

SAB[®] SYSTEM

OPENING / CLOSING SYSTEM GATES FOR TRAFFIC BARRIERS





INSTALLATION AND ASSEMBLY MANUAL

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PREFACE

The SAB[®] system Snoline S.p.A. is a widely tested and proven technology and is one of the most reliable systems in solving the problem of the closing of gates in the safety barriers. Like any road safety system, SAB[®] must be properly installed to ensure proper performance. The installation instructions must be fully known and understood before beginning the installation.

If you need additional information, or have questions about SAB[®], please call the Technical Department of Snoline S.p.A. at +39 02909961

INTRODUCTION

The SAB[®] system has been tested to meet the requirements of standard 1317, part 4.

SAB[®] is supplied in various lengths, multiple unit of 4.34 meters module, so that it can adapt to the various existing gaps. Closing gates SAB[®] was tested according to ISO 1317 Part 4 at L.I.E.R. laboratories here shows the test table conducted on SAB[®] system.

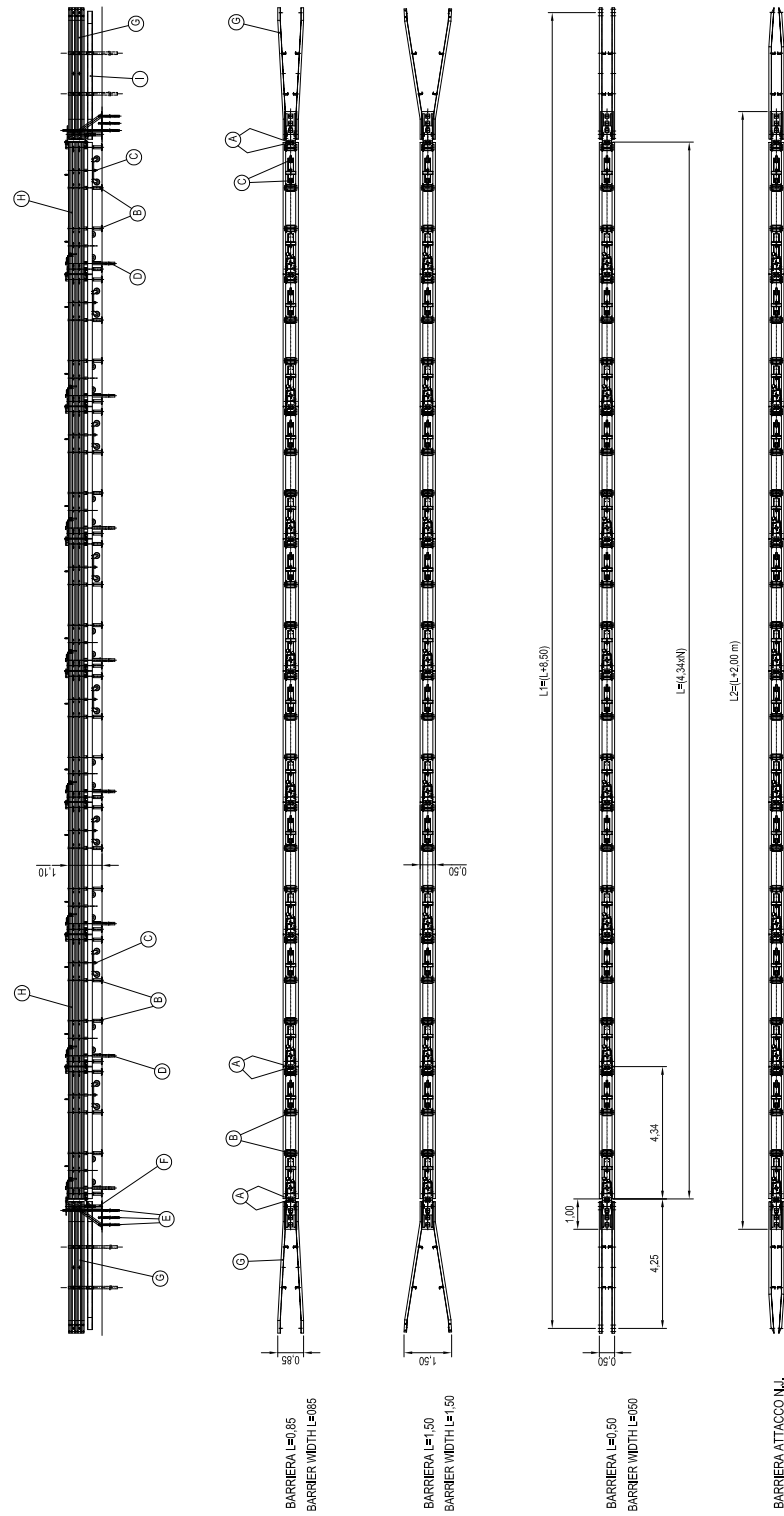
TEST REPORT LIST

TEST REPORT	LAB	TEST	PRODUCT	TEST	CLASS	WW
SNO/SAB-03/587	LIER	TB51 -13000 kg; 70 km/h; 20deg	SAB	TB51	/	W6
SNO/SAB-04/604	LIER	TB51 -900 kg; 100 km/h; 20deg	SAB	TB51	A	W2

DRAWINGS AND BOMS

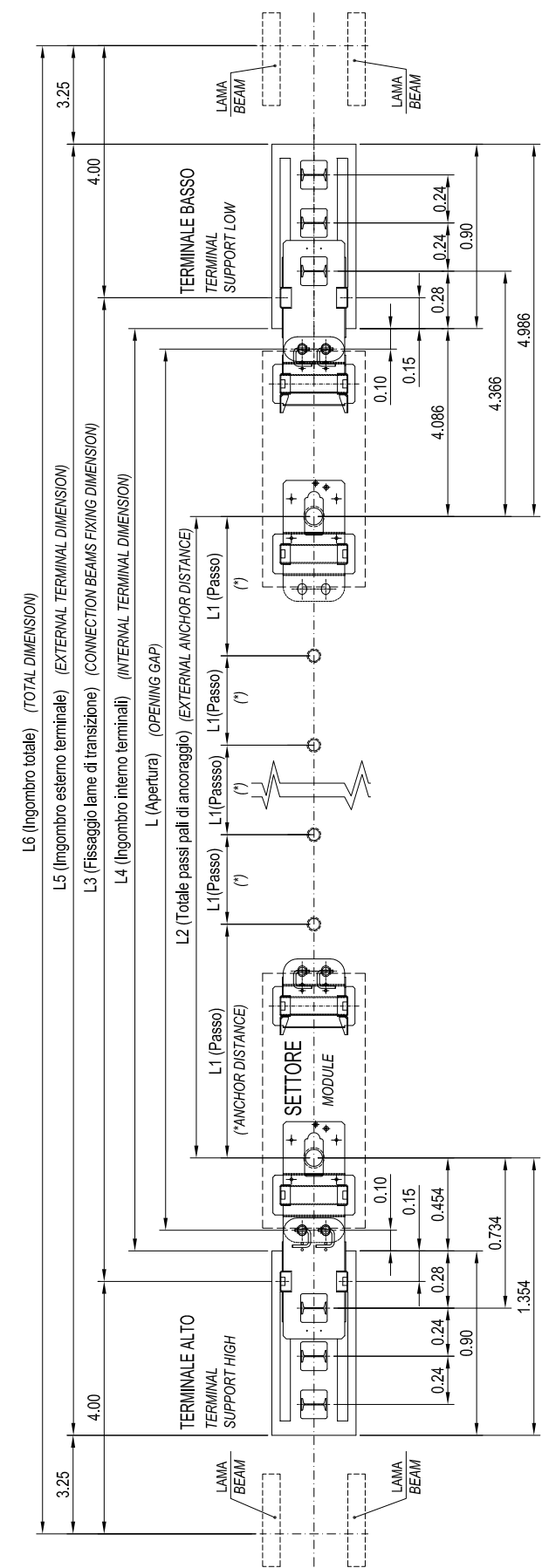
In the following pages, drawings and boms of the SAB[®] currently in production.

SYSTEM FOR CLOSING GATES - SAB010



- A** - Pin cerniere
B - Piedi verticali
C - Ruote regolabili in altezza
D - Pali ancoraggio intermedi (amovibili)
E - Pali ancoraggio estremi (fissi)
F - Supporto limitate con attacco transizione
G - Transizione da definite secondo tipologie barriere
H - Lama tipologica
I - Profilo scansanote
- A** - Pin hinges
B - Vertical foot
C - Wheel adjustable for height
D - Removable anchor posts
E - Fixed anchor posts
F - Terminal support with the connection for transition
G - Variable connection
H - Beam panel
I - Wheel guide beam
- N.B. / NOTE**
N=25 MODULI
N=25 MODULES

DRILLING PLANS - SAB03

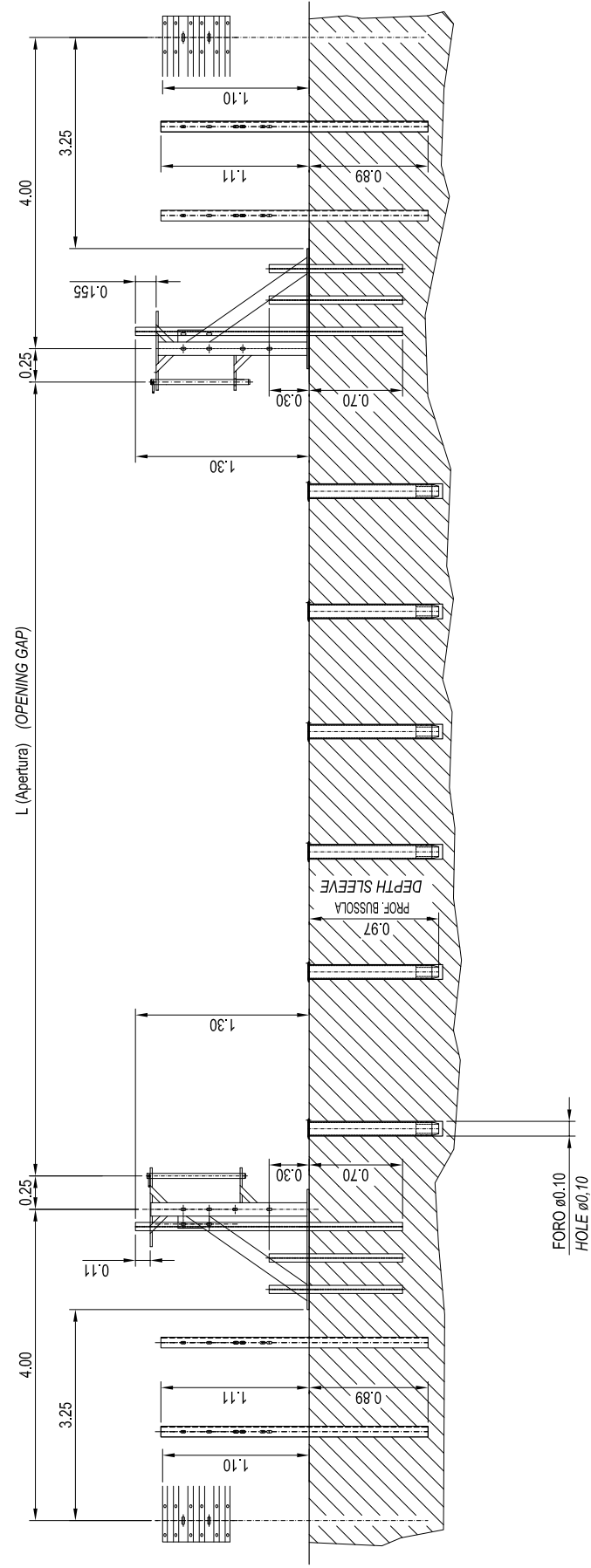


N° MODULI N° MODULE	DIMENSIONI IN m DIMENSIONS IN m									
	L	L1	L2	L3	L4	L5	L6			
1	4.34	-	-	4.84	4.54	6.34	12.84			
2	8.68	1 x 4.34	4.34	9.18	8.88	10.68	17.18			
3	13.02	2 x 4.34	8.68	13.52	13.22	15.02	21.52			
4	17.36	3 x 4.34	13.02	17.86	17.56	19.36	25.86			
5	21.70	4 x 4.34	17.36	22.20	21.90	23.70	30.20			
6	26.04	5 x 4.34	21.70	26.54	26.24	28.04	34.54			
7	30.38	6 x 4.34	26.04	30.88	30.58	32.38	38.88			
8	34.72	7 x 4.34	30.38	35.22	34.92	36.72	43.22			
9	39.06	8 x 4.34	34.72	39.56	39.26	41.06	47.56			
10	43.40	9 x 4.34	39.06	43.90	43.60	45.40	51.90			
11	47.74	10 x 4.34	43.40	48.24	47.94	49.74	56.24			
12	52.08	11 x 4.34	47.74	52.58	52.28	54.08	60.58			
13	56.42	12 x 4.34	52.08	56.92	56.62	58.42	64.92			
14	60.76	13 x 4.34	56.42	61.26	60.96	62.76	69.26			
15	65.10	14 x 4.34	60.76	65.60	65.30	67.10	73.60			
20	86.80	19 x 4.34	82.46	87.30	87.00	88.80	95.30			
25	108.50	24 x 4.34	104.16	109.00	108.70	110.50	117.00			

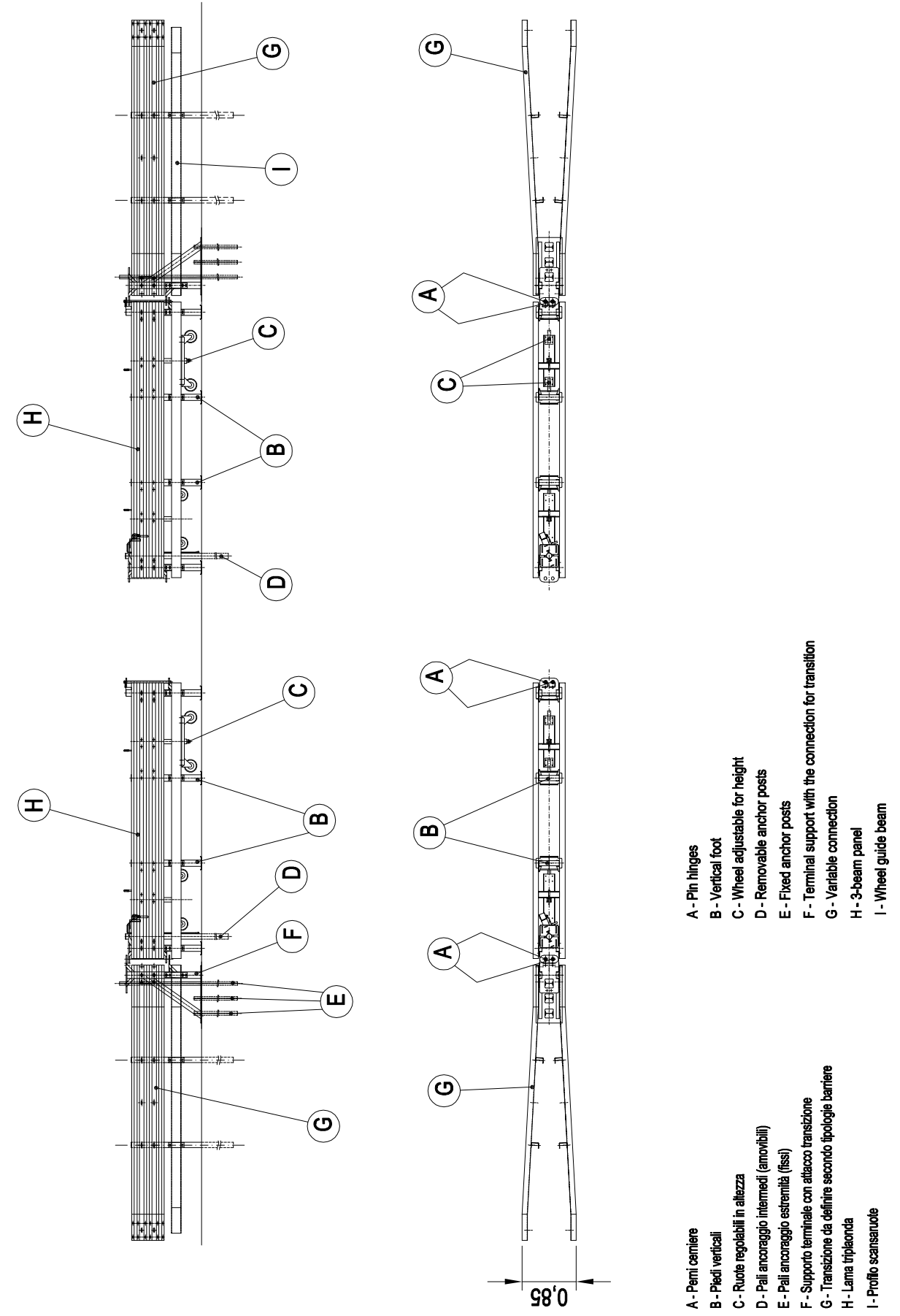
N.B.
- LE DIMENSIONI SONO ESPRESSE IN m
- PER PROFONDITA' FORATURA VEDI DIS. SAB0003/1

NOTE
- DIMENSION ARE IN m
- FOR DEPTH HOLES TO SEE SAB0003/1

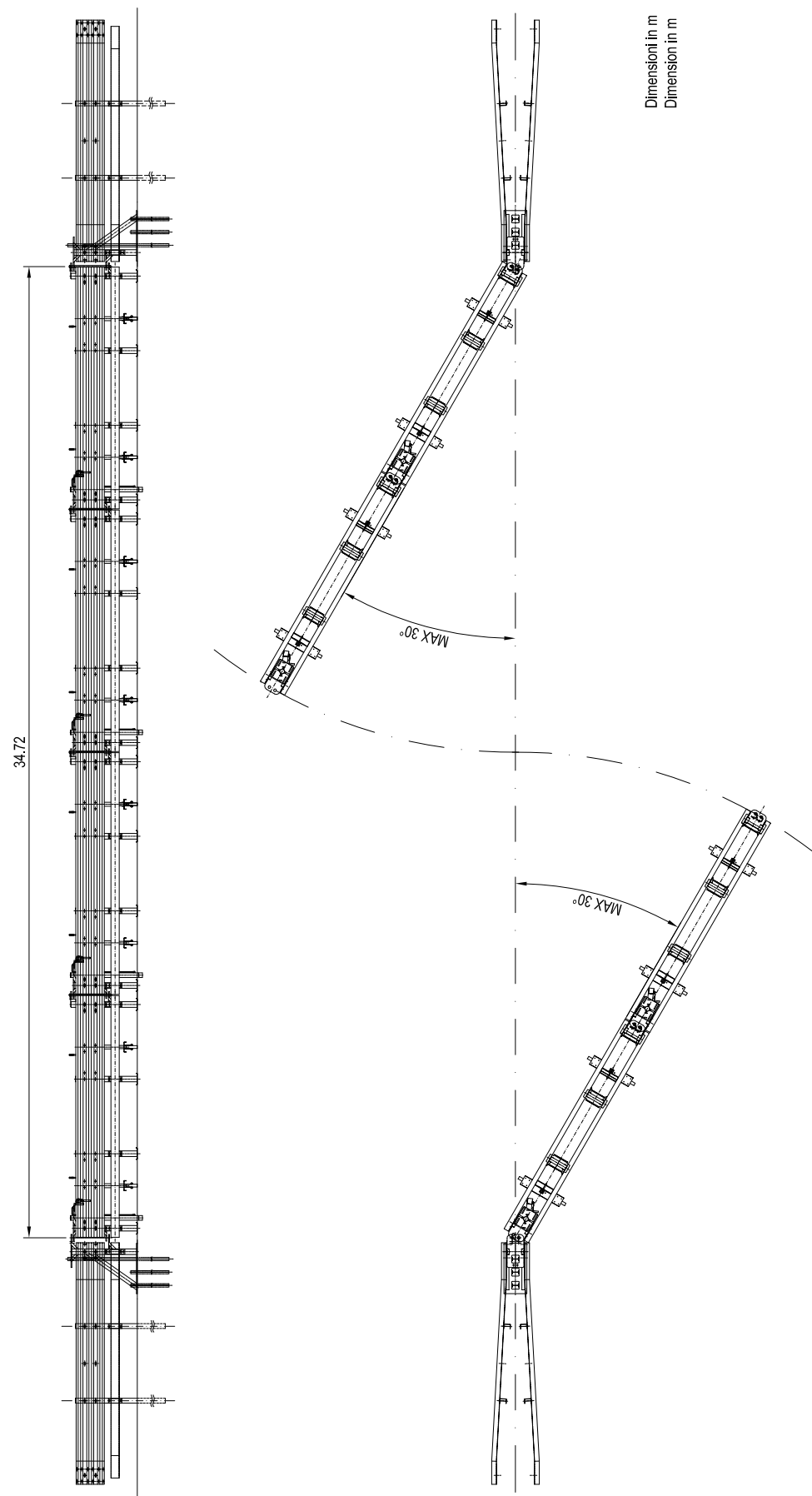
DRILLING PLANS - SAB03/1



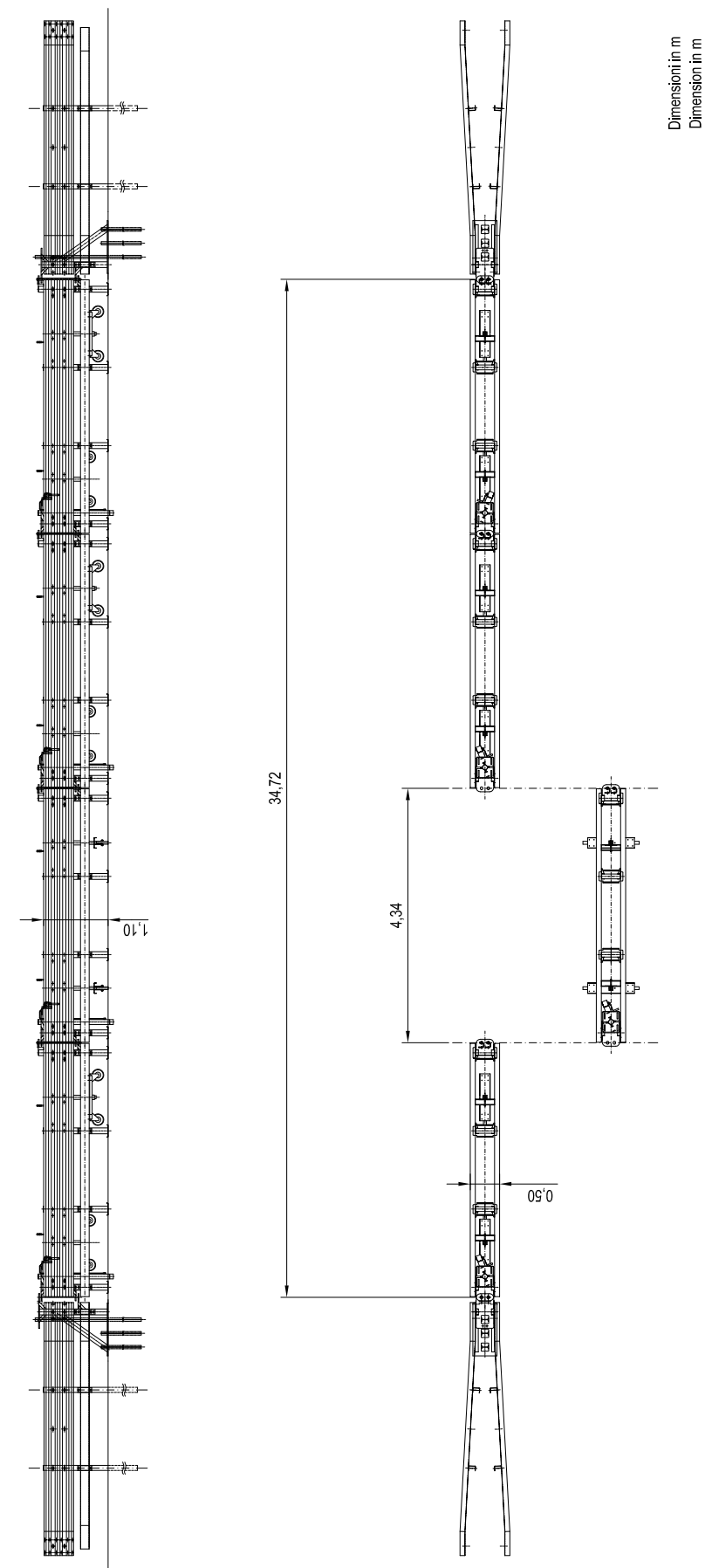
SYSTEM FOR OPENING/CLOSING GATES - SAB133



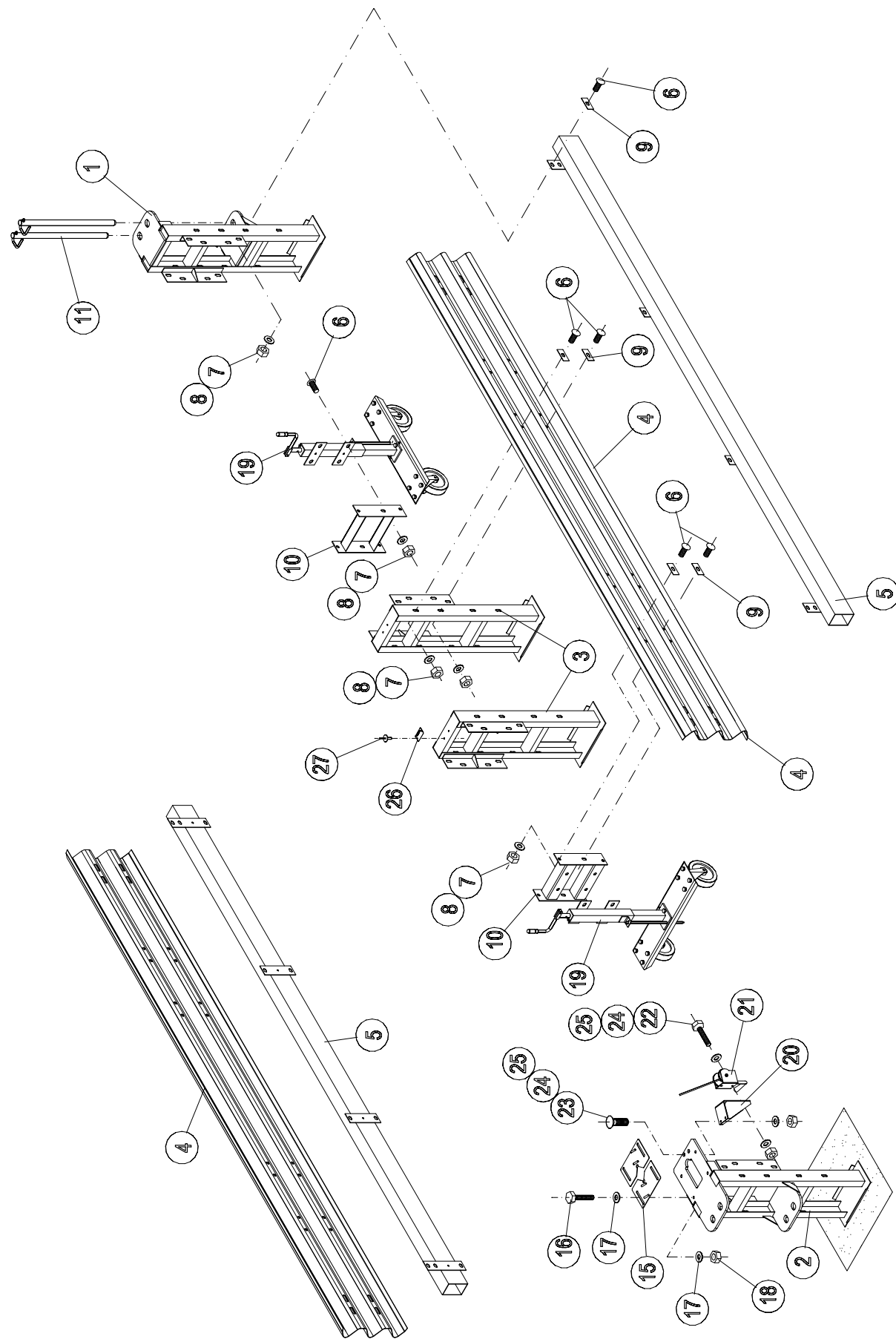
SYSTEM FOR OPENING/CLOSING GATES - SAB012/1



SYSTEM FOR OPENING/CLOSING GATES - SAB013



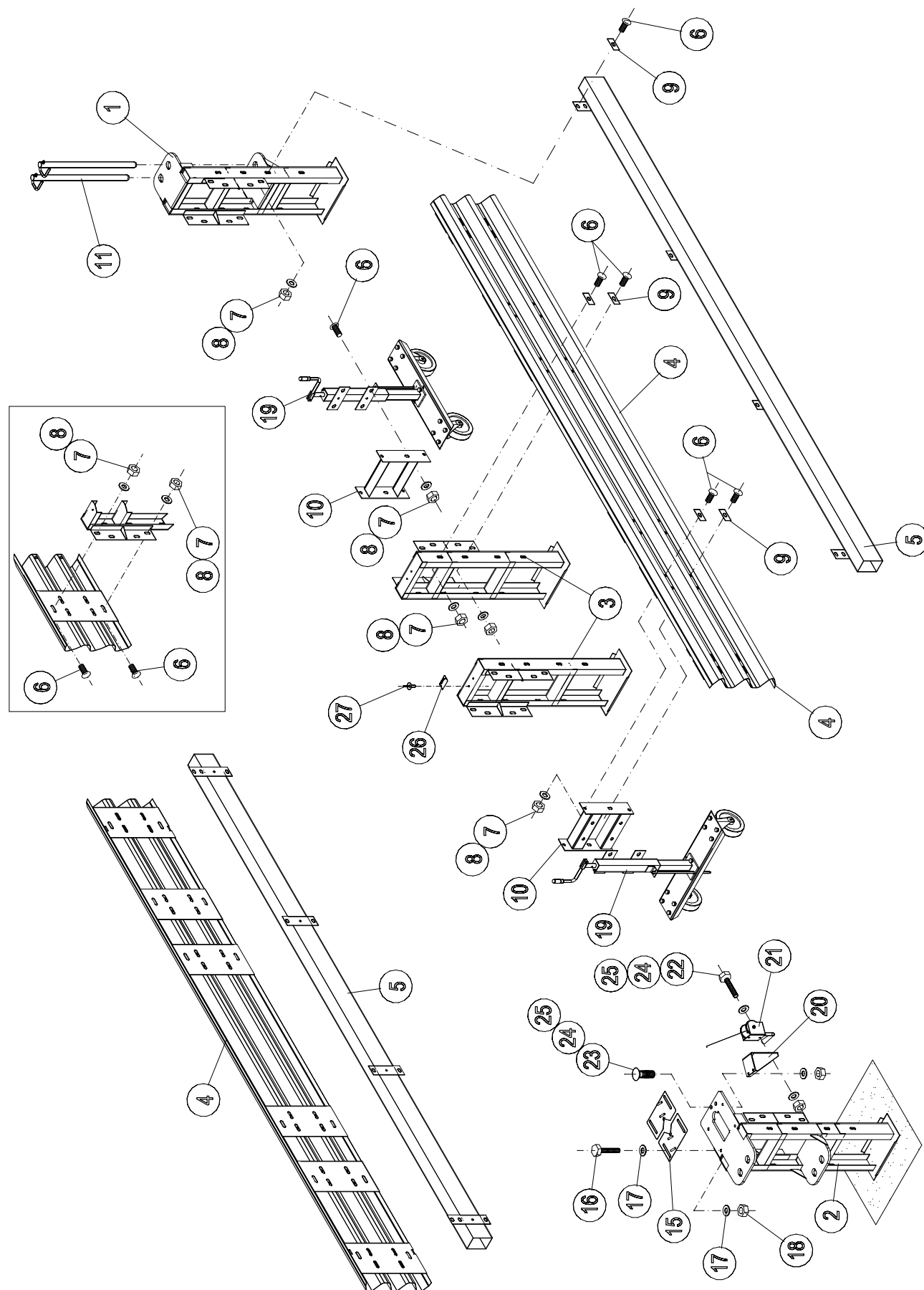
SAB SECTOR - SAB4340IT-EXP



SAB4340IT

POS.	DESCRIZIONE (IT)	DESCRIPTION (ENG)	kg	CODE	QTY.
1	Supporto alto	High support	40,0	SAB0030	1
2	Supporto basso	Low support	51,0	SAB0031	1
3	Supporto centrale	Central support	23,0	SAB0032	2
4	Lama 3 onde	3-beam panel	76,5	SAB0033	2
5	Scansaruote	Wheel guide beam	51,5	SAB0034	2
6	Vite TTL M16x40 cl 8.8 z.c.	Screw CH M16x40 cl 8.8 hot-galv.		VTTL16-40ZC	64
7	Rondella piana M16 (17x40) z.c.	Washer M16 (17x40) hot-galvanize		RP17-40ZC	64
8	Dado maggiorato M16 cl 8 z.c.	Nut M16 cl 8 hot-galvanize		D16MAZC	64
9	Piastrina copri asola z.c.	Slot plate hot-galvanize		SABPCAZC	56
10	Supporto movimento a vite	Worm gear support	7,0	SAB0060	2
11	Perno con maniglia	Pivot with handle		SAB0066	2
15	Piastra di contrasto	Plate	2,0	SAB0036	2
16	Vite TE M12x40 cl 8.8 z.c.	Screw HH M12x40 cl 8.8 hot-galv.		VTE12-40ZC	4
17	Rondella piana M12 z.c.	Washer M12 hot-galvanize		RP12-24ZC	8
18	Dado maggiorato M12 cl 8 z.c.	Nut M12 cl 8 hot-galvanize		D12MAZC	4
19	Gruppo ruote	Wheel mechanism	30,0	SAB0017	2
20	Squadretta per argano	Square for winch	2,6	SAB0070	1
21	Argano con fune e grillo	Winch with cable and clevis		SABAM	1
22	Vite TE M10x25 cl. 8.8 z.c.	Screw HH M10x25 cl. 8.8 hot-galv.		VTE10-25ZC	2
23	Vite TSEI M10x35 cl. 10.9 z.c.	Screw FSH M10x35 cl. 10.9 hot-galv.		VTS10-35ZC	2
24	Rondella piana M10 z.c.	Washer M10 hot-galvanize		RP10-21ZC	6
25	Dado maggiorato M10 cl. 8 z.c.	Nut M10 cl. 8 hot-galvanize		D10MAZC	4
26	Targhetta identificazione	Identification plate		TAU0114	1
27	Rivetto Al ø4,8x20 testa larga	AL rivet ø4,8x20 -large		RV4820	2

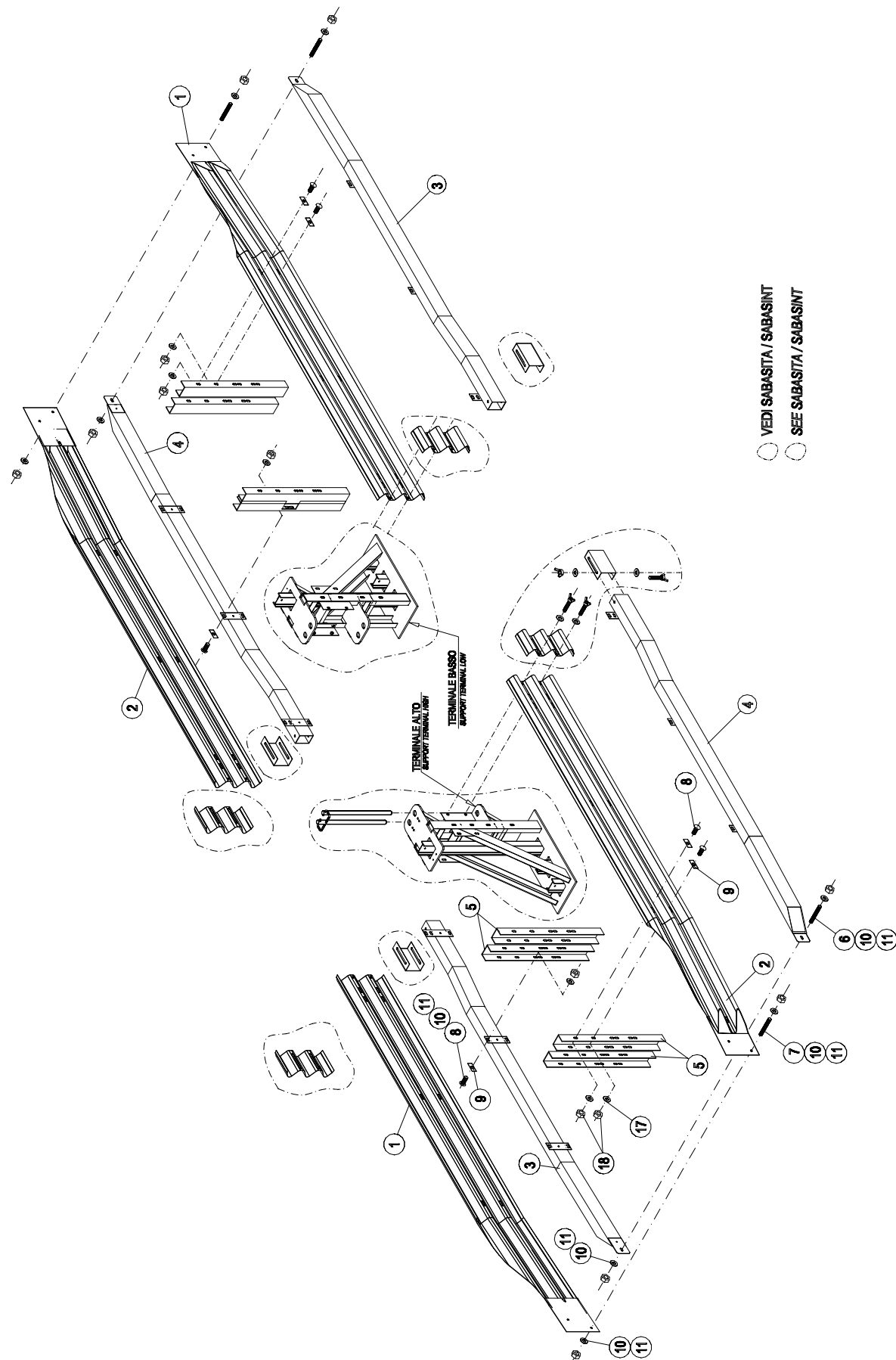
SAB SECTOR - SAB4340E-EXP



SAB4340E

POS.	DESCRIZIONE (IT)	DESCRIPTION (ENG)	kg	CODE	QTY.
1	Supporto alto	High support	40,0	SAB0030	1
2	Supporto basso	Low support	51,0	SAB0031	1
3	Supporto centrale	Central support	23,0	SAB0032	2
4	Lama 3 onde	3-beam panel	103,0	SAB0365	2
5	Scansaruote	Wheel guide beam	51,5	SAB0034	2
6	Vite TTL M16x40 cl 8.8 z.c.	Screw CH M16x40 cl 8.8 hot-galv.		VTTL16-40ZC	64
7	Rondella piana M16 (17x40) z.c.	Washer M16 (17x40) hot-galvanize		RP17-40ZC	64
8	Dado maggiorato M16 cl 8 z.c.	Nut M16 cl 8 hot-galvanize		D16MAZC	64
9	Piastrina copri asola z.c.	Slot plate hot-galvanize		SABPCAZC	40
10	Supporto movimento a vite	Worm gear support	7,0	SAB0060	2
11	Perno con maniglia	Pivot with handle		SAB0066	2
15	Piastra di contrasto	Plate	2,0	SAB0036	2
16	Vite TE M12x40 cl 8.8 z.c.	Screw HH M12x40 cl 8.8 hot-galv.		VTE12-40ZC	4
17	Rondella piana M12 z.c.	Washer M12 hot-galvanize		RP12-24ZC	8
18	Dado maggiorato M12 cl 8 z.c.	Nut M12 cl 8 hot-galvanize		D12MAZC	4
19	Gruppo ruote	Wheel mechanism	30,0	SAB0017	2
20	Squadretta per argano	Square for winch	2,6	SAB0070	1
21	Argano con fune e grillo	Winch with cable and clevis		SABAM	1
22	Vite TE M10x25 cl. 8.8 z.c.	Screw HH M10x25 cl. 8.8 hot-galv.		VTE10-25ZC	2
23	Vite TSEI M10x35 cl. 10.9 z.c.	Screw FSH M10x35 cl. 10.9 hot-galv.		VTS10-35ZC	2
24	Rondella piana M10 z.c.	Washer M10 hot-galvanize		RP10-21ZC	6
25	Dado maggiorato M10 cl. 8 z.c.	Nut M10 cl. 8 hot-galvanize		D10MAZC	4
26	Targhetta identificazione	Identification plate		TAU0114	1
27	Rivetto Al ø4,8x20 testa larga	AL rivet ø4,8x20 -large		RV4820	2

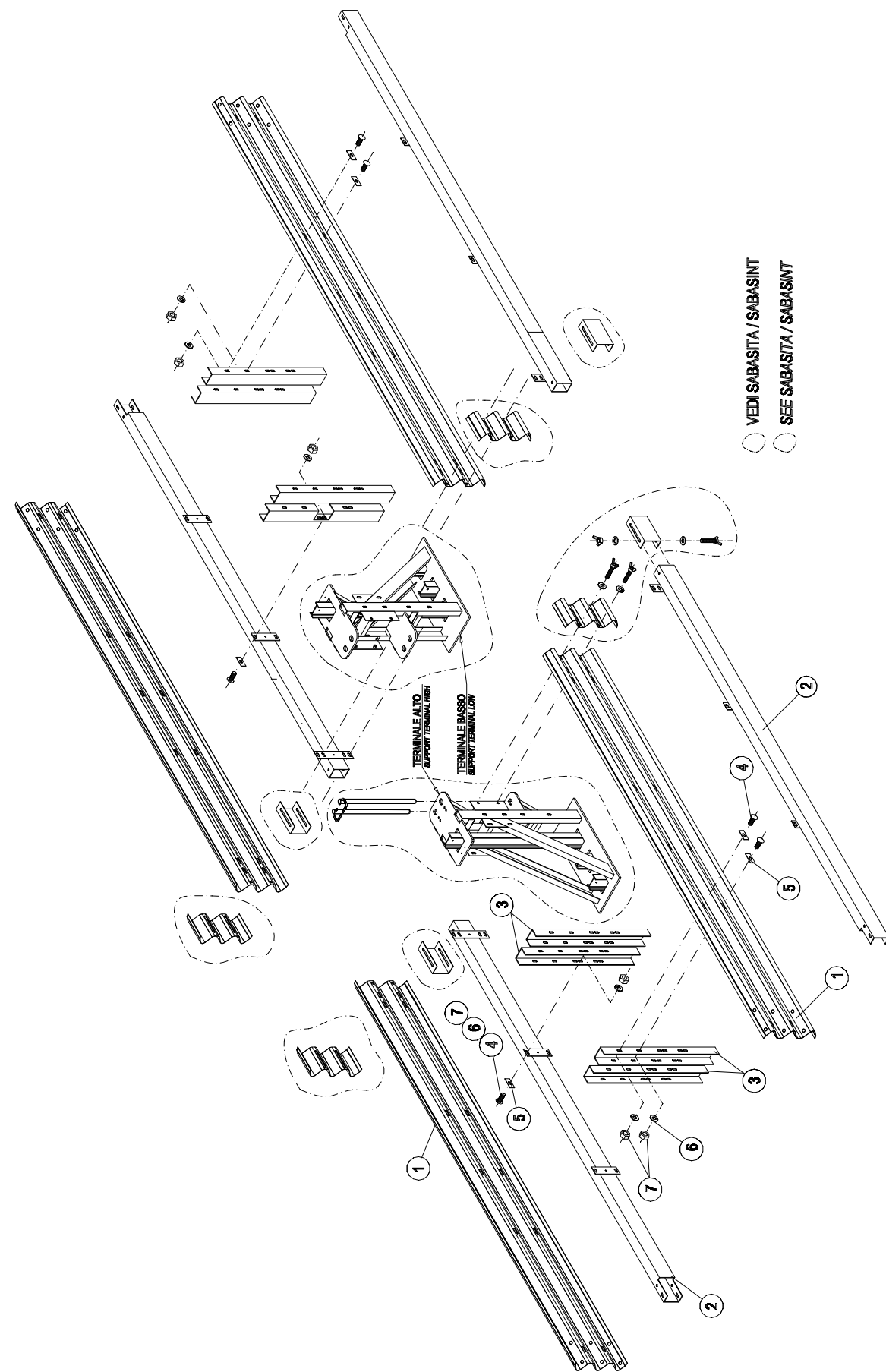
NEW JERSEY MONOFILAR CONNECTION



SABCNJ

POS.	DESCRIZIONE (IT)	DESCRIPTION (ENG)	kg	CODE	QTY.
1	Lama transizione destra	3-beam panel transition right	76,5	SAB0080	2
2	Lama transizione sinistra	3-beam panel transition left	76,5	SAB0081	2
3	Scansaruote transiz. destra	Wheel guide beam right	76,0	SAB0082	2
4	Scansaruote transiz. sinistra	Wheel guide beam left	76,0	SAB0083	2
5	Palo ancoraggio per lama transiz.	Transition post	27,0	SAB0045	8
6	Barra filettata M16x1000 z.e.	Threaded bar M16x1000 electrogalv.		B16-1000ZE	8
7	Barra filettata M16x500 z.e.	Threaded bar M16x500 electrogalv.		B16-500ZE	10
8	Vite TT M16x40 cl. 8.8 z.c.	Screw CH M16x40 cl. 8.8 hot-galv.		VTTL16-40ZC	56
9	Piastrina copri asola z.c.	Slot plate hot-galvanize		SABPCAZC	56
10	Rondella piana M16 (17x40) z.c.	Washer M16 (17x40) hot-galvanize		RP17-40ZC	72
11	Dado maggiorato M16 cl. 8 z.c.	Nut M16 cl. 8 hot-galvanize		D16MAZC	72

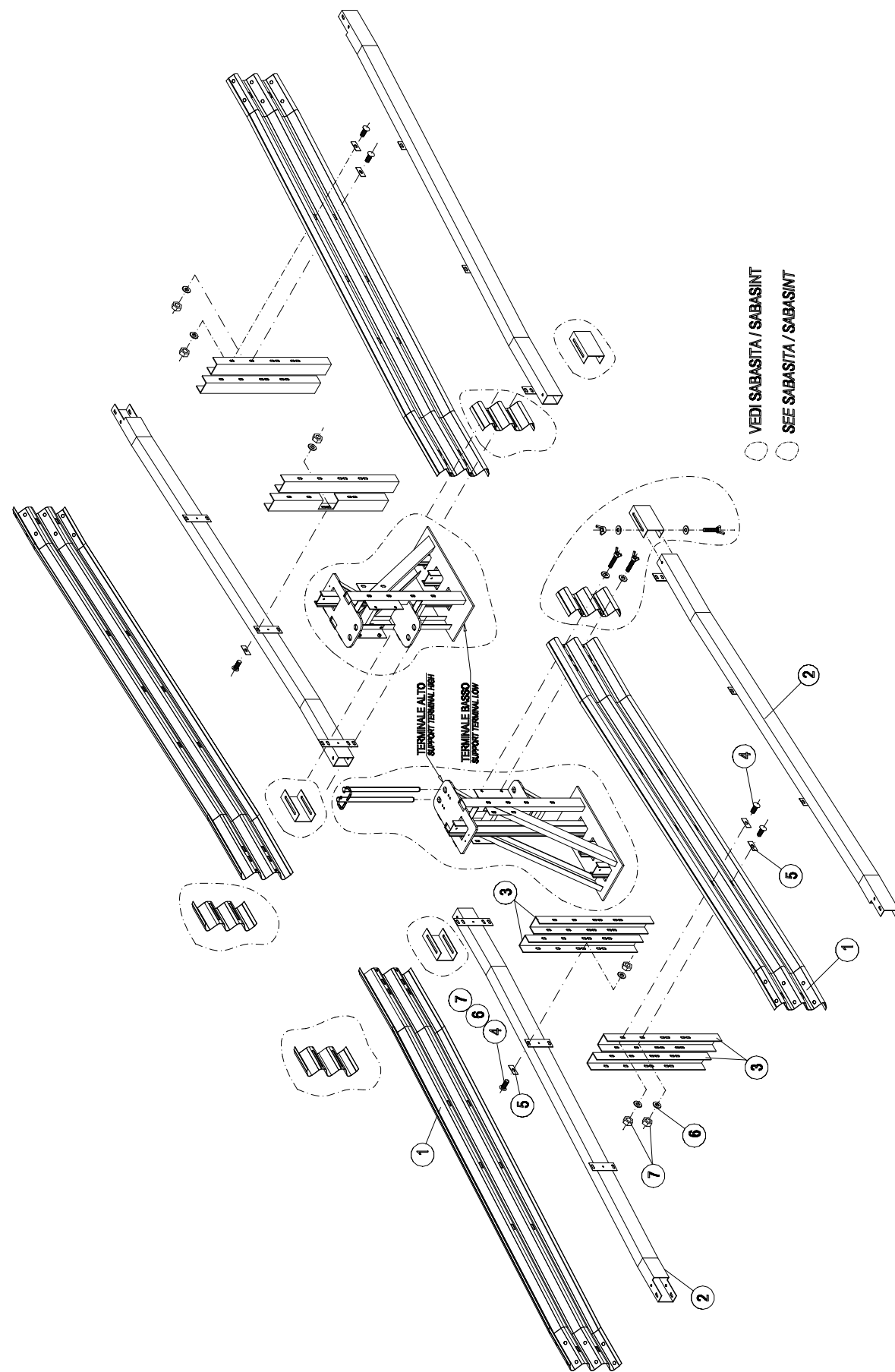
CONNECTION L=0,50 m SAB050-EXP



SAB050

POS.	DESCRIZIONE (IT)	DESCRIPTION (ENG)	kg	CODE	QTY.
1	Lama transizione L=0,50	3-beam panel transition L=0,50	76,5	SAB0085	4
2	Scansaruote	Wheel guide beam	51,5	SAB0086	4
3	Palo ancoraggio per lama transizione	Transition post	27,0	SAB0045	8
4	Vite TT M16x40 cl. 8.8 z.c.	Screw CH M16x40 cl. 8.8 hot-galv.		VTTL16-40ZC	56
5	Piastrina copri asola z.c.	Slot plate hot-galvanize		SABPCAZC	56
6	Rondella piana M16 (17x40) z.c.	Washer M16 (17x40) hot-galvanize		RP17-40ZC	56
7	Dado maggiorato M16 cl. 8 z.c.	Nut M16 cl. 8 hot-galvanize		D16MAZC	56

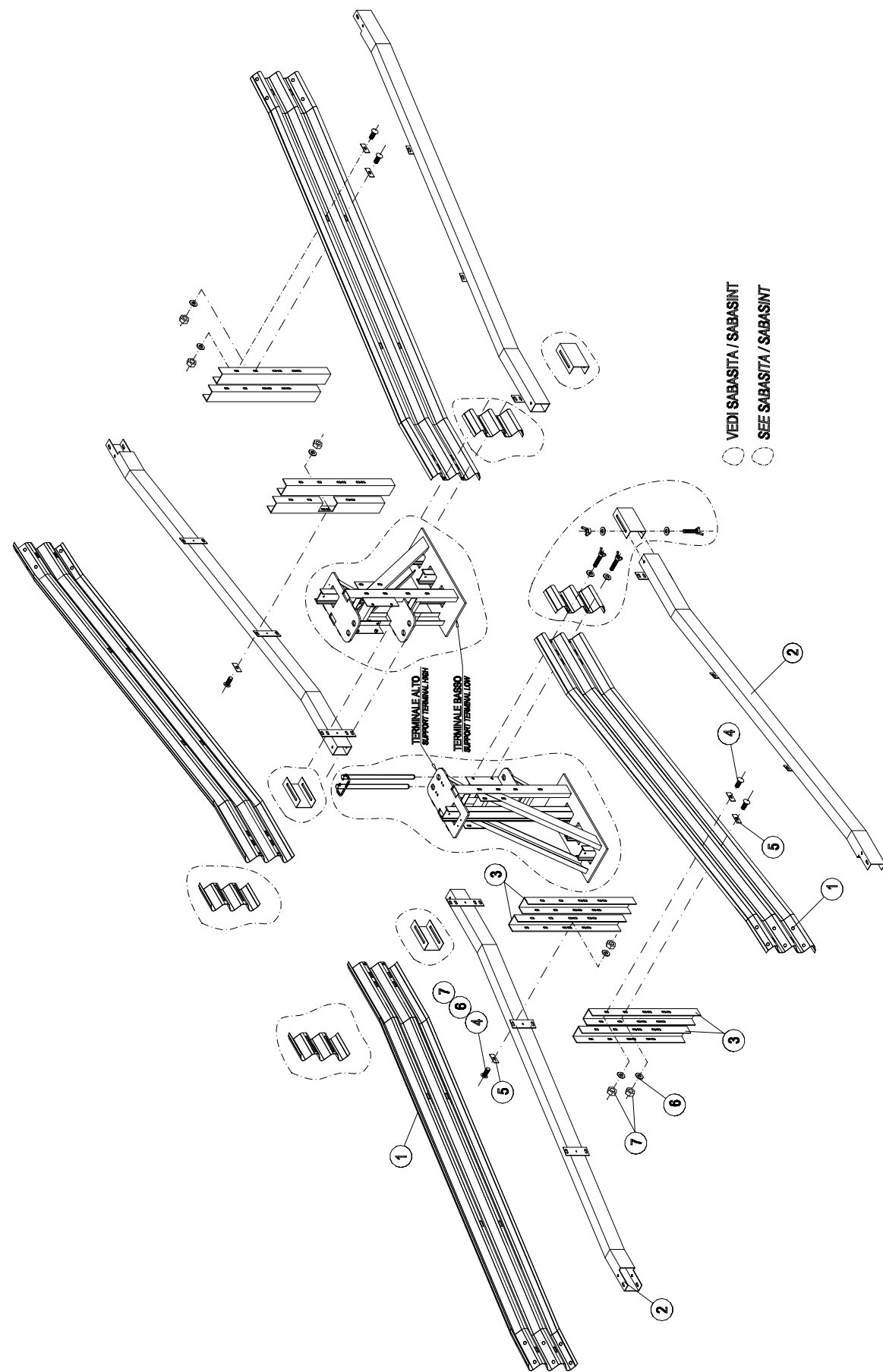
CONNECTION L=0,85 m SABC085-EXP



SABC085

POS.	DESCRIZIONE (IT)	DESCRIPTION (ENG)	kg	CODE	QTY.
1	Lama transizione L=0,85	3-beam panel transition L=0,85	79,0	SAB0042	4
2	Scansaruote	Wheel guide beam	51,5	SAB0043	4
3	Palo ancoraggio per lama transiz.	Transition post	27,0	SAB0045	8
4	Vite TT M16x40 cl. 8.8 z.c.	Screw CH M16x40 cl. 8.8 hot-galv.		VTTL16-40ZC	56
5	Piastrina copri asola z.c.	Slot plate hot-galvanize		SABPCAZC	56
6	Rondella piana M16 (17x40) z.c.	Washer M16 (17x40) hot-galvanize		RP17-40ZC	56
7	Dado maggiorato M16 cl. 8 z.c.	Nut M16 cl. 8 hot-galvanize		D16MAZC	56

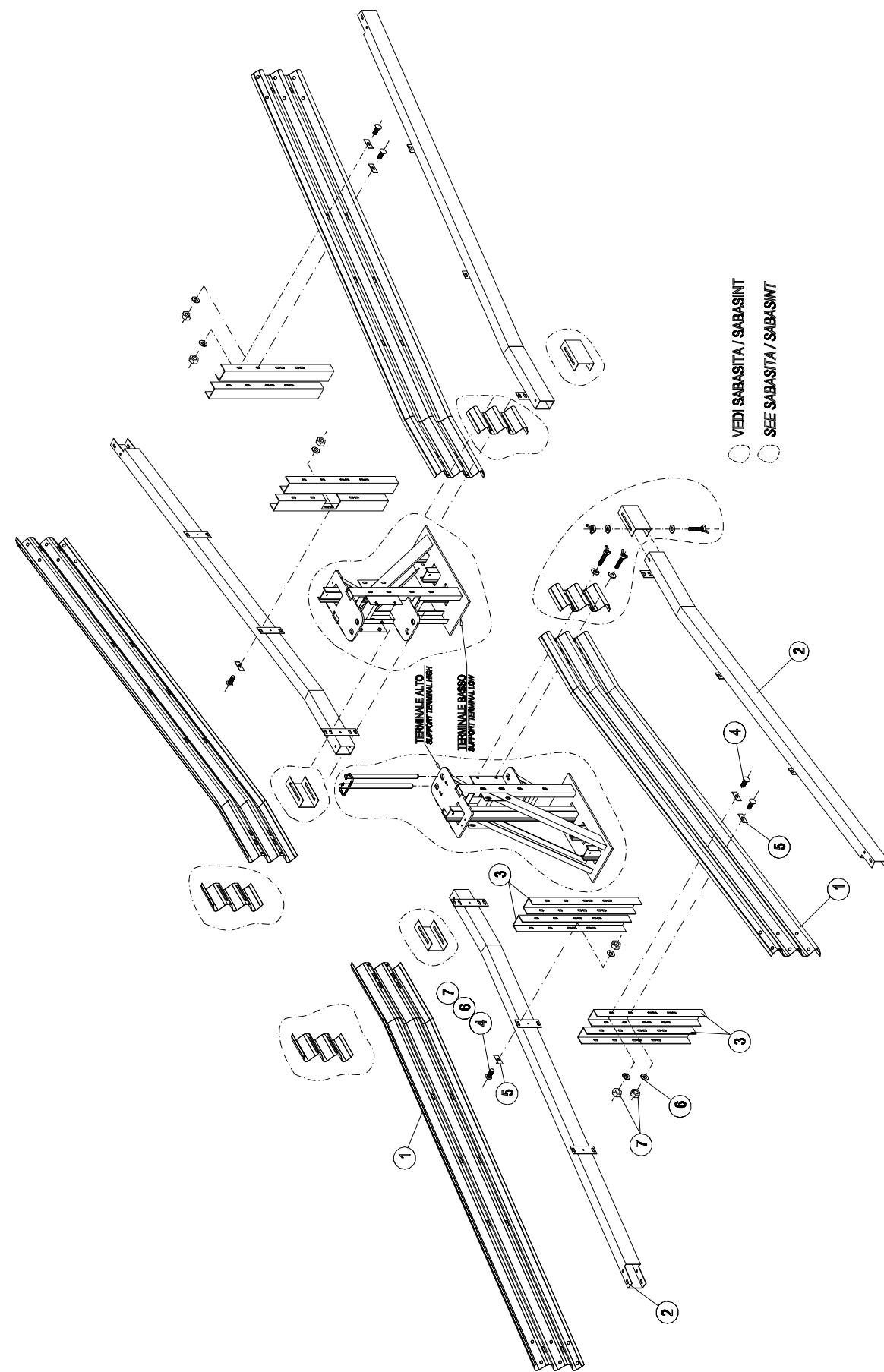
CONNECTION L=1,50 m SABC150-EXP



SABC150

POS.	DESCRIZIONE (IT)	DESCRIPTION (ENG)	kg	CODE	QTY.
1	Lama transizione L=1,50	3-beam panel transition L=1,50	76,5	SAB0120	4
2	Scansaruote	Wheel guide beam	50,0	SAB0119	4
3	Palo ancoraggio per lama transiz.	Transition post	27,0	SAB0045	8
4	Vite TT M16x40 cl. 8.8 z.c.	Screw CH M16x40 cl. 8.8 hot-galv.		VTTL16-40ZC	56
5	Piastrina copri asola z.c.	Slot plate hot-galvanize		SABPCAZC	56
6	Rondella piana M16 (17x40) z.c.	Washer M16 (17x40) hot-galvanize		RP17-40ZC	56
7	Dado maggiorato M16 cl. 8 z.c.	Nut M16 cl. 8 hot-galvanize		D16MAZC	56

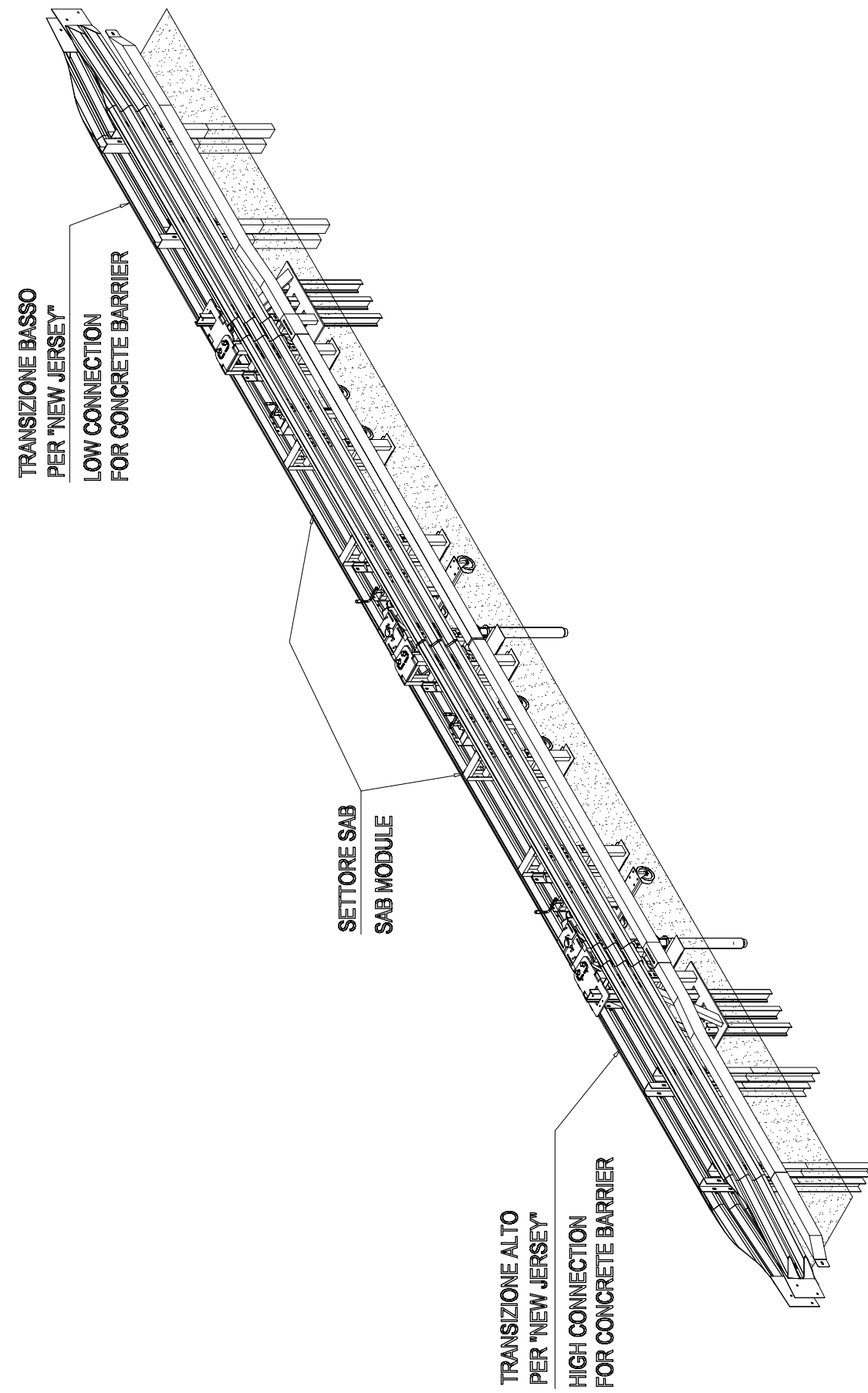
CONNECTION TAPERED L=1,50 m SAB0150W-EXP



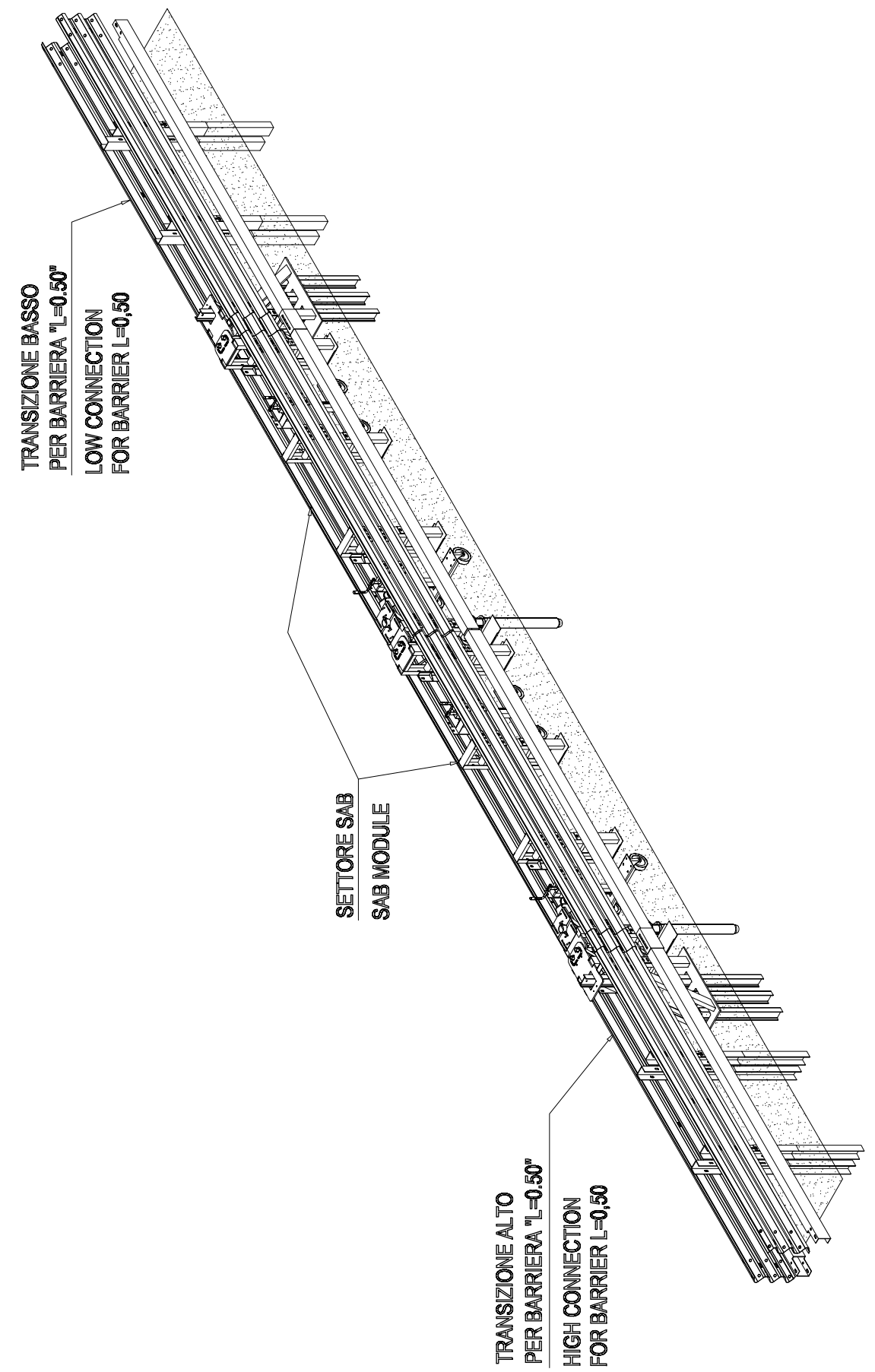
SABC150W TAPERED

POS.	DESCRIZIONE (IT)	DESCRIPTION (ENG)	kg	CODE	QTY.
1	Lama transizione L=1,50	3-beam panel transition L=1,50	76,5	SAB0424	4
2	Scansaruote	Wheel guide beam	50,0	SAB0425	4
3	Palo ancoraggio per lama transiz.	Transition post	27,0	SAB0045	8
4	Vite TT M16x40 cl. 8.8 z.c.	Screw CH M16x40 cl. 8.8 hot-galv.		VTTL16-40ZC	56
5	Piastrina copri asola z.c.	Slot plate hot-galvanize		SABPCAZC	56
6	Rondella piana M16 (17x40) z.c.	Washer M16 (17x40) hot-galvanize		RP17-40ZC	56
7	Dado maggiorato M16 cl. 8 z.c.	Nut M16 cl. 8 hot-galvanize		D16MAZC	56

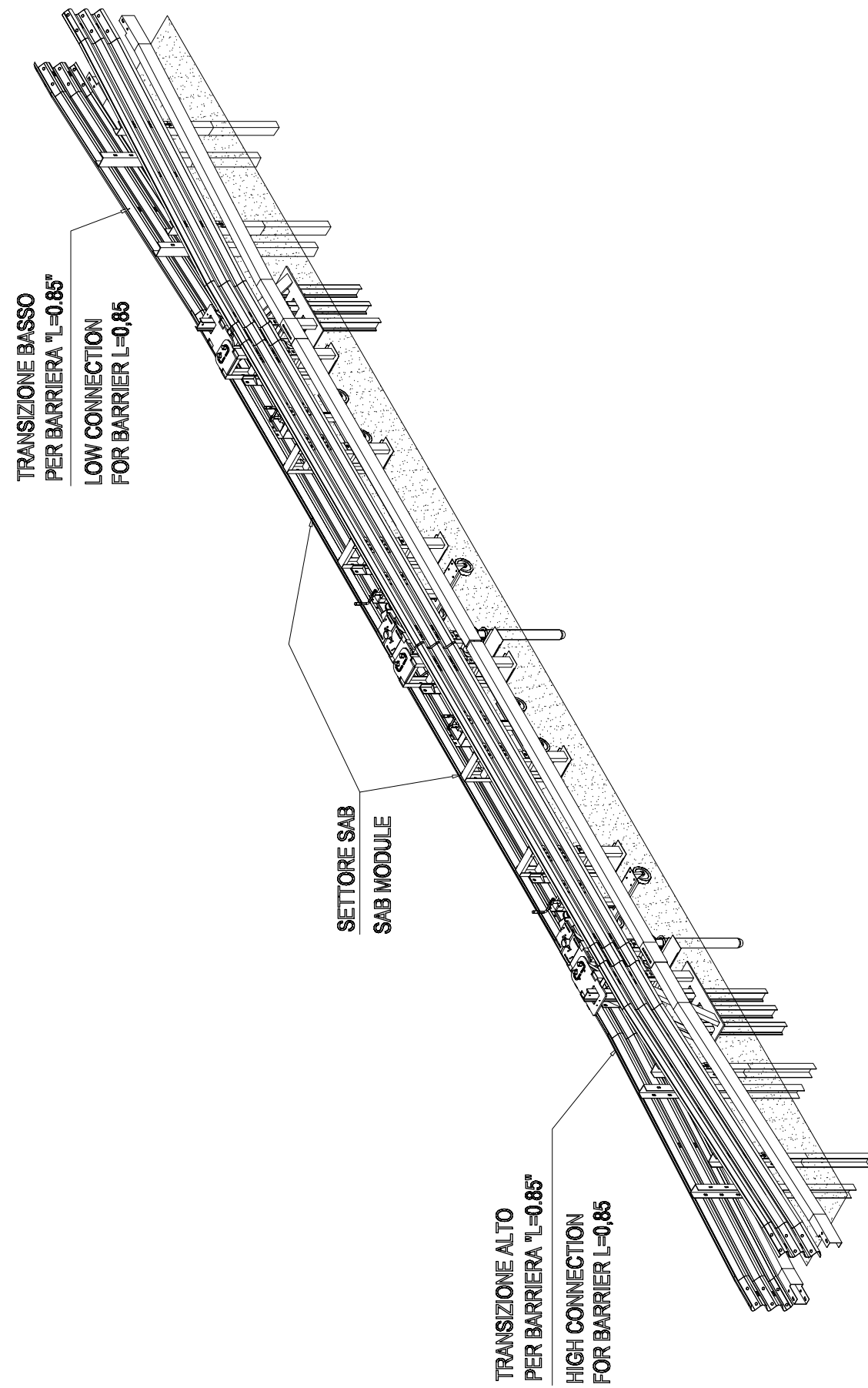
CONNECTION TO NEW JERSEY SAB125



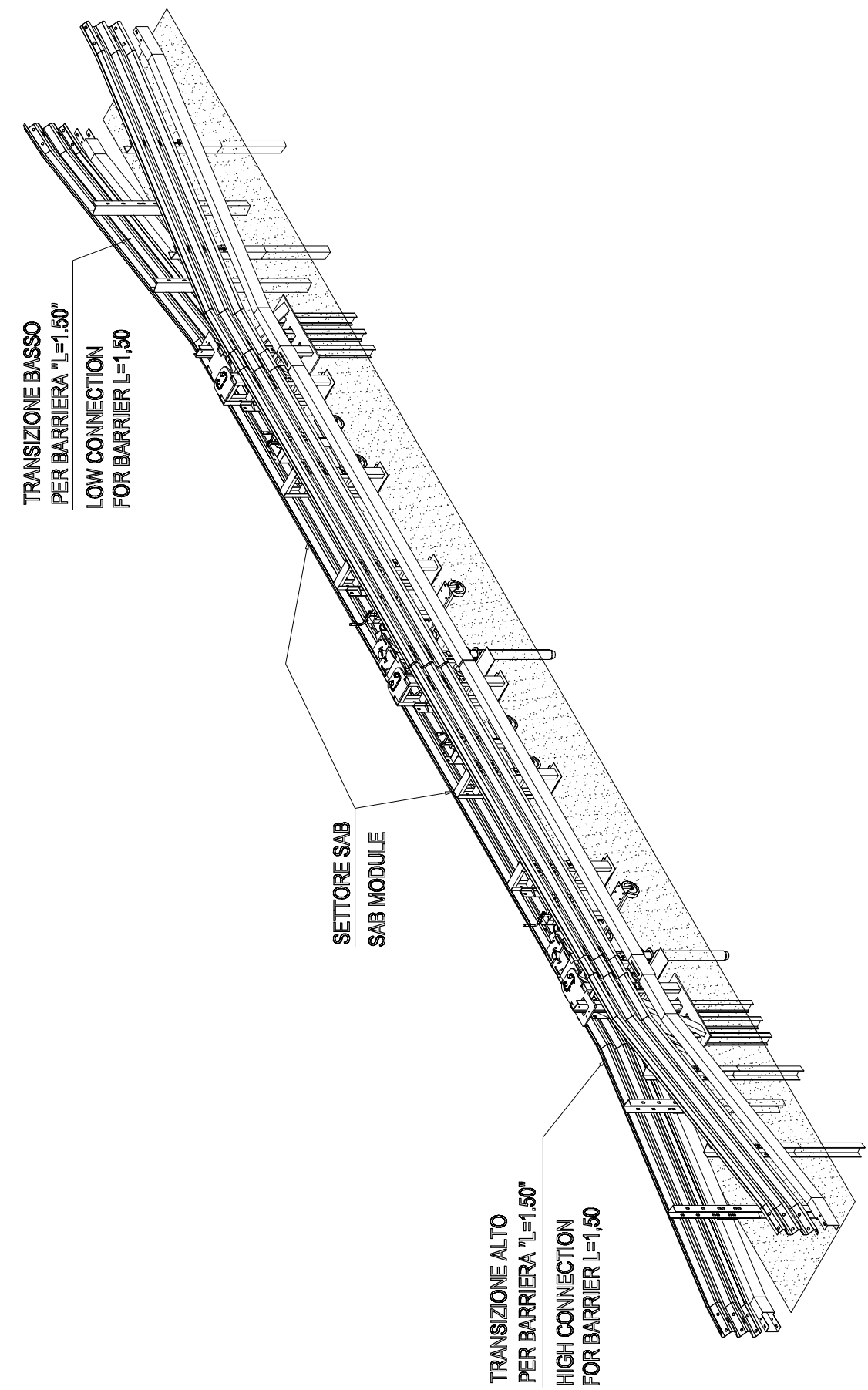
CONNECTION TO NEW JERSEY L=0,50 m SAB127



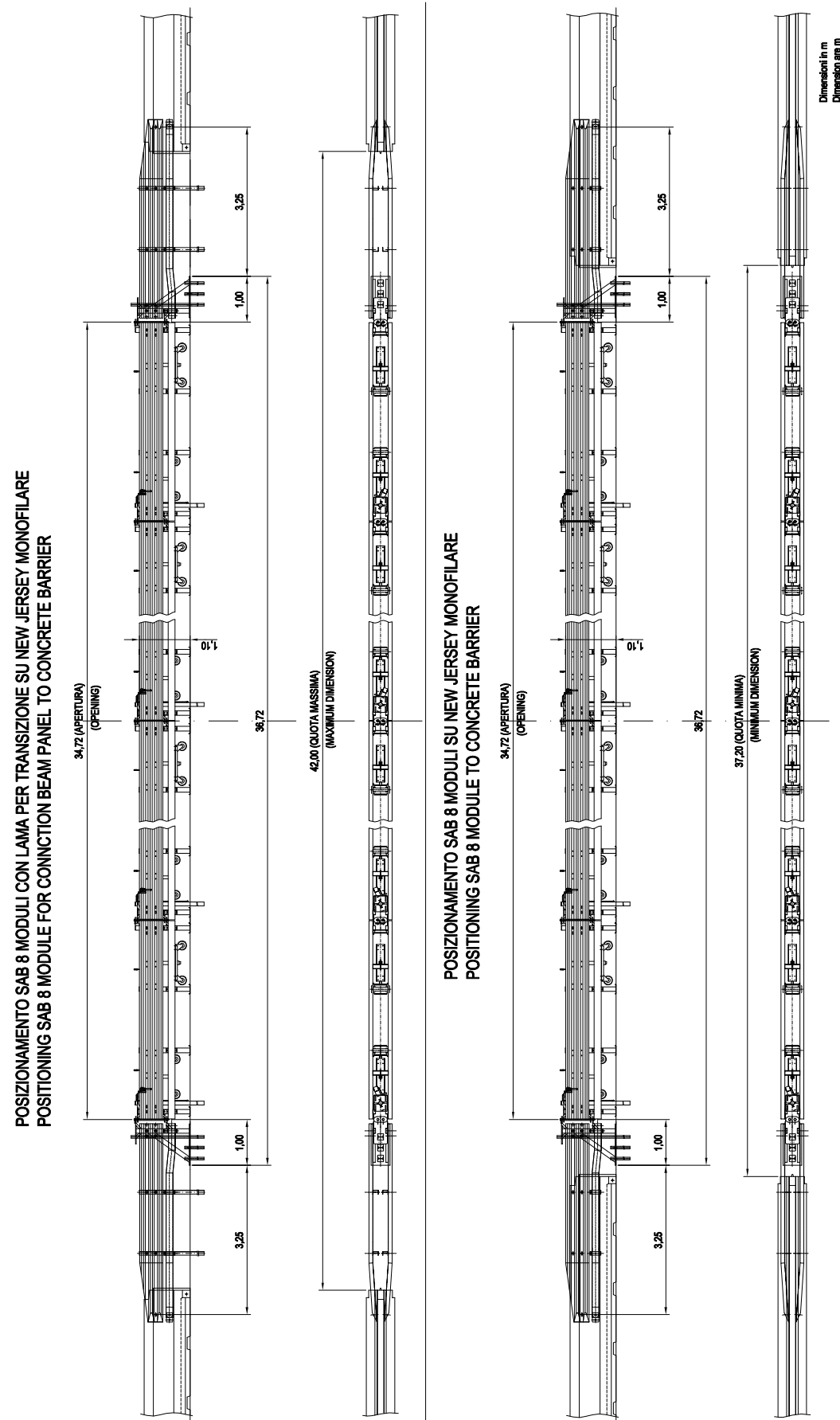
CONNECTION TO NEW JERSEY L=0,85 m SAB126



CONNECTION TO NEW JERSEY L=1,50 m SAB128



8 MODULES ON MONOFILAR NEW JERSEY



BEFORE INSTALLATION

Depending on the application and circumstances on the laying site installation SAB® should employ a team of two people for up to eight-ten hours. Before you start you need to get familiar with the basic components that make up the SAB®.

EQUIPMENT CHECK LIST FOR ASSEMBLY

- Driving string
- Pile-driver, core-drill, diam. 80 mm and diam. 120 mm
- Lorry with crane and 4 arms cable
- Series of fixed wrenches
- Series of ratchet spanner
- Torque wrench to 100 Nm
- Rib metric
- Measuring tape
- Level
- Spray paint or coloured chalks
- Complete toolbox with screwdriver, hacksaw, pipe spanner

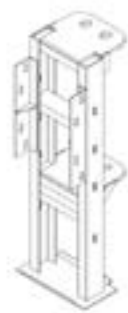
During installation the installer are obliged to apply the current safety requirements in the European community and in force in the country of installation of the device updated to the date of installation.

Note: this list is the general recommendation. It may depend on the specific characteristics of the installation site a real need for equipment to be used.

COMPONENTS REQUIRED



SAB0017



SAB0030



SAB0031



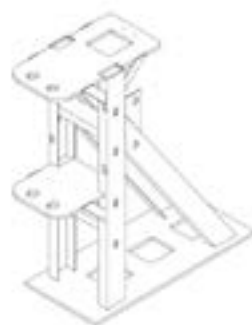
SAB0032



SAB0034



SAB0036



SAB0040



SAB0041



SAB0045



SAB0046



SAB0047



SAB0052



SAB0053



SAB0054



SAB0055



SAB0060



SAB0070



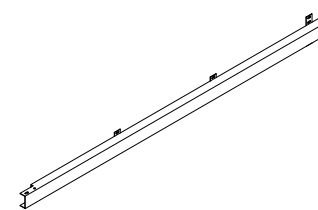
SAB0072



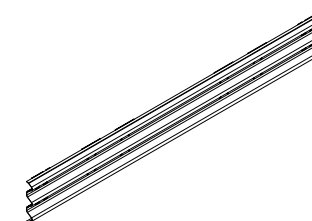
SAB0073



SAB0074



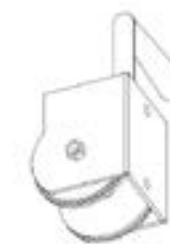
SAB0086



SAB0365



SAB0411



SABAM

I sistemi della famiglia SAB® non contengono componenti tossiche.

INSTALLATION OF THE SYSTEM

SAB® is a modular system made up from a variable number of elements, depending on the gap length (see drawing SAB10 page 4).

Each element is pre-assembled and ready to be joint to the other elements according to the following instruction. SAB® system is installed on a pre-existing barrier, see the drawings of reference (SAB10 and SAB03) and the pictures which follow.

Attention: all the tightening screw have to screwed with a tightening torque of at least 80 Nm.

INSTALLATION OF THE SAB®

1. Distance Tracking

Define the axis of transiting, using the drawing string. Set one of the two backup so that the drilling plane is included in the gap. Measure exactly and trace clearly the point where sleeves for removable pickets will be inserted. Please refer to drawing SAB03 page 6. Distances must be calculated from the backup placed previously.



Figure 1 - Sleeve's insertion

2. Sleeve's insertion

Insert sleeves at the defined distances (figure 1). The sleeves have to be inserted with the pile-driver using the push rod included in the equipment: the push rod has to be inserted into the sleeve during the operation. To avoid embedding of the 2 pieces, lubricant might be used (e.g. grease). Be sure that the push rod hits perpendicularly to the ground; in case of level road use a level. It is possible to do a pre-hole of Ø100mm with down-the-hole hammer drill placed on the pile-driver. Insert the sleeves and complete the insertion hammering them. After this step verify that the flange of the sleeve is in contact to the road pavement (figure 2).



Figure 2 - Sleeve inserted

3. Modules Installation

Arrange elements along the axis of the barrier. To move manually the elements, lower and rotate 90° degrees the wheels mechanism, taking care of inserting the fixing pin (figure 3).



Figure 3 - Module Shift

4. Inserting anchoring pickets and winch connection

Insert intermediate anchoring pickets (removable) within the elements and corresponding sleeves fixed in the ground (figure4).



Figure 4 - Inserted Anchoring Picket

During this step connect winch cable with the suitable seating on the tube (figure 5).



Figure 5 - Winch attached to the Anchoring picket

5. Insertion of pickets

Insert pickets (figure 6) between SAB030 and SAB031. Verify that these can be easily removed. Otherwise move the elements using the slots of the fixing plates. After the inspection, lean the fixing plates around the picket and fix them lightly: verify that the tubes can be easily lifted. Lift the wheels mechanism, unplug it, turn 90° and take it inside the module.



Figure 6 - Modules connected by Picket

6. Adjust the height of the backup

Control that the feet of all the elements rest on the ground. If not use the backup slots to adjust suitably the backup height, loosening the corresponding screw. The panel height has not to be changed.

7. Backup supports installation

Arrange backup supports (figure 7); insert pivots verifying that these can be easily removed.



Figure 7 - Backup supports positioning

8. Anchorage and reaction pickets insertion

Insert the anchorage picket of the first backup support (figure 8). Verify that it doesn't lean out more than 1,20m from the pavement level. Insert the 2 reaction pickets, verifying that these lean out between 0,15 and 0,20m from the pavement level. Pickets have to be inserted with the pile-driver. For anchoring by threaded bar to tighten 60 Nm.

Repeat steps 7 - 8 for the second backup support.



Figure 8 - Pickets insertion

9. Installation pickets looking and wheel guide beam tubes

Insert pickets looking for correspondence between slots of the wheel guide beam tubes and the ones of the pickets (figure 9).

10. Connection beams

Assemble the connecting beams and to block the wheel guide beam tubes and connecting blade. Finally fix the wheel guide beam tubes and connecting the beams to the existing barrier.

Repeat steps for the next terminal.

11. Locking handles

Lock pins handles with metal clamps.



Figure 9 - Pickets looking and wheel guide beam tubes

FOUNDATIONS AND DRILLING PLANS

The ground where the system has to be placed has not to be disconnected, irregular, with potholes or humps. The paving has to be levelled to the road paving avoiding transversal slopes which might make the system unsteady in this direction. Verify, considering the foundation plan in drawing SAB0, that the installation of the system doesn't damage the devices already placed in the ground and doesn't modify their structural completeness and performances. The place paving should allow the opening movement of the gap.

Consequently it is advisable to:

- Level the pavement surface, in case of insufficient plainness. One solution might be a bituminous layer.
- Remove the unevenness of the ground.
- Sweep the ground from particles that might cause troubles.

Please refer to the drawing SAB03 for the drilling plan, attention is paid to SAB03/1 design for deep piling poles.

In problematic cases limited to installation sites for disconnections and / or inclinations of the ground and / or failure to depth for driving piles it is possible, after technical consultation with the Office Snoline, the adjustment (slotted plates, additional holes punched through oxyfuel..) "on site" in the installation phase. If holes are recommended to renew the affected area following the treatment described in "repair" of the standard 1461: remove any flakes and then run the repair for thermal spraying of zinc or by using a zinc rich paint.

Particularly deep piling that more than 10% deviate from the quotas indicated in SAB03/1 design it is recommended to consult with the technical department Snoline (tel. 02 909 961).

CONNECTIONS

Connections are necessary parts to join the SAB[®] system to the existing barrier. They have the sole aim to connect the gap closing to the barrier already present and set up on the seat. Therefore connection part has to be studied for each typology and depends from the length of the gap and from the barrier type (guard-rail or New Jersey). Length and connection angles both of the beams and of the wheel guide beam are variable. The arrangement and the pickets number depend on the dimension and the connection angle. During the installation it is advisable to drive the pickets after having assembled the wheel guide beam. Otherwise the plan of the pickets insertion points is required.

Generally there are two groups of connections:

- Panels for connection to standard metallic guard-rail.
The more common surveys of the connections belonging to this category are tied with the width of the barrier: 50 cm, 85 cm and 150 cm. Other possible "special" connections may be retraced to the previous and, in any case, they are obtained adapting the 3 mentioned cases to barriers with non-standard drawings, heights or geometries. The connections are joined to the guard-rail with screws and nuts to insert in the existing holes in the beam of the connection. Moreover on the connection there are holes essential to the matching with the pickets to insert in the ground (similarly to what shown before for the insertion of the anchorage pickets in the backup), needed to assure a certain stiffness and resistance to the connection self. Screws and washers required to join the connections to the pickets and to the existing barrier are supplied. These procedures are applied also with special connections, because conceptually nothing changes. The difference consists in the geometry of the connection and in case in the number of holes or pickets to insert in the ground.
- 3-beam panels for connection to New Jersey.
Likewise to metallic barriers, the connection to New Jersey may be extended to any similar barrier. The difference consists in the connection's shape. There are two possibilities: the first, in which the connection is joined to the barrier through threaded bars and to the ground through fixing pickets; the second the connection is only matched to the barrier through threaded bars (see drw. SAB 133 and SAB 132), this one represents the instance of SAB[®] with 8 elements, but the connections are the same also with a different number of elements.

In the first case, apply crossing holes to the barrier (concrete) in connection of the crossing holes of the connection to allow the insertion of the threaded bars and of the related tightening nuts.

Moreover, there are holes on the connection necessary to the matching with the pickets to insert in the ground (similarly to what shown before for the insertion of the anchorage pickets for the backup), needed to guarantee a correct stiffness and resistance of the connection self. Screws and washers required to join connections to the pickets and to the existing barrier are supplied.

The second case is very similar to the previous except for the absence of picket fixed in the ground. The decision to apply the first or the second is taken during the laying: the use of pickets replaces the part of the threaded bars and vice versa. According to the length of the gap you might have a greater or smaller overlap between the connection and barrier panels. If the hole is matching the New Jersey the threaded bar will be applied, if the hole on the connection panel doesn't overlap the barrier it will be matched to a picket. In any case use at least 4 threaded bars (2 crossing holes each SAB[®]'s end), one higher corresponding to the panel and one lower at the wheels guide beam's height).

Caution: practicing the barrier perforations that allow the insertion of the threaded bars (with an adequate tolerance), but without exceeding the upper tolerance of 2-3 mm.

GAP OPENING

Referring to the drawings SAB133, SAB012 and SAB013 there are different ways of opening:

1. TOTAL OPENING, I way. Carriageway passage of a 1 or 2 lanes road: in this case remove the single element and place it in the protected positions of the closed lane parallel to the existing barrier (page 7).
2. TOTAL OPENING, II way. Carriageway passage of a 1 or 2 lanes road: in this case move compasses-wise the elements in one way or in both way removing all the removable pickets [D] and 4 pivots [A]. The solution is feasible only in the event of gap in the central reservation longer than 30 m (page 8).
3. PARTIAL OPENING. Emergency passage: removal of only one element. It's necessary to extract the 4 pivot [A] at the end of the element and lift the removable picket [D]. Each element is usable for the emergency opening (ambulances, rescues, etc.), see in particular the drawing SAB013 page 9.

Complete opening requires about 10 minutes and 2 people. It needs only a shear for cutting the metallic clamps and can be done by the assistance staff.

You should follow some actions to shift the system elements:

1. Extract the pivots [A] which bind the opening after having sheared the metallic clamps. Refer to drawings.
2. Lift anchorage pickets [D] through the manual winch.
3. Lower the wheels of the elements shifted: use the manual crank [C].
4. Verify that wheel mechanism is fixed perpendicularly to the element axes by means of a pin.
5. Lift the element of some centimetre in order to avoid that it get stuck in the adjacent elements.
6. Once released from the original seating, lift further the element to allow a rapid and safety removal of the element self.

For what is the gap closing concerned carry out the opening actions contrariwise. In particular:

1. Arrange the element along the gap axes.
2. Lower the element of some centimetre in order to insert it through the adjacent elements.
3. Lower totally the element rotate the wheels mechanism of 90°, disconnecting the docking pin. Lift the wheels using the winch [C].
4. Insert the anchorage pickets [D] by means of the manual winch.
5. Insert the pivots [A] and restore the safety lock with metallic clamps.

The closing requires about 10 minutes and 2 people. It doesn't require particular equipment and can be done by the assistance staff. Metallic clamps are required to block the pins handles again.

INSPECTIONS, MAINTENANCE

The SAB's components doesn't require maintenance. They recommend periodic inspections (every 2-3 years) to check and remove any deposits formed and possibly greasing of mechanisms used to handling (hoist, wheel assembly..).

REPAIRS

In the event of an accident shape the system again, as positioned at the installation. Particularly, if the device might be partially or totally damaged, it is absolutely necessary to verify which parts are deformed and which one are ruined. The more critical parts are the one of the elements, particularly the anchorage pickets, which are inserted in the sleeves and the moving parts which, in case of following shifting are more fragile and important; nevertheless it is suitable to verify the condition of each element. The replacement of the elements, of single element component or other system's parts should follow the same indication effective for the system's installation.

Non observance of the installation instructions may result in non-conforming performances.

No unauthorized changes to system components, if would be necessary to make changes or repairs on site call, before proceeding, the technical department of Snoline S.p.A. at +39 02909961 in order to guarantee the proper functioning of the device. If galvanizing flaws are found or if repairs are required during installation (in particular for holes made by flame cutting) it is advisable to renew the affected area following the treatment described in the "repair" paragraph of regulation 1461: remove scales and then repair using thermal spraying of zinc or by using a zinc rich paint.

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