ground conditions. Cracking and soil substinence are both dramatically reduced.

High strength, system flexibility and user friendliness are the main features and instead of the fixed in position threaded spindels the double and triple parallel slide rails are connected by a heavy duty sliding frame, that slides up and down within the slide rails. This design has the advantage of increased system strength and a dramatic reduction of soil subsidence which could otherwise cause damage to roads and nearby structures.

Double slide rail system, parallel shoring, DG PV
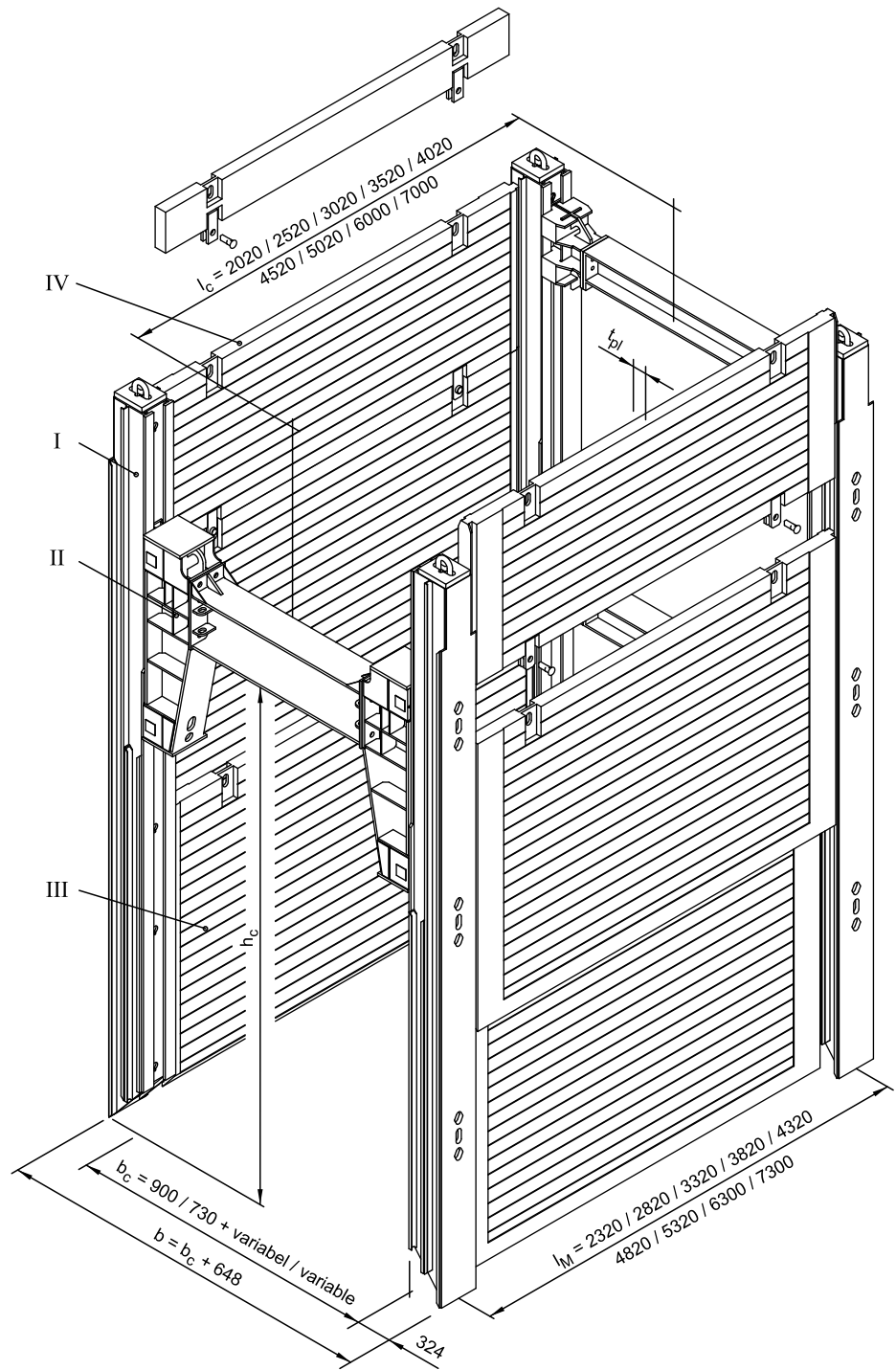
I	Slide rail	l_c	Pipe culvert length
II	Boogie car	b	Shoring / trench width
III	Base panel	b_c	Inner width
IV	Top panel	h_c	Pipe culvert height
l_M	Module length	t_{pl}	Thickness

⬆ *Double slide-rail, parallel shoring, DG PV with U-type or rectangular roller unit*

(All dimensions in mm. The details of length of pipe opening l_c refer to the rectangular roller unit.)

Double slide rail system, parallel shoring, DG PV

Slide rail

Art. No.	Short description	l [m]	G [kg]
157 130	Double slide rail system, parallel shoring, DG PV	**4,80**	980,0
157 150	Double slide rail system, parallel shoring, DG PV	**6,00**	1.235,0
157 155	Double slide rail system, parallel shoring, DG PV	**7,00**	1.475,0

Boogie car

Art. No.	Short description	G [kg]
159 310	Rectangular roller unit	346,0
159 320	Rectangular roller unit	392,0
832 204	U-type boogie car	450,0

Extension bars for rectangular roller unit, parallel shoring, 2510 / 3310 x 405 mm

Art. No.	Short description	l [m]	G [kg]
159 820	Extension bar HEB 240, L=500x305 mm	**0,50**	64,9
159 580	Extension bar HEB 240, L=1000x305 mm	**1,00**	106,5
159 660	Extension bar HEB 240, L=1500x305 mm	**1,50**	148,0
159 700	Extension bar HEB 240, L=2000x305 mm	**2,00**	190,0

Extension bars are available in all lengths on request and can be combined.

Extension bars for U-type roller unit, parallel shoring, 1700 x 450

see Single slide rail system EG PV (page 35)

Shoring widths for rectangular roller unit, parallel shoring, 2510 / 3310 x 405 mm

Length extension bar	Shoring panel KRI 2,00 - 3,50		Shoring panel KRU 2,00 - 3,50		Shoring panel KRI 4,00 - 5,00		Shoring panel KRU 4,00 - 5,00		Shoring panel KR 6,00 - 7,00	
[m]	b_c [m]	b [m]	b_c [m]	b [m]	b_c [m]	b [m]	b_c [m]	b [m]	b_c [m]	b [m]
without extension bar	0,825	1,350	0,755	1,275	0,825	1,380	0,725	1,275	0,695	1,410
0,500	1,325	1,850	1,255	1,775	1,325	1,880	1,225	1,775	1,195	1,910
1,000	1,825	2,350	1,755	2,275	1,825	2,380	1,725	2,275	1,695	2,410
1,500	2,325	2,850	2,255	2,775	2,325	2,880	2,225	2,775	2,195	2,910
2,000	2,825	3,350	2,755	3,275	2,825	3,380	2,725	3,275	2,695	3,410

Shoring widths for U-type roller unit, parallel shoring, 1700 x 450 mm

Length extension bar	Shoring panel KRI 2,00 - 3,50		Shoring panel KRU 2,00 - 3,50		Shoring panel KRI 4,00 - 5,00		Shoring panel KRU 4,00 - 5,00		Shoring panel KR 6,00 - 7,00	
[m]	b_c [m]	b [m]	b_c [m]	b [m]	b_c [m]	b [m]	b_c [m]	b [m]	b_c [m]	b [m]
without extension bar	0,995	1,520	0,925	1,445	0,995	1,550	0,895	1,445	0,865	1,580
0,275	1,270	1,795	1,200	1,720	1,270	1,825	1,170	1,720	1,140	1,855
0,550	1,545	2,070	1,475	1,995	1,545	2,100	1,445	1,995	1,415	2,130
1,100	2,095	2,620	2,025	2,545	2,095	2,650	1,995	2,545	1,965	2,680
1,650	2,645	3,170	2,575	3,095	2,645	3,200	2,545	3,095	2,515	3,230
2,200	3,195	3,720	3,125	3,645	3,195	3,750	3,095	3,645	3,065	3,780

Accessories / Spares

see Single slide rail system EG PV (page 36)

Single slide-rail inner-city parallel shoring

⬆ *Single slide-rail inner-city parallel shoring*

Module length	2,77 m / 4,27 m
Length slide rail	4,00 m
Height sheet pile element	1,00 m
Length sheet piles (KD VI/8)	variable

Pipelines inside, traffic outside.
During inner-city trenching operations, attention has to be paid to the numerous supply lines crossing the trench. At the same time it is essential that no vibrations are transmitted to the soil outside the trench because of housing close by and roads and rails often running alongside the trench.
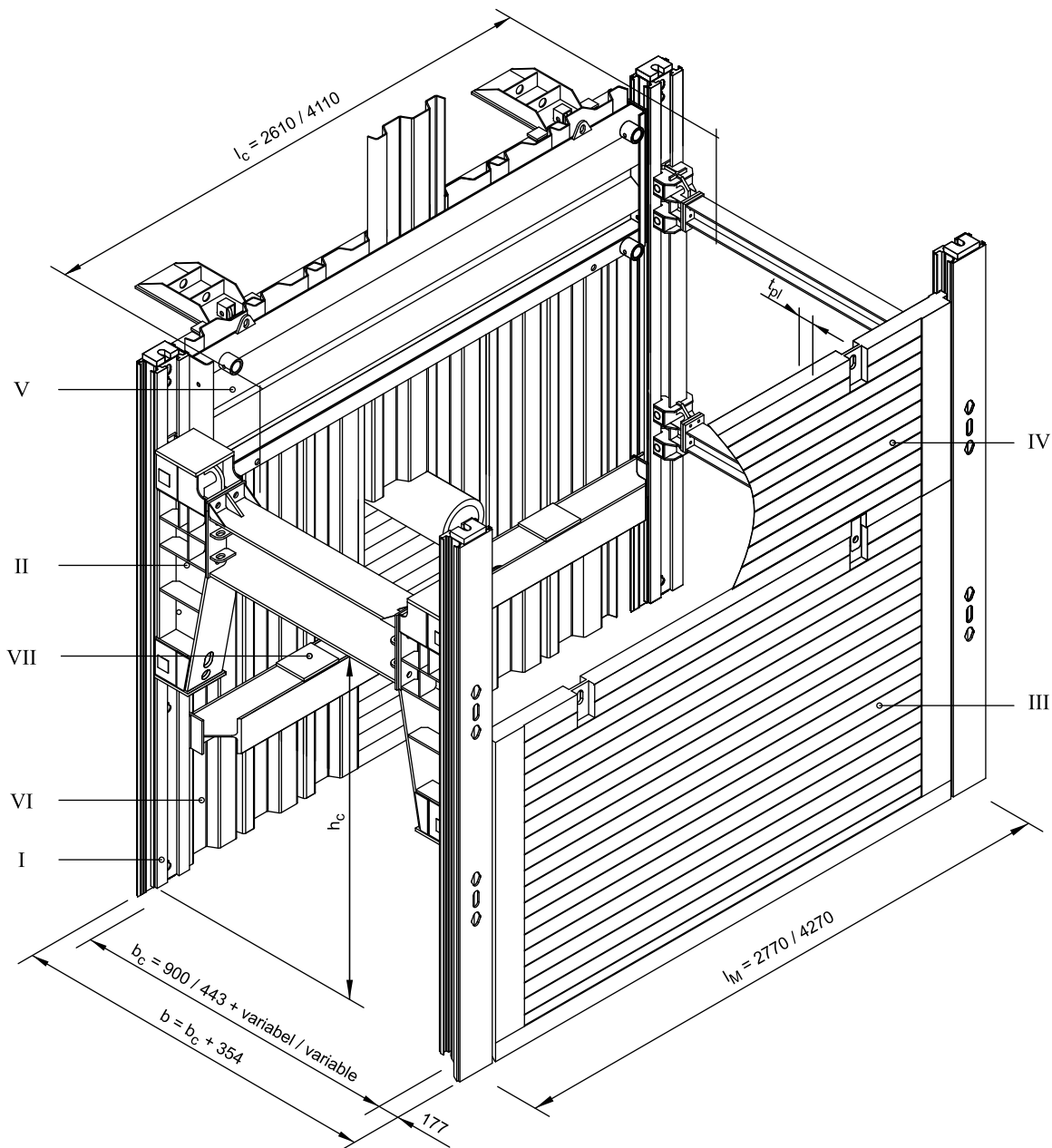
Large-area support prevented by small supply lines.
Large-area support systems are out of the question - in spite of their other advantages - for use in trench sections crossed by numerous supply lines, if only for functional reasons.

Unlimited combinations.
The new inner-city linear shoring piling frame system can be combined with the components of the linear shoring system from E+S - with supports, boogie cars and large support panels. Consequently, the advantages of inner-city linear shoring can be combined with those on a single site. This offers you totally new scope for cost estimation and efficiency.

Single slide-rail inner-city parallel shoring

$l_c = 2610 / 4110$

t_{pl}

$l_M = 2770 / 4270$

h_c

$b_c = 900 / 443 + variabel / variable$

$b = b_c + 354$

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I	Linear shoring support	l_M	Module length
II	Boogie car	l_c	Pipe culvert length
III	Base panel	b	Shoring / trench width
IV	Top panel	b_c	Inner width
V	Sheet pile element DKU	h_c	Pipe culvert height
VI	Sheet pile	t_{pl}	Thickness
VII	Waling		

⬆ *Single slide-rail inner-city parallel shoring with U-type or rectangular roller unit*

(All dimensions in mm. The details of length of pipe opening l_c refer to the rectangular roller unit.)

Single slide-rail inner-city parallel shoring

2

Slide rail

Art. No.	Short description	l [m]	G [kg]
156 060	Single slide rail system, parallel shoring, EG PV	**4,00**	489,0

Parallel shoring roller unit

Art. No.	Short description	Description	G [kg]
159 280	Rectangular roller unit	SL PV R 2112 x 260	171,4
832 204	U-type boogie car	SL PV U 1700 x 450	450,0

Universal DKU piling frame element (height 1.00 m)

Art. No.	Short description	l [m]	l_M [m]	t_{pl} [m]	l_c [m]	G / VP [kg]
842 671	Universal DKU piling frame element	**2,27**	2,77	0,31	2,61	510,0
842 674	Universal DKU piling frame element	**3,81**	4,27	0,31	4,11	785,0

You can find further piling frame elements at our website www.es-verbau.com

The details of length of pipe opening l_c refer to the rectangular roller unit.

Waling

Art. No.	Short description	l [m]	l_M [m]	G [kg]
842 712	Waling for DKU piling frame, module length 2.77 m (single slide rail, Krings)	**2,524**	2,77	209,0
842 714	Waling for DKU piling frame, module length 4.27 m (single slide rail, Krings)	**4,024**	4,27	400,0

Extension bars

see Single slide rail system EG PV (page 35)

Trench widths

see Single slide rail system EG PV (page 35)

Accessories / Spares

see Single slide rail system EG PV (page 36)

l	Length	t_{pl}	Thickness
l_M	Module length	G	Weight
l_c	Pipe culvert length		

Corner post EG Eck / DG Eck

⬆ *Corner post EG Eck / DG Eck*

Shoring depth	max. 5,50 m
Earth pressure max.	32,70 - 125,00 kN/m²
Panel length	2,00 m - 7,00 m
Height base panel	2,32 m
Height top panel	1,33 m

The KRINGS corner slide rail system is the proven time and labor saving method of shoring all types of pit and shaft excavations. Suitable for depths up to 26.4' / 8.00 m the KRINGS corner slide rails together with the standard trench shoring products are ideal for applications such as tank installations, repair shaft, launching and receiving shafts for pipejacking, thrustboring and microtunneling works, retaining walls and manhole pits.

Corner slide rails can be custom made for any required angle. For jacking, boring and microtunneling shafts KRINGS provides the perfect solution. Special corner rails are available upon request and many variations and possibilities are possible with this system.

Corner post EG Eck / DG Eck
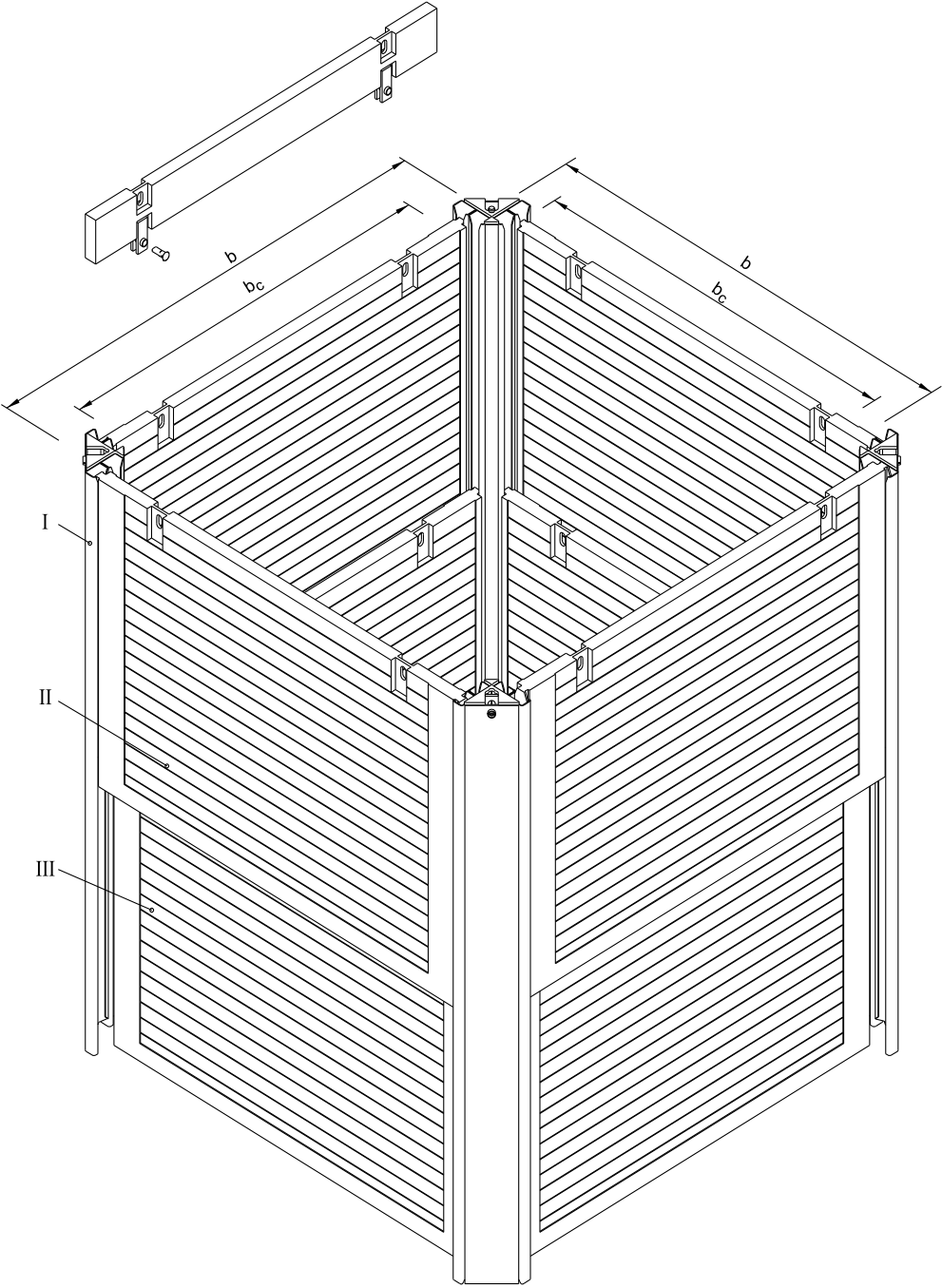
I	Corner post	b	Shoring / pit width
II	Base panel -outside-	b_c	Inner width
III	Base panel -inside-		

⬆ *Corner post EG Eck / DG Eck*

(All dimensions in mm)

Corner post EG Eck / DG Eck

Slide rail

Art. No.	Short description	Description	l [m]	G [kg]
156 030	Single corner rail	EG ECK - 3500	3,50	195,0
157 050	Double corner slide rail	DG ECK - 4500	4,50	517,0
157 060	Double corner slide rail	DG ECK - 5000	5,00	575,0
157 070	Double corner slide rail	DG ECK - 5500	5,50	624,0
157 010	Double corner extension rail	DG A ECK - 2000	2,00	244,0

Shoring widths for DG corner

Shoring panel	KRU		KRI	
Length [m]	b_c [m]	b [m]	b_c [m]	b [m]
2,00	2,110	2,620	2,175	2,685
2,50	2,610	3,120	2,675	3,185
3,00	3,110	3,620	3,175	3,685
3,50	3,610	4,120	3,675	4,185
4,00	4,110	4,660	4,175	4,725
4,50	4,610	5,160	4,675	5,225
5,00	5,110	5,660	5,175	5,725
6,00	6,015	6,630	6,015	6,730
7,00	7,015	7,630	7,015	7,730

Accessories / Spares

see Single slide rail system EG PV (page 36)

l	Length		b_c	Inner width
b	Shoring / trench width		G	Weight

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Base panel KRI (height 2.32 m)

Art. No.	l [m]	l_M EG PV [m]	l_M DG PV [m]	t_{pl} [m]	G / VP [kg]	A [m²]	eh [kN/m²]
151 096	2,00	2,27	2,32	0,110	530,0	4,64	141,00
151 101	2,50	2,77	2,82	0,110	620,0	5,80	90,50
151 106	3,00	3,27	3,32	0,110	710,0	6,96	62,90
151 111	3,50	3,77	3,82	0,110	805,0	8,12	46,20
151 121	4,00	4,27	4,32	0,125	1.025,0	9,28	50,60
151 126	4,50	4,77	4,82	0,125	1.140,0	10,44	40,00
151 131	5,00	5,27	5,32	0,125	1.250,0	11,60	32,40

Base panel KRU (height 2.32 m)

Art. No.	l [m]	l_M EG PV [m]	l_M DG PV [m]	t_{pl} [m]	G / VP [kg]	A [m²]	eh [kN/m²]
151 256	2,00	2,27	2,32	0,110	530,0	4,64	141,00
151 261	2,50	2,77	2,82	0,110	620,0	5,80	90,50
151 267	3,00	3,27	3,32	0,110	710,0	6,96	62,90
151 273	3,50	3,77	3,82	0,110	805,0	8,12	46,20
151 276	4,00	4,27	4,32	0,125	1.025,0	9,28	50,60
151 286	4,50	4,77	4,82	0,125	1.140,0	10,44	40,00
151 291	5,00	5,27	5,32	0,125	1.250,0	11,60	32,40

Top panel KRI (height 1.30 m)

Art. No.	l [m]	l_M EG PV [m]	l_M DG PV [m]	t_{pl} [m]	G / VP [kg]	A [m²]	eh [kN/m²]
151 015	2,00	2,27	2,32	0,110	364,0	2,60	141,00
151 020	2,50	2,77	2,82	0,110	426,0	3,25	90,50
151 025	3,00	3,27	3,32	0,110	491,0	3,90	62,90
151 030	3,50	3,77	3,82	0,110	554,0	4,55	46,20
151 040	4,00	4,27	4,32	0,125	678,0	5,20	50,60
151 045	4,50	4,77	4,82	0,125	754,0	5,85	40,00
151 050	5,00	5,27	5,82	0,125	825,0	6,50	32,40

Top panel KRU (height 1.30 m)

Art. No.	l [m]	l_M EG PV [m]	l_M DG PV [m]	t_{pl} [m]	G / VP [kg]	A [m²]	eh [kN/m²]
151 175	2,00	2,27	2,32	0,110	364,0	2,60	141,00
151 180	2,50	2,77	2,82	0,110	426,0	3,25	90,50
151 185	3,00	3,27	3,32	0,110	491,0	3,90	62,90
151 190	3,50	3,77	3,82	0,110	554,0	4,55	46,20
151 200	4,00	4,27	4,32	0,125	678,0	5,20	50,60
151 205	4,50	4,77	4,82	0,125	754,0	5,85	40,00
151 210	5,00	5,27	5,32	0,125	825,0	6,50	32,40

Base panel KR -outside- (height 2.30 m)

Art. No.	l [m]	l_M EG PV [m]	l_M DG PV [m]	t_{pl} [m]	G / VP [kg]	A [m²]	eh [kN/m²]
151 133	6,00	6,25	6,30	0,150	1.840,0	13,80	37,80
151 134	7,00	7,25	7,30	0,150	2.180,0	16,10	27,70

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**Base panel KR -inside- (height 2.30 m)**

Art. No.	l [m]	l_M EG PV [m]	l_M DG PV [m]	t_{pl} [m]	G / VP [kg]	A [m²]	eh [kN/m²]
151 293	**6,00**	6,25	6,30	0,150	1.840,0	13,80	37,80
151 294	**7,00**	7,25	7,30	0,150	2.180,0	16,10	27,70

Top panel KR -outside- and -inside- (height 1.35 m)

Art. No.	l [m]	l_M EG PV [m]	l_M DG PV [m]	t_{pl} [m]	G / VP [kg]	A [m²]	eh [kN/m²]
151 053	**6,00**	6,25	6,30	0,150	1.380,0	8,10	37,80
151 054	**7,00**	7,25	7,30	0,150	1.650,0	9,45	27,70

for panels l = 2,00 m - 5,00 m   **for panels l = 6,00 m - 7,00 m**
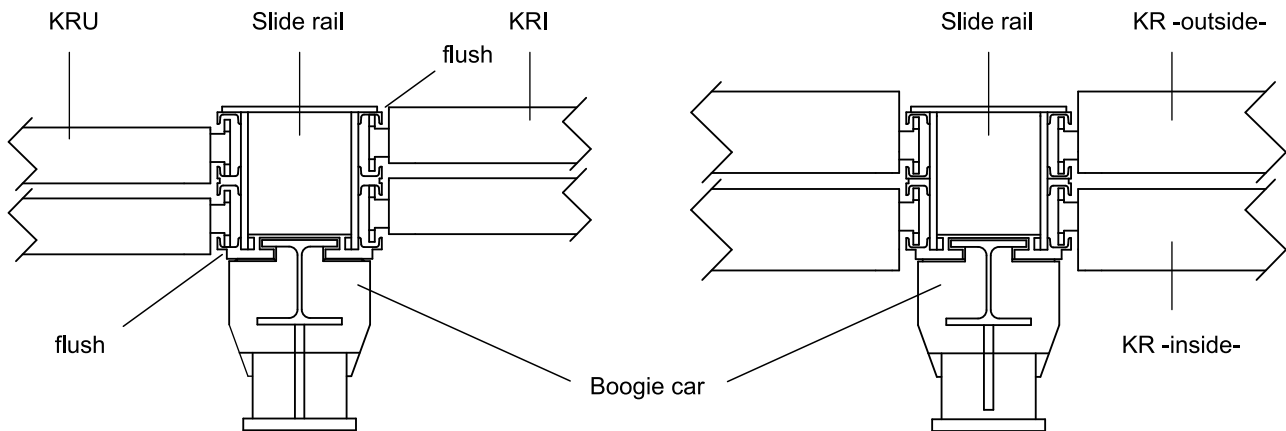
⬆ *Difference between KRI and KRU panel*

l	Length		G / VP	Weight per shoring panel
h	Height		d	Diameter
t_{pl}	Thickness		eh	Earth pressure max.
A	Area		EG PV	Single slide rail system
G	Weight		DG PV	Double slide rail system

Imprint

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