MAGNUM
DURA-CLAMP
CIRCA FLEX
MODULAR
AL-SPEED

UNISPAN
Forming & Shoring Solutions

DURA-CLAMP

MODULAR FORMWORK • INSTRUCTION MANUAL

PILOSIO
BUILT TO BUILD

PILOSIO: YOUR QUALITY PARTNER SINCE 1961:

Pilosio SpA designs and produces formworks for walls and slabs, trench lining systems and scaffolds either for sale or rental. With an experience of 50 years, Pilosio brand is synonymous of its elevated quality, pre and post sale service, worldwide distribution net and wide range of products (for the last 50 years, Pilosio brand was – and still – famous for its elevated quality, pre and post sale service, worldwide distribution net and wide range of products.)
Our technical office is always at the disposal of our clients to design special solutions in order to resolve the most various requirements of the construction sites we have a special unit of carpentry capable to realize any single pieces upon request. Pilosio equipments are used in the most various fields such as: formworks for walls, slaps and columns, trench lining systems for any type of excavation, scaffolds for construction, maintenance and restoration, theater boxes tribunes and covers for the show business.

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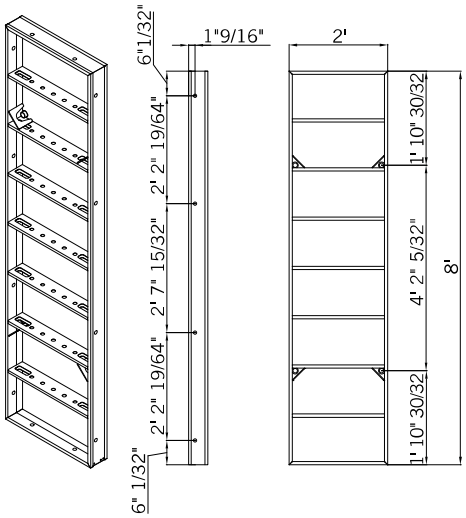
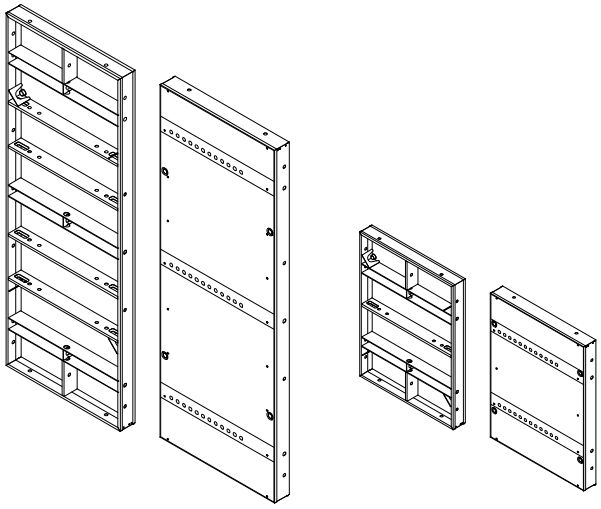
Components and fittings

Name	Dimensions	Weight	Weight	Code
	LxH (in.)	lbs	kg	

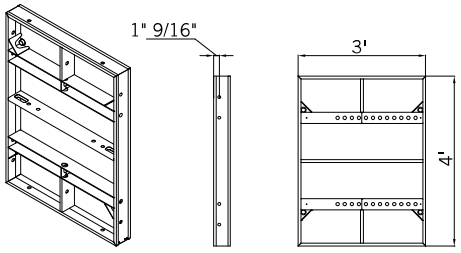


DURA-CLAMP PANEL

H=8'-0"	LxH (in.)	lbs	kg	
	2′ x 8′	113.8	51.6	**5202561ZPK**
	1′ 6″ x 8′	95.9	43.5	**5202545ZPK**
	1′ x 8′	76.5	34.7	**5202530ZPK**
	6″ x 8′	56.2	25.5	**5202515ZPK**



Adjustable Panel (for columns and corners)	LxH (in.)	lbs	kg	
	3′ x 8′	94.6	42.9	**5202591FZPK**
	3′ x 4′	48.5	22.0	**5201291FZPK**
	3′ x 2	25.1	11.4	**5200691FZPK**

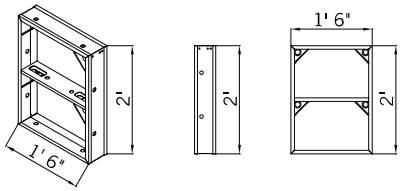


DURA-CLAMP PANEL

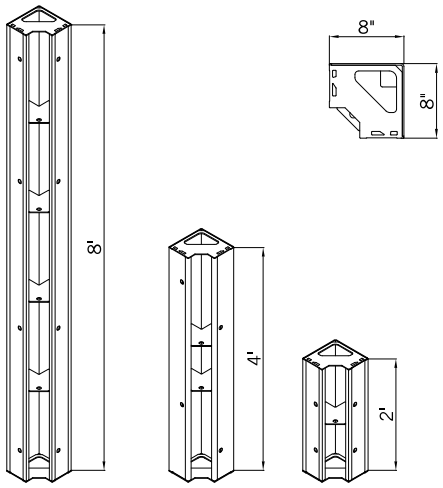
H=2'-0"	LxH (in.)	lbs	kg	
	2′ x 4′	61.7	28.0	**5201361ZPK**
	1′ 6″ x 4′	53.8	24.4	**5201345ZPK**
	1′ x 4′	43.0	19.5	**5201330ZPK**
	6″ x 4′	29.5	13.4	**5201315ZPK**

DURA- CLAMP

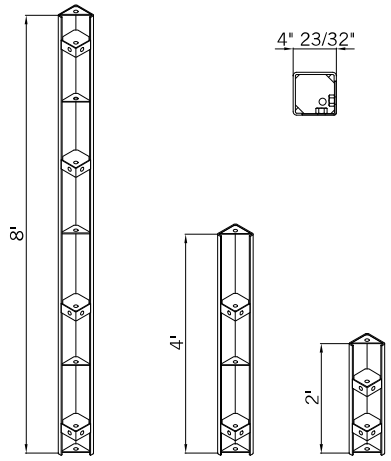
Name	Dimensions	Weight	Weight	Code
	LxH (in.)	lbs	kg	



DURA-CLAMP PANEL H=2'-0"	LxH (in.)	lbs	kg	
	2' x 2'	35.1	15.9	**5200661ZPK**
	1' 6" x 2'	30.4	13.8	**5200645ZPK**
	1' x 2'	23.6	10.7	**5200630ZPK**
	6" x 2'	15.4	7.0	**5200615ZPK**



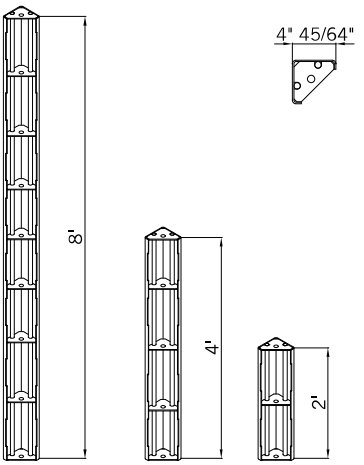
Inner corner (8"+ 8")	LxH (in.)	lbs	kg	
	8'	98.5	44.7	**5232440ZP**
	4'	52.0	23.6	**5231240ZP**
	2'	40.3	18.3	**5230640ZP**



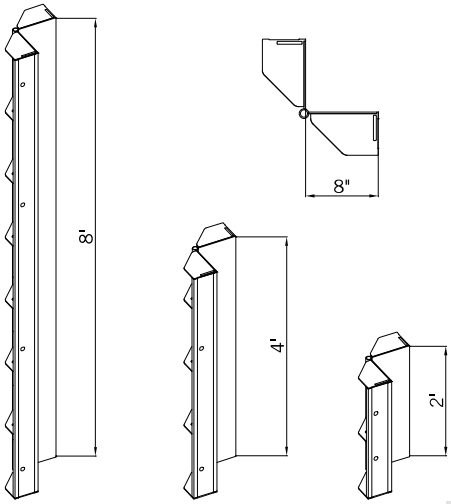
Inner corner (4"23/32"+ 4"23/32")	LxH (in.)	lbs	kg	
Complete with: N. 8 Washer 25/32"x 2"1/8" UNI 6593 N. 8 Screw M18x50 UNI 5737 N. 8 Nut M18 UNI 5588	8'	75.4	34.2	**5232420**
Complete with: N. 4 Washer 25/32"x 2"1/8" UNI 6593 N. 4 Screw M18x50 UNI 5737 N. 4 Nut M18 UNI 5588	4' 2'	37.5 21.2	17.0 9.6	**5241240** **5240640**

Components and fittings

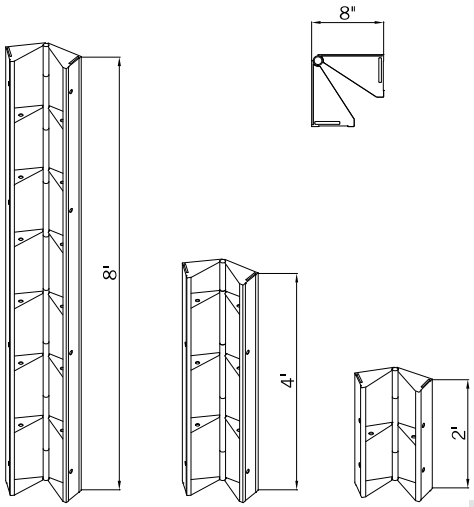
Name	Dimensions	Weight	Weight	Code
	LxH (in.)	lbs	kg	
Outer corner (0"+ 0")	**LxH (in.)**	**lbs**	**kg**	
	8′	57.3	26.0	**5232400ZP**
	4′	29.8	13.5	**5231200ZP**
	2′	15.2	6.9	**5230600ZP**



Outer corner with hinge (8"+8")	LxH (in.)	lbs	kg	
	8′	141.1	64.0	**5232454ZP**
	4′	73.6	33.4	**5231254ZP**
	2′	37.5	17.0	**5230654ZP**



Inner corner with hinge (8"+8")	LxH (in.)	lbs	kg	
	8′	133.4	60.5	**5232444ZP**
	4′	68.3	31.0	**5231244ZP**
	2′	35.5	16.1	**5230644ZP**



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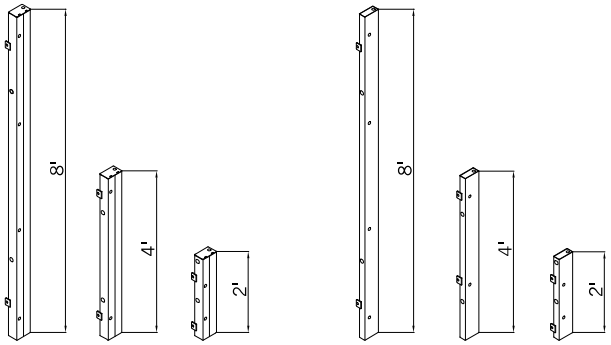
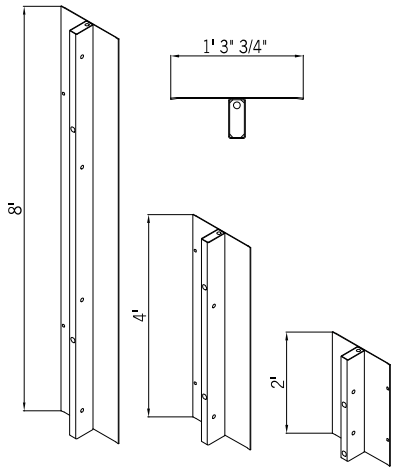
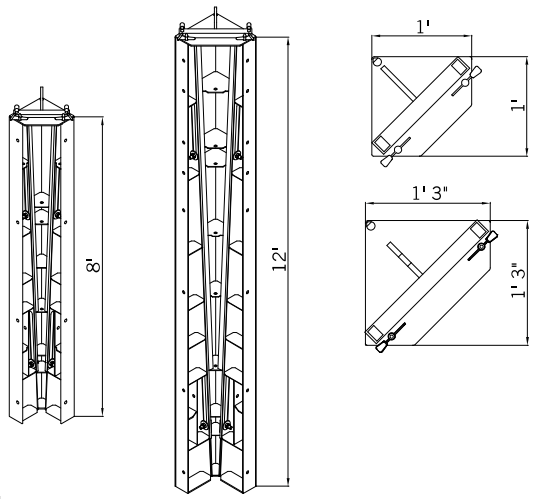


Name	Dimensions	Weight	Weight	Code
	LxH (in.)	lbs	kg	
Infill bar	**LxH (in.)**	**lbs**	**kg**	
H=8′	1″ x 8′	20.9	9.5	**5242402ZP**
	2″ x 8′	30.0	13.6	**5242405ZP**
	3″ x 8′	58.2	26.4	**5242407ZP**
H=4′	1″ x 4′	11.2	5.1	**5241202ZP**
	2″ x 4′	16.3	7.4	**5241205ZP**
	3″ x 4′	30.0	13.6	**5241207ZP**
H=2′	1″ x 2′	6.4	2.9	**5240602ZP**
	2″ x 2′	9.0	4.1	**5240605ZP**
	3″ x 2′	16.5	7.5	**5240607ZP**



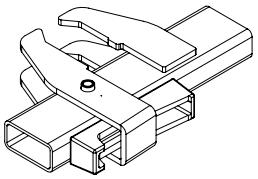
Infill Panel	LxH (in.)	lbs	kg	
	8′	93.5	42.4	**5242440**
	4′	47.4	21.5	
	2′	24.5	11.1	



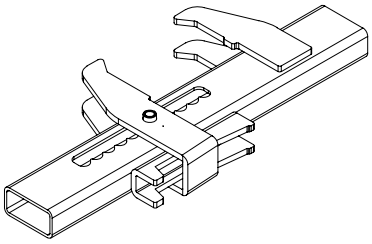
Conical corner (12″+12″)	LxH (in.)	lbs	kg	K5233244ZP
Complete with:	8′	303.1	137.5	
N. 8 Plate 3″ 29/32″x 3″ 1/8″x 3/8″for tie-rod				**582930**
N. 8 Screw M18x100 UNI 5739 Zn				**15V1860TZ**
N. 8 Nut M18 UNI 5588 Zn				**15D18NZ**
N. 8 Washer 25/32″x 2″1/8″ UNI 6593 Zn				**15R18GZ**
(15″+15″)	**LxH (in.)**	**lbs**	**kg**	**K5233366ZP**
Complete with:	1′	519.2	235.5	
N. 16 Plate 3″ 29/32″x 3″ 1/8″x 3/8″for tie-rod				**582930**
N. 16 Screw M18x100 UNI 5739 Zn				**15V1860TZ**
N. 16 Nut M18 UNI 5588 Zn				**15D18NZ**
N. 32 Washer 25/32″x 2″1/8″ UNI 6593 Zn				**15R18GZ**

Components and fittings

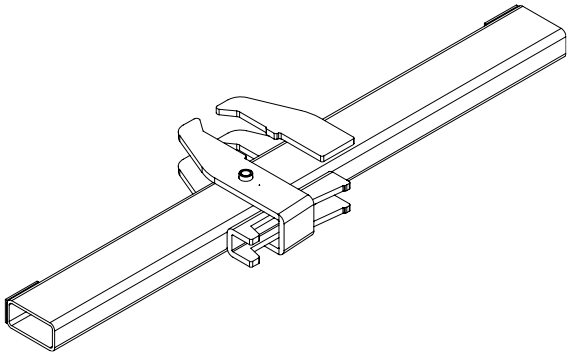
Name	*Weight* lbs	*Weight* kg	*Code*
Aligning connector	**lbs**	**kg**	
	5.3	2.4	**5260000**



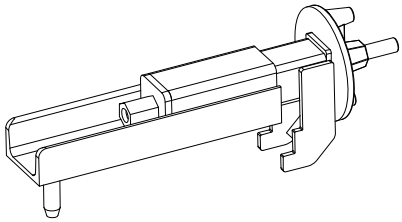
Adjustable connector	**lbs**	**kg**	
	6.6	3	**5260050**



Connector for alignment	**lbs**	**kg**	
	10.1	4.6	**5260010**



Alignment connector for horizontal setting up	**lbs**	**kg**	
N. 1 waler plate D15	15.7	7.1	**526070**



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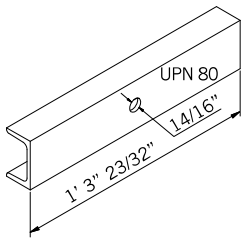
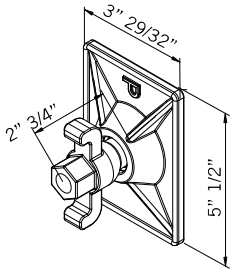
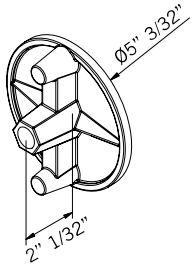


Reinforcement "U" channel	lbs	kg	
	7.7	3.5	554042

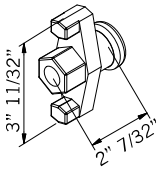
Threaded bar (D15)	LxH (in.)	lbs	kg	
	9" 27/32"	0.8	0.37	583025
	1' 7" 11/16"	1.6	0.73	583050
	2' 5" 17/32"	2.3	1.05	583075
	3' 3" 3/8"	3.1	1.42	583100
	4' 11" 1/16"	4.9	2.20	583150
	6' 6" 3/4"	6.4	2.90	583200



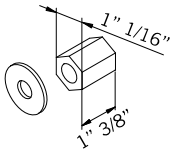
D15 swivel plate	lbs	kg	
	2.6	1.2	583905



D15 waler plate	lbs	kg	
	2.6	1.2	583900



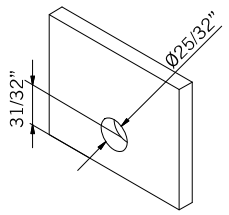
D15 nut with wings	lbs	kg	
	0.7	0.34	583907



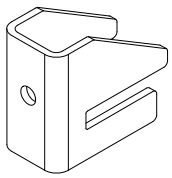
D15 nut	lbs	kg	
	0.24	0.11	583910
Washer	**lbs**	**kg**	
	0.04	0.02	15R18GZ

Components and fittings

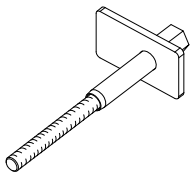
Name	*Dimensions*	*Weight*	*Weight*	*Code*
	LxH (in.)	lbs	kg	
Plate for tie-rod	**LxH (in.)**	**lbs**	**kg**	
	L= 3" 29/32" H= 3" 1/8" S= 3/8"	1.3	0.6	**582930**



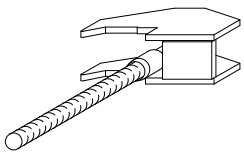
Mobile tie-rod retainer	**lbs**	**kg**	
	5.7	2.6	**5270021**



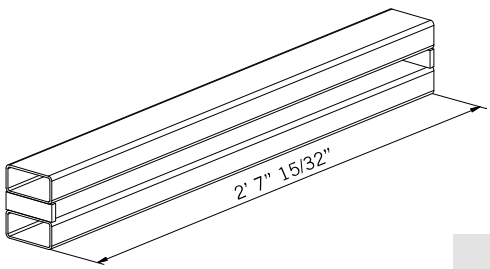
Tie-rod for connection of columns	**lbs**	**kg**	
	2.2	1	**5250005**



Connecting device for outher corners	**lbs**	**kg**	
	2.9	1.3	**5250010**



Reinforcement crossbar	**lbs**	**kg**	
	18.7	8.5	**556080**



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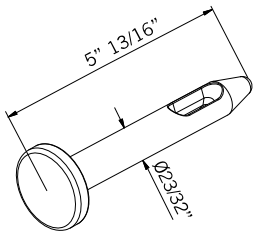
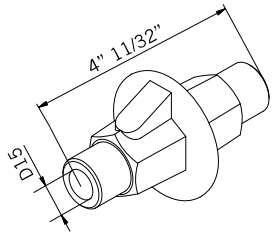
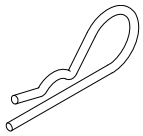


Name	Weight lbs	Weight kg	Code
Pin P300	0.7	0.33	581010

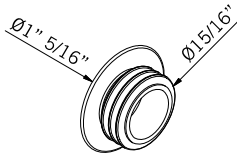
Wedge	lbs	kg	
	0.33	0.15	581100



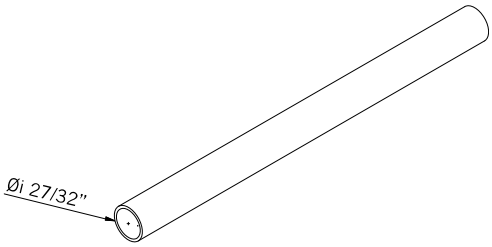
Water stop D15	lbs	kg	
	1.5	0.7	583940



Cotter pin Ø 7/64"	lbs	kg	
	0.018	0.008	15COP3



PVC Plug Ø 15/16"	lbs	kg	
	0.002	0.001	584024

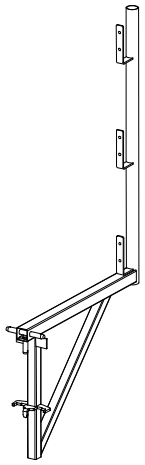


PVC Spacer Øi 27/32" da 2000	lbs	kg	
	0.7	0.3	584201

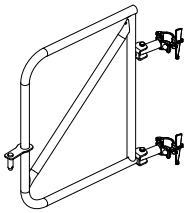
PVC Plastic cone Øe 27/32"	lbs	kg	
	0.004	0.002	584101

Components and fittings

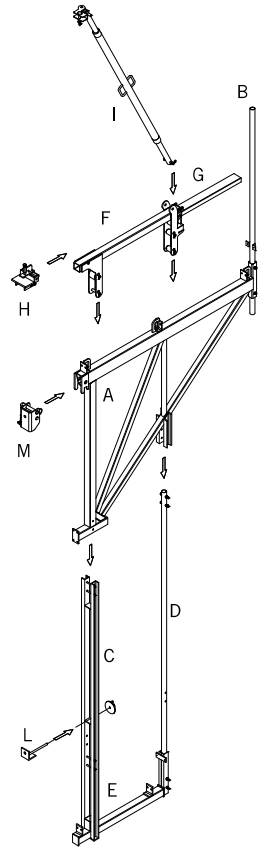
Name	Weight lbs	Weight kg	Code
Working bracket with adjustable support for metallic boards	**lbs**	**kg**	
Complete with: N. 1 Cotter Pin Ø 7/64"	24.7	11.2	**K591005**



Guardrail frame	**lbs**	**kg**	
Complete with: N. 1 Cotter Pin Ø 7/64"	16.1	7.32	**591025**



Climbing support bracket of 7' 10" 62/127"	**lbs**	**kg**	
Complete with:			**K593100**
N. 1 Bracket of 7' 10" 15/32" (A)	176.4	80.0	
N. 1 Guardrail post of 7' 10" 15/32" (B)	19.4	8.8	
N. 1 Lower stage standard of 9' 10" 3/32"(C)	97.7	44.3	
N. 1 Lower stage tube of 11' 5" 25/32"(D)	30.2	13.7	
N. 1 Lower stage crosspiece of 3' 11" 7/32" (E)	34.6	15.7	
N. 1 Sliding trolley of 4' 5" 17/32" (F)	70.5	32.0	
N. 1 Guide covering of 2' 11" 13/32" (G)	10.4	4.7	
N. 1 Panel support (H)	17.2	7.8	
N. 1 Push pull prop 6' 2" 25/32" (I)	55.1	25.0	
N. 1 Anti lifting device with D15 bar (L)	4.2	1.9	



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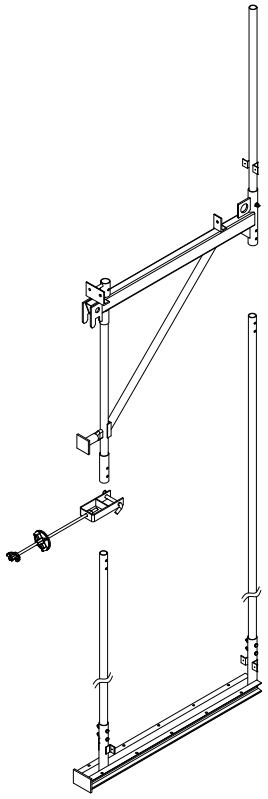
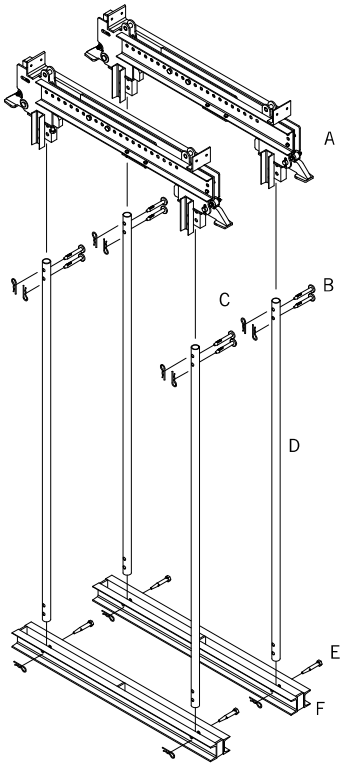


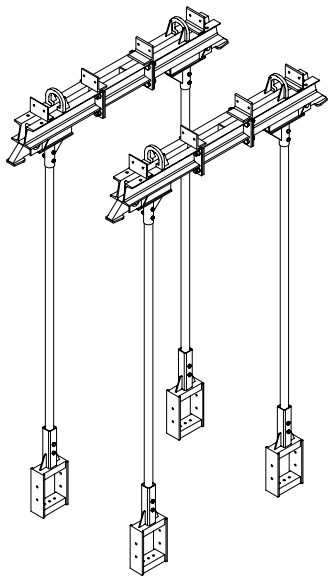
Name	Dimensions	Weight	Weight	Code
	LxH (in.)	lbs	kg	
Support bracket		**lbs**	**kg**	
Complete with: N. 1 Guardrail post L= 4' 11" 1/32" N. 1 Anti lift device support N. 1 Cotter pin Ø 7/64" N. 1 Tie rod L. 2' 5" 1/2" with welded nut N. 1 Wing nut D15 N. 1 Screw M12x80 UNI 5737 Zn N. 1 Nut M12 UNI 5588 Zn N. 1 Washer 1/2"x15/16" UNI 6592 Zn (Connecting tubes are excluded)		97.0	44.0	**592000**
Lower stage for supporting bracket		**lbs**	**kg**	
Complete with: N. 1 Tube Ø48 L= 10' 10" 11/16" end drilled N. 1 Tube Ø48 L= 7' 2" 7/32" end drilled N. 8 Screw M12x80 UNI 5737 Zn N. 8 Nut M12 UNI 5588 Zn N. 8 Washer 1/2"x15/16" UNI 6592 Zn (Connecting tubes are excluded)		103.6	47.0	



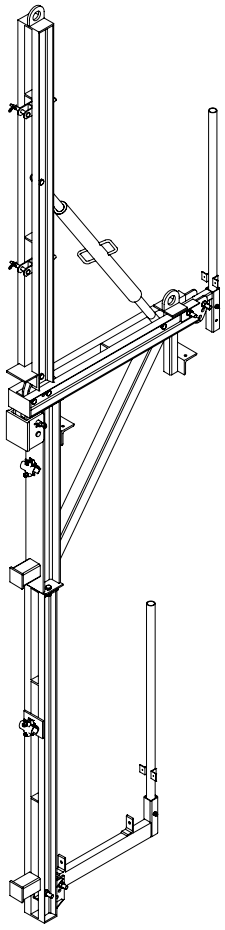
Mobile adjustable platform	LxH (in.)	lbs	kg	
Complete with: N. 1 Mobile adjustable platform (A)	4' 9" 1/16" - 7' 8" 1/2"	196.2	89.0	**K598300**
N. 8 P300 pin (B) N. 12 Cotter pin Ø 7/64" (C) N. 4 Tube Ø1" 7/8"x1/8"(D) N. 4 P300 pin (E) N. 2 Beams for the lower platform (F)	7' 10" 15/32" - 9' 10" 3/32"	264.6	120.0	**K598310**

Components and fittings

Name	Dimensions	Weight	Weight	Code
	LxH (in.)	lbs	kg	



Mobile coupling for working platform			
			598200



Supporting and shoring bracket	lbs	kg	
	833.3	378	593050

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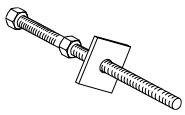
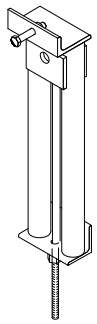
Name	Dimensions	Weight	Weight	Code
	LxH (in.)	lbs	kg	

Bracket fixing device with nut	lbs	kg	
Complete with: N. 1 D15 Nut N. 1 Washer for tie-rod	17.6	8.0	**592020**



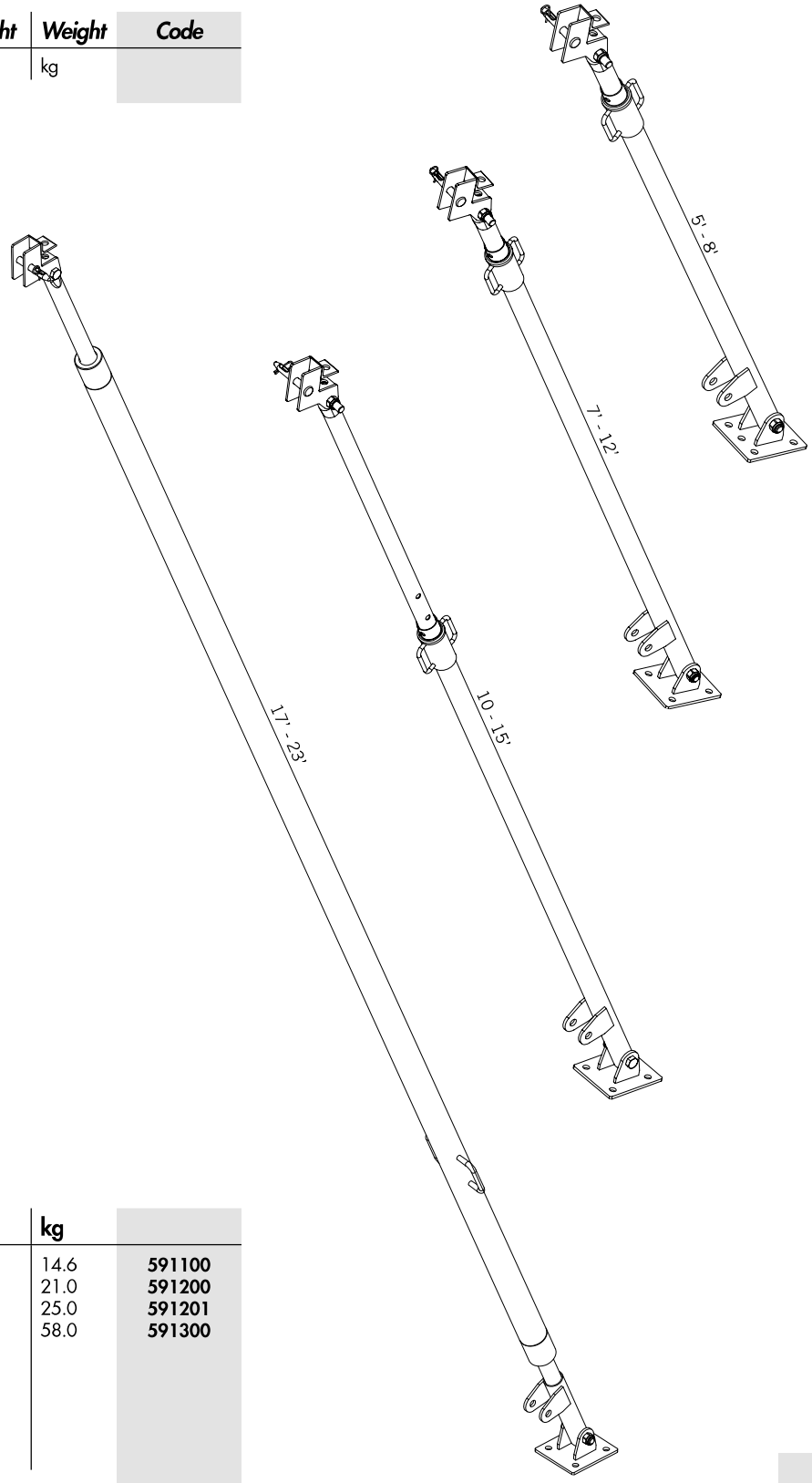
M24 tie-rod for bracket fixing device	lbs	kg	
Complete with: N. 1 Nut M24 UNI 5587 Zn N. 1 Plate (3" 29/32" x 3" 29/32" x 3/8") with D25 hole	17.6	8.0	**592030**



Adjustable supporting anchor	lbs	kg	
Complete with: N. 1 D15 Nut N. 1 Washer for tie-rod N. 1 Screw M14x80 UNI 5739 Zn	23.1	10.5	**598000**

Components and fittings

Name	Dimensions	Weight	Weight	Code
	LxH (in.)	lbs	kg	



Push-pull prop	LxH (in.)	lbs	kg	
Complete with: N. 1 Tilt plate N. 1 Connector for push-pull prop N. 1 P300 pin N. 1 Cotter pin Ø 7/64" N. 1 Screw M20x100 UNI 5737 Zn N. 2 Self locking nut M20 UNI 7473 Zn	5' - 8' 7' – 12' 10' – 15' 17' – 23'	32.2 46.3 55.1 127.9	14.6 21.0 25.0 58.0	**591100** **591200** **591201** **591300**

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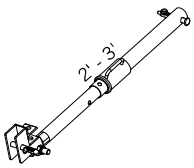
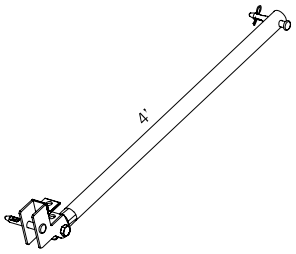
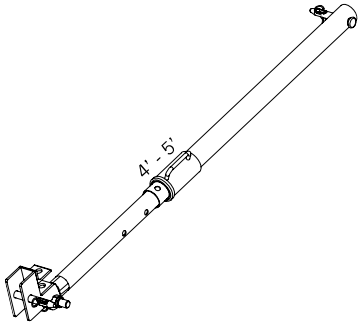


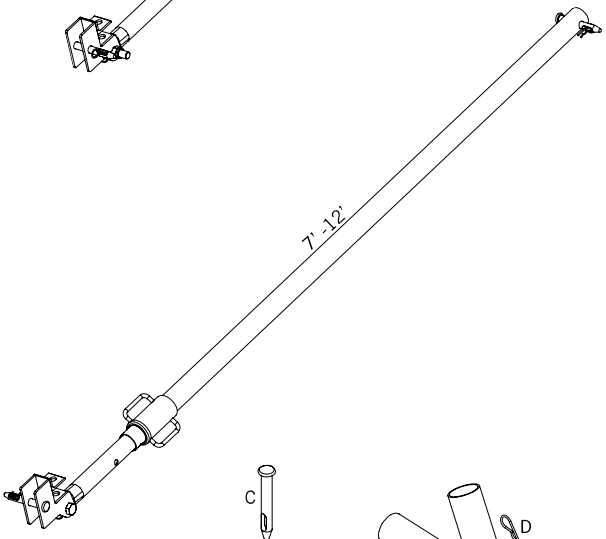
Adjustable Arm	LxH (in.)	lbs	kg	
Complete with: N. 1 Connector for push pull prop N. 2 P300 pin N. 2 cotter pin Ø 7/64" N. 1 screw M20x100 UNI 5737 Zn N. 1 self locking nut M20 UNI 7473 Zn	2' - 3'	14.8	6.7	**591102**



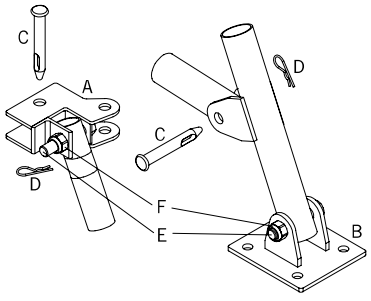
Fixed Arm	LxH (in.)	lbs	kg	
Complete with: (for push pull prop 591200 and 591201) N. 1 Connector for push-pull prop N. 2 P300 pin N. 2 cotter pin Ø 7/64" N. 1 screw M20x100 UNI 5737 Zn N. 1 self locking nut M20 UNI 7473 Zn	4'	11.5	5.2	**591210**



Adjustable Arm	LxH (in.)	lbs	kg	
Complete with: (for push pull prop 591200 and 591201) N. 1 Connector for push-pull prop N. 2 P300 pin N. 2 cotter pin Ø 7/64" N. 1 screw M20x100 UNI 5737 Zn N. 1 self locking nut M20 UNI 7473 Zn	4' - 5'	19.8	9.0	**591205**



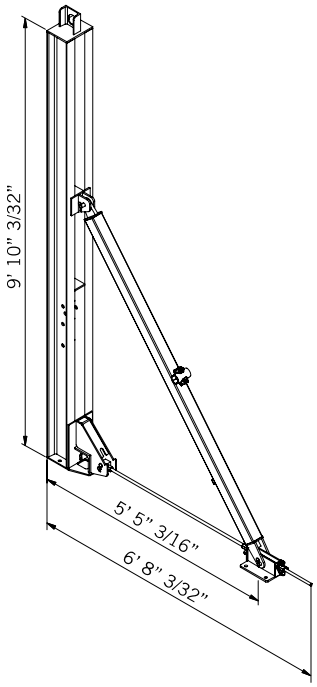
Adjustable Arm	LxH (in.)	lbs	kg	
Complete with: (for push pull prop 591300 and 591310) N. 1 Connector for push pull prop N. 2 P300 pin N. 2 cotter pin Ø 7/64" N. 1 screw M20x100 UNI 5737 Zn N. 1 self locking nut M20 UNI 7473 Zn	7' - 12'	41.9	19.0	**591305**



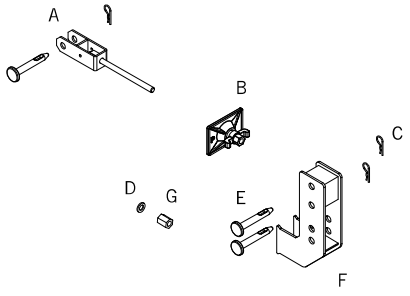
Accessories for push-pull prop	lbs	kg	
A) Connector for push-pull prop	3.3	1.5	**2059P825**
B) Tilt plate 45/64"x5/8"	5.3	2.4	**2059P829**
C) P300 pin	0.73	0.33	**581010**
D) Cotter pin Ø 7/64"			**15COP3**
E) Screw M20x100 UNI 5737 Zn	0.67	0.303	**15V20100PZ**
F) Self locking nut M20 UNI 7473 Zn	0.15	0.067	**15D20FZ**

Components and fittings

Name	Dim.	Weight	Weight	Code
	LxH (in.)	lbs	kg	



Counter beam TL 250	lbs	kg	
Complete with: N. 1 Strut L= 7' 6" 17/32" N. 3 Screw M20x100 UNI 5737 Zn N. 3 Nut M20 UNI 5588 Zn N. 2 D15 wing nut	363.8	165.0	**K594250**



Accessories for counter beam	lbs	kg	
A) Connection tie-rod	1.32	0.60	**594410**
B) Swivel plate D15	2.6	1.20	**583900**
C) Cotter pin Ø 7/64"			**15COP3**
D) Washer 25/32"x 2"1/8" UNI 6593 Zn	0.04	0.02	**15R18GZ**
E) P300 pin	0.7	0.33	**581010**
F) Panel support MINIMAG Imperial	12	5.40	**594430**
G) D15 Nut	0.2	0.11	**583910**

Anchor	LxH (in.)	lbs	kg	
Complete with:				
N. 1 Waler Plate D20		3.3	1.5	**585900**
N. 1 Disponsable Waler D20		3.3	1.5	**585900**
N. 1 Tie-rod	2' 5" 1/2"	4.3	1.95	**585075**
N. 1 Tie-rod	4' 11" 1/32"	8.6	3.9	**585150**
N. 1 Pvc spacer	6' 6" 23/32"	0.7	0.3	**584210**

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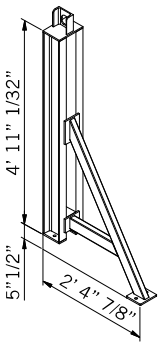
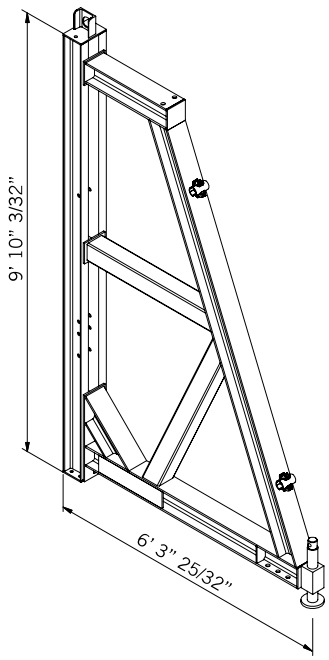
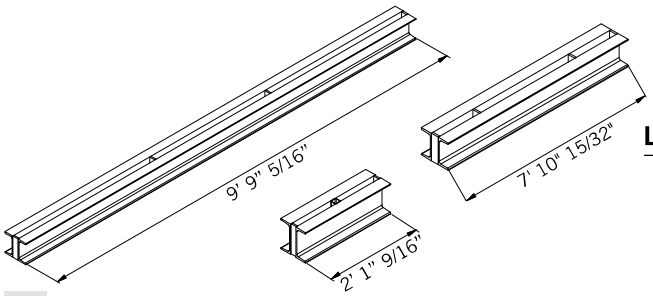
Name	Dim.	Weight	Weight	Code
	LxH (in.)	lbs	kg	



TS 150 Counter beam	LxH (in.)	lbs	kg	
Complete with: N. 4 Screw M16x55 UNI 5739 Zn N. 4 Nut M16 UNI 5588 Zn N. 4 Washer 21/32"x1"11/64" UNI 6592	2' 4" 7/8" x 4' 9" 1/32"	140.0	63.5	**K594150**



TR 300 Counter beam	LxH (in.)	lbs	kg	
	6' 8" 3/32" x 11' 10" 3/32"	782.6	355.0	**594301**

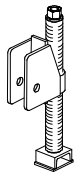


Longitudinal beams	LxH (in.)	lbs	kg	
	2' 1"- 9/16" 7' 10" 15/32" 9' 9"5/16"	77.2 173.3 214.3	35.0 78.6 97.2	**594970** **556240** **594900**

Components and fittings

Name	Dimensions	Weight	Weight	Code
	LxH (in.)	lbs	kg	

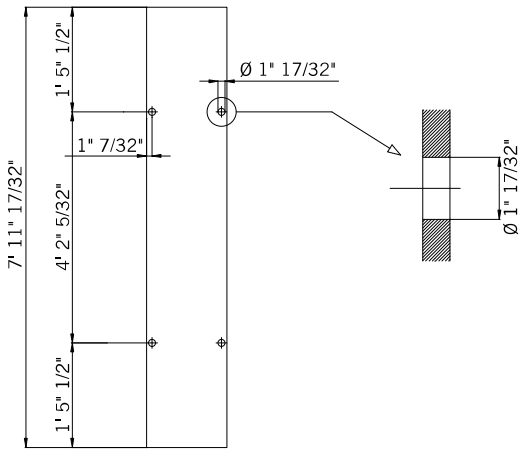
Panel container frame	lbs	kg	
Complete with: N.1 Sliding Block N.1 Bend tie-rod N.1 Bush Ø 1" 5/32" L= 0' 1" 9/16" N.1 Screw M14x70 UNI 5737 Zn N.1 Nut M14 N.1 Washer UNI 8842 A14 Zn (jagged)	27.3	12.4	**437000**



Adjustable base	lbs	kg	
	11.9	5.4	**557010**

Drilling of Alkus Panel

(7' 11" 1/2")	LxH (in.)	lbs	kg	
(On request)	1' 11" 7/16"	36.6	16.6	**2052P584**
	1' 5" 7/16"	27.3	12.4	**2052P585**
	0' 11" 7/16"	17.9	8.1	**2052P586**
	0' 5" 3/8"	8.4	3.8	**2052P587**
(3' 11" 15/32")	**LxH (in.)**	**lbs**	**kg**	
(On request)	1' 11" 7/16"	18.3	8.3	**2052P588**
	1' 5" 7/16"	13.4	6.1	**2052P589**
	0' 11" 7/16"	8.8	4.0	**2052P590**
	0' 5" 3/8"	4.2	1.9	**2052P591**
(2' 11" 15/32")	**LxH (in.)**	**lbs**	**kg**	
(On request)	1' 11" 7/16"	13.7	6.2	**2052P596**
	3' 11" 15/32"	27.6	12.5	**2052P597**
	7' 11" 1/2"	55.3	25.1	**2052P598**



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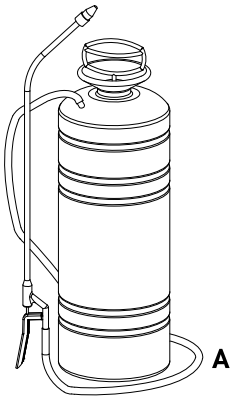
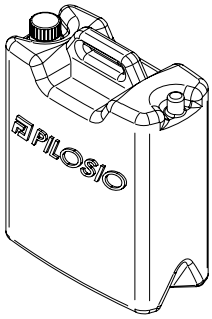
Name	Dim.	Weight	Weight	Code
	LxH (in.)	lbs	kg	

Guide Bush	lbs	kg	
	0.009	0.004	**2052PG09**

Self drilling screw	LxH (in.)	lbs	kg	
	Ø 27/128"x 1" 45/128"	0.0099	0.0045	**07605533**



A



B

A) Pomp for dismantling liquid application (11 l.)	lbs	kg	
	8.8	4	**150ILPOM**
B) Dismanting fluid for Pilosio formwork (25 l.)	**lbs**	**kg**	
	49.2	22.3	**150ILDIS**

Reference regulations and rules

INTRODUCTION

In addition to the instructions given below, the following regulations and standards must be complied with:
- EN 15113 "Vertical formwork."
- EN 13374 "Protection guardrails."

Regulations of reference on safety matters
All operational and dimensional references shown in this Manual refer to the regulations in force on Italian territory. For application in other countries, comply with the regulations in force in that country.

GENERAL PROVISIONS

The preparation, assembly, handling, installation and dismantling operations must be carried out by qualified personnel under the supervision of a construction manager who must ensure that:
- the above-mentioned operations are carried out professionally and in absolute safety complying with the instructions and drawings supplied with the formwork;
- the lifting/handling equipment and the relative load-bearing devices to be used for the handling and positioning of the formwork are suitable for the purpose.
- all the members which make up the structures and the equipment are checked thoroughly before use in order to remove those which, due to breakages, deformations or corrosion, do not guarantee total reliability.
- the workers who are to carry out the assembly, handling, installation, checking and dismantling of the structures are in possession of the correct equipment to do so and, depending on the risks involved, use the following individual protective equipment: safety harnesses; gloves; helmets; boots.

The operations for handling the structural members must be planned by the construction site manager in accordance with the installation sequence and the instructions provided by the manufacturer. The operations which require the wearing of safety harnesses must be clearly specified and instructions on the use of harness attachments must be provided. If, during handling operations, it is necessary to remove some guardrails, specific instructions must be provided for the correct operational procedures to be followed by the workers. During the working phases, anchorage systems must be fitted as indicated in the drawings provided with the formwork. These anchorages must guarantee sufficient yield strength during use of the equipment for the stresses transmitted by the formwork. The coupling devices must fix together the members in such a way that they may only be separated by means of a deliberate operation, excluding the possibility of any accidental opening of the devices. A specific design must be prepared by a qualified professional for any deformation which does not fall within the dimensions and/or overloads specified in the operational diagrams, or for the use of provisional equipment. The various configurations and/or major changes, even if needed during progress of the work, must be indicated on the final assembly drawings. An Operational Safety Plan must be prepared by the construction firm, providing details for the handling, assembly, use and dismantling of the equipment.

PRE-ASSEMBLY INSTRUCTIONS

Technical documentation provided with the formwork
The user must receive the following documentation from the manufacturer:
- specific instructions regarding the correct assembly, use and dismantling;
- technical documentation, where necessary, with details of the design parameters and loads;
- assembly drawing with additional and explanatory instructions.

Equipment qualification check
Before assembly it is necessary to check that:
- the metal frame of the formwork is not deformed and that the welding is satisfactory (absence of breakages, cracks, etc.)
- the panel is free from deposits and protected against water absorption;
- the devices provided for setting up the formwork are in full working order (wing nuts, clamps, alignment devices, tie rods etc.);
- the lifting and handling devices are in full working order and correctly maintained (normal and extra-height hooks, lifting pins, equalizers, etc.)
- the working brackets are in full working order and correctly maintained, especially the formwork attachments. The anti-slip decks must be no less than 8" wide and 1" 1/2" thick (boards 8"x 2"), free from mould, cracks and with few through knots (reduction of deck section by less than 10%);
- the props are not deformed (giving particular attention to the formwork attachments, ground anchorages, locking pins) and that the welding is satisfactory.

Formwork storage
The materials may require a large amount of storage space so the area must be carefully chosen to avoid the obstruction of paths and interference with the site roads.
The position of the storage area should also be as close as possible to the place of assembly in order to avoid unnecessary handling of the equipment.
The formwork is stored in special containers in which the panels are placed with the plywood surface facing upwards. Only the top panel will have the plywood facing upside down. For storage directly on the ground, the panel surface should face upwards, to avoid the accumulation of water. Supporting beams are placed on the ground to keep the formwork clean and dry and also allow easy lifting of the formwork for the following working phases.

Lifting and handling
These operations can take place in the storage area or in the working area where slabs/floors are to be prepared, moving formwork from one floor to the other.
Before starting the operations for lifting and moving the formwork from the storage area to the working area it is necessary to lock the formwork together by means of tie rods.
The lifting and handling of the formwork is carried out by using steel cables attached to the crane hook.

It is necessary to check that the actual load on the cables, depending on the weight to be lifted (the dynamic increase must also be taken into account) and the angle of the cable with respect to the formwork, does not exceed the capacity of the cables indicated by the manufacturer.
The lifting and handling operations from one concrete casting phase to another must be carried out with formwork in a vertical position, using a special self-blocking hook or a hook suitable for extra heights. It is once again necessary to check that the actual load on the lifting cables and the loads lifted are less than the respective capacity of the cables and lifting hook. Access to the lifting and handling areas is strictly forbidden.

INSTRUCTIONS FOR ASSEMBLY, USE AND DISMANTLING

In order to assess the main risks present on the construction site due to use of the formwork (as foreseen by the Legislative Decree 494/96), they should be listed by type of activity and situations, and a summary of the measures to be taken should also be provided.
- technical documentation, where necessary, with details of the design parameters and loads;
- assembly drawing with additional and explanatory instructions.

Installation - overturning of formwork
The formwork must be placed in an oblique and/or vertical position whilst awaiting the subsequent reinforcement placing or concrete casting phases. In this position the formwork is isolated and subject to wind loads which can vary from minimum values of 4,1 psf to values of 16,50/20,50 psi, depending on the height and exposure. It is therefore advisable to reduce to the absolute minimum the time that the formwork must be in this position, where it is at the greatest risk when wind speeds exceed 35,80 mph.
Overturning can also be due to other causes, such as an unlevel or unstable support base, or crane operation errors whilst moving buckets, other formwork, reinforcement etc. The aim of the adjustable props is, as well as correctly aligning the formwork, to stabilize the formwork whilst awaiting the casting phase. It is advisable to fix the stirrup of the prop to the ground (with a bar inserted into the ground or an expanding plug in the case of a concrete base), especially in the presence of strong winds and if the formwork is isolated. Alternatively, use could be made of suitable ballast placed on the stirrups.
The number of props must be calculated on the basis of the dimensions of the formwork and the intensity of the wind load, but, in any case, at least two must be fitted.

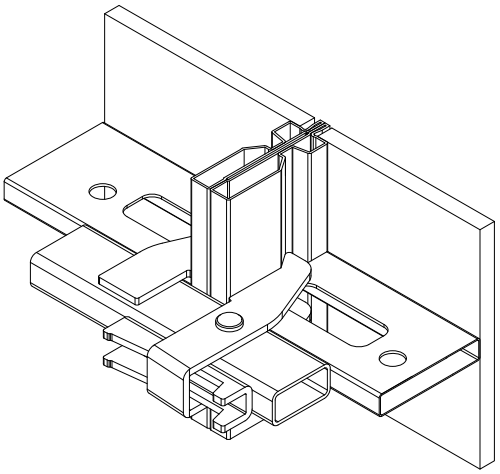
Installation - falling objects
There is the risk of falling objects during all installation phases, unless a working platform is included.
A worker who checks the wing nuts, alignment devices, pins and wedges etc, or climbs on special ladders or on the formwork itself, if there is the relative frame fixed to it, must use a safety harness with double ropes and spring catch devices.

Use - Collapse of formwork
The concrete pressure acts on the alkus panel surface and on the tie rods which connect together the formwork holding the concrete. The metal frame of the formwork and the tie rods with wing nuts are the components which ensure the safety of the workers, during the concreting phase, who are working on the ground near to the formwork and on the working platforms, which are connected to the formwork frame.
The ends of the tie rods may sometimes be covered with plastic plugs to avoid any contact with the panel uprights.
It is therefore necessary to check that the tie rods – wing nuts are satisfactorily tightened together and that the concrete pressure, which mainly depends on the speed and height of the concrete casting, does not exceed the design pressure for the formwork as specified by the manufacturer (1230 psf). In order to determine the concrete pressure, reference should be made to the diagram of UNI standard U50.00.206.0 "Formwork - safety requirements".

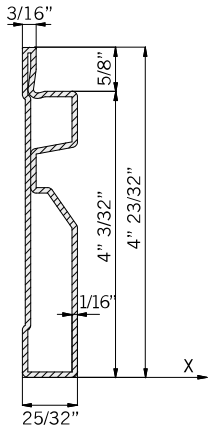
Use - Falling objects
During the concrete casting phase, working brackets and working decks are used with a width of not less than 24" and fitted with a suitable guardrail (1st ledger must be placed at the height of at least 1m from the working deck, 2nd ledger no more than 24" away from the 1st, toe board at least 8" high), both lengthways and at the ends of the scaffolding.
Any maintenance decks must be at least 24" wide.
Access to the scaffold structures must be by means of a ladder and manhole included on the deck.

Dismantling
The safety measures to taken with regards to the risks resulting from overturning of the formwork or falling objects are the same as those indicated for the installation.
The person in charge of dismantling must:
- ensure that the formwork is kept stable by the props before unfastening the tie rods. After the self-locking lifting hook has been inserted, the person must move away from the formwork before the lifting phase begins.
- the formwork accessories (wing nuts, alignment devices, bars and tie rods etc.) must be lowered to the ground by suitable equipment, and they must not be merely dropped to the ground.

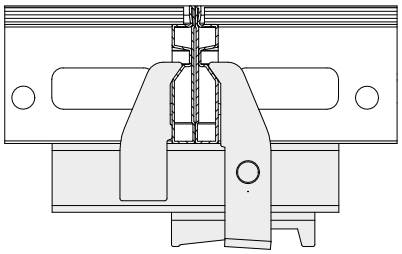
Formwork assembly

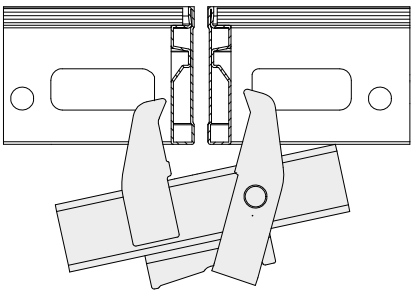


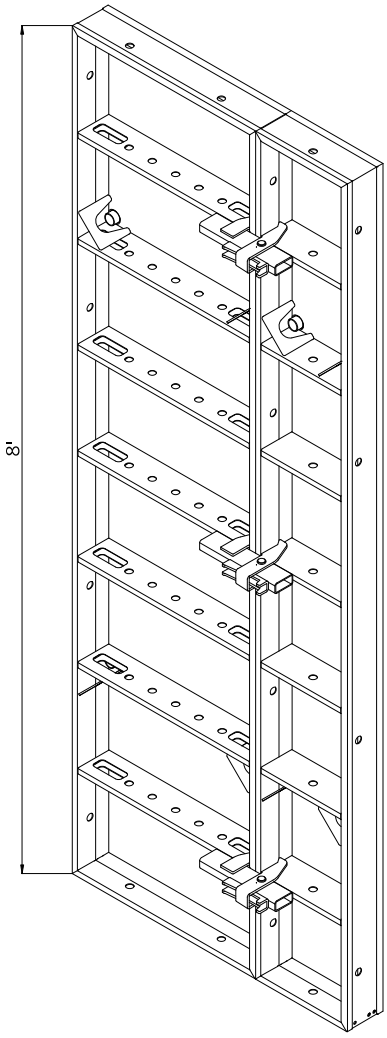
"DURA-CLAMP" PROFILE CHARACTERISTICS



MATERIAL:
EN 10149-2 - S315MC



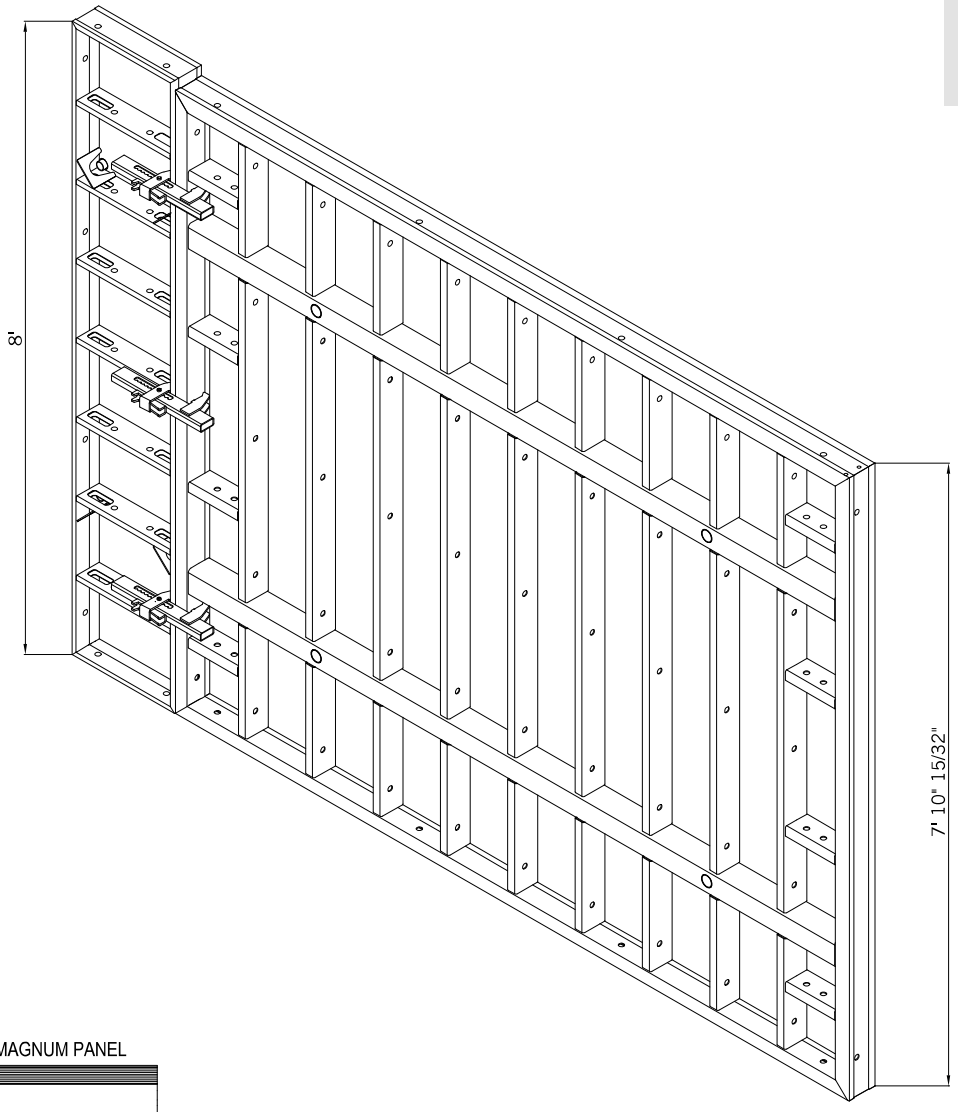


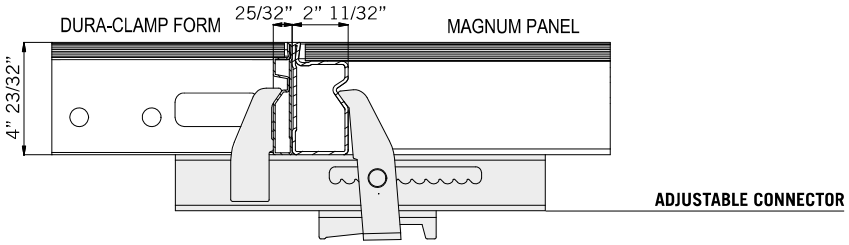


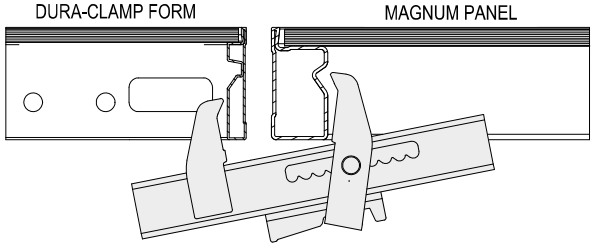
Panel Connection with "DURA-CLAMP"
Aligning Connector

DURA- CLAMP

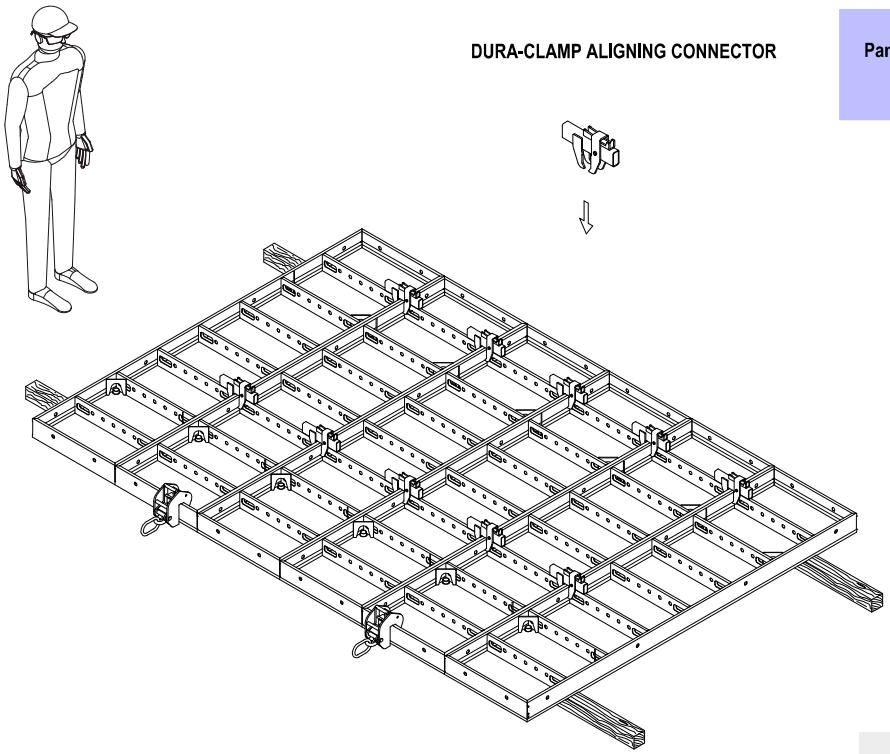
Connection with "MAGNUM" Panel





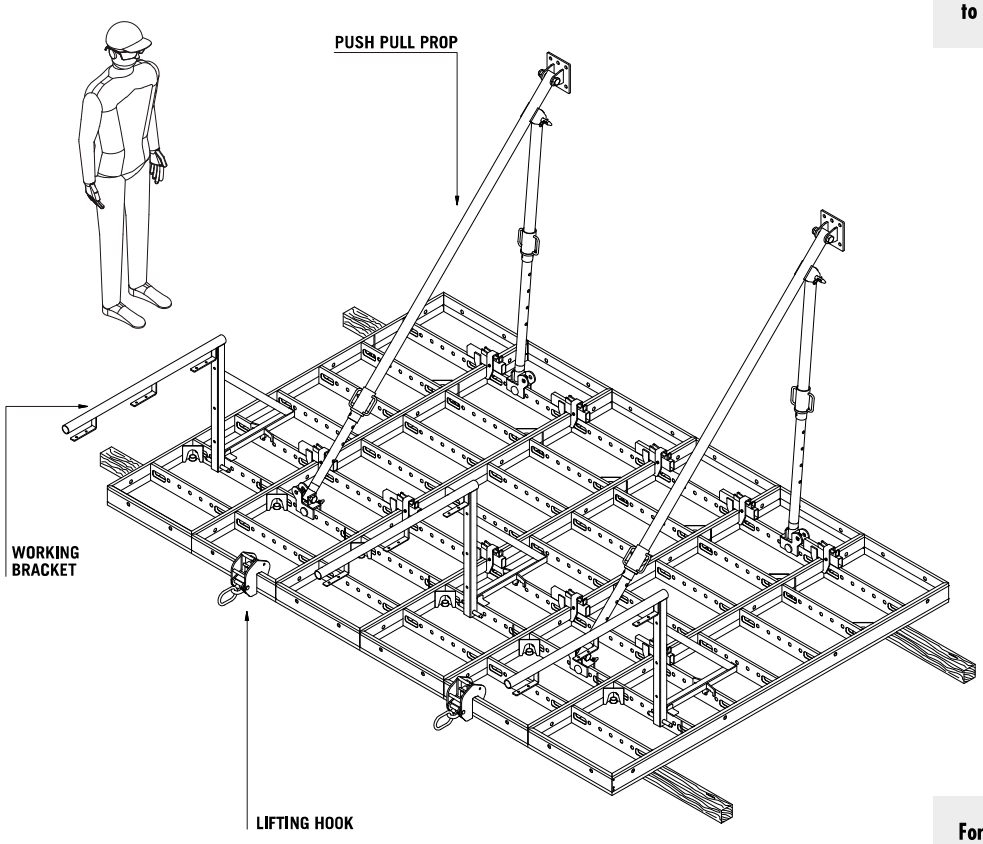


Formwork assembly



Panel connection utilizing the "DURA-CLAMP" aligning connector.

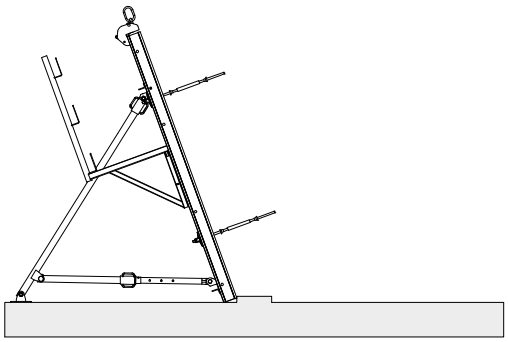
Formwork assembly: use timber battens to level supporting surface.

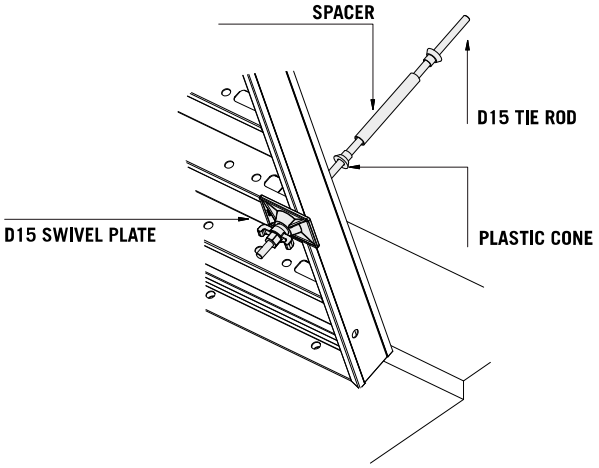


Formwork assembly: fit accessories (brackets and props) and raise by lifting hooks.

Setting up "DURA-CLAMP" Panels

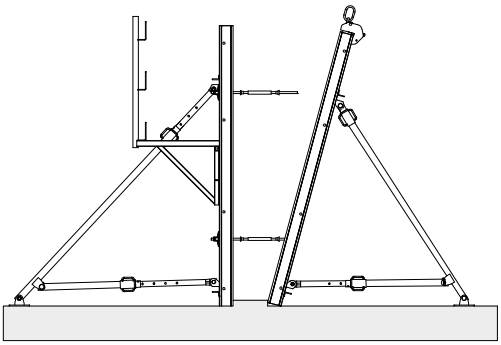
SETTING UP WALL 1





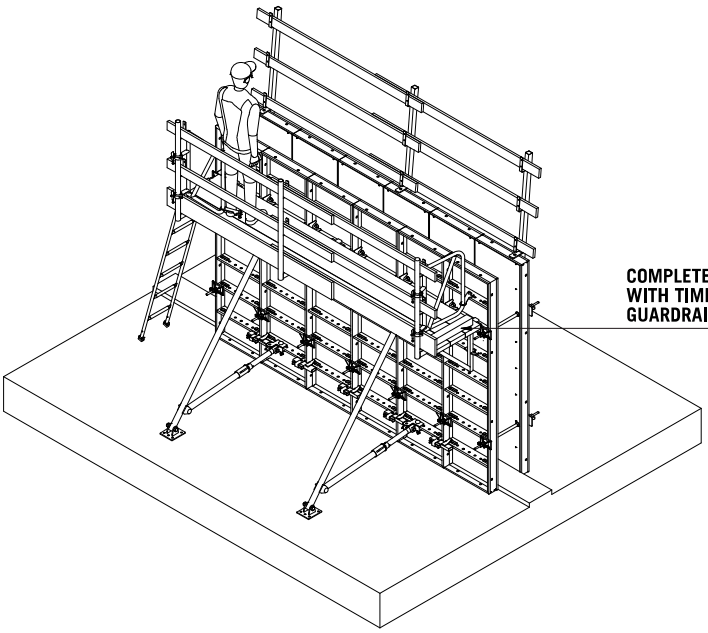
Wall nr.1: assemble spacers with tie rods and plumb panels using props.

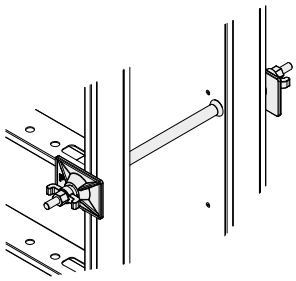
SETTING UP WALL 2



Wall nr.2: repeat previous operation with opposite panels.

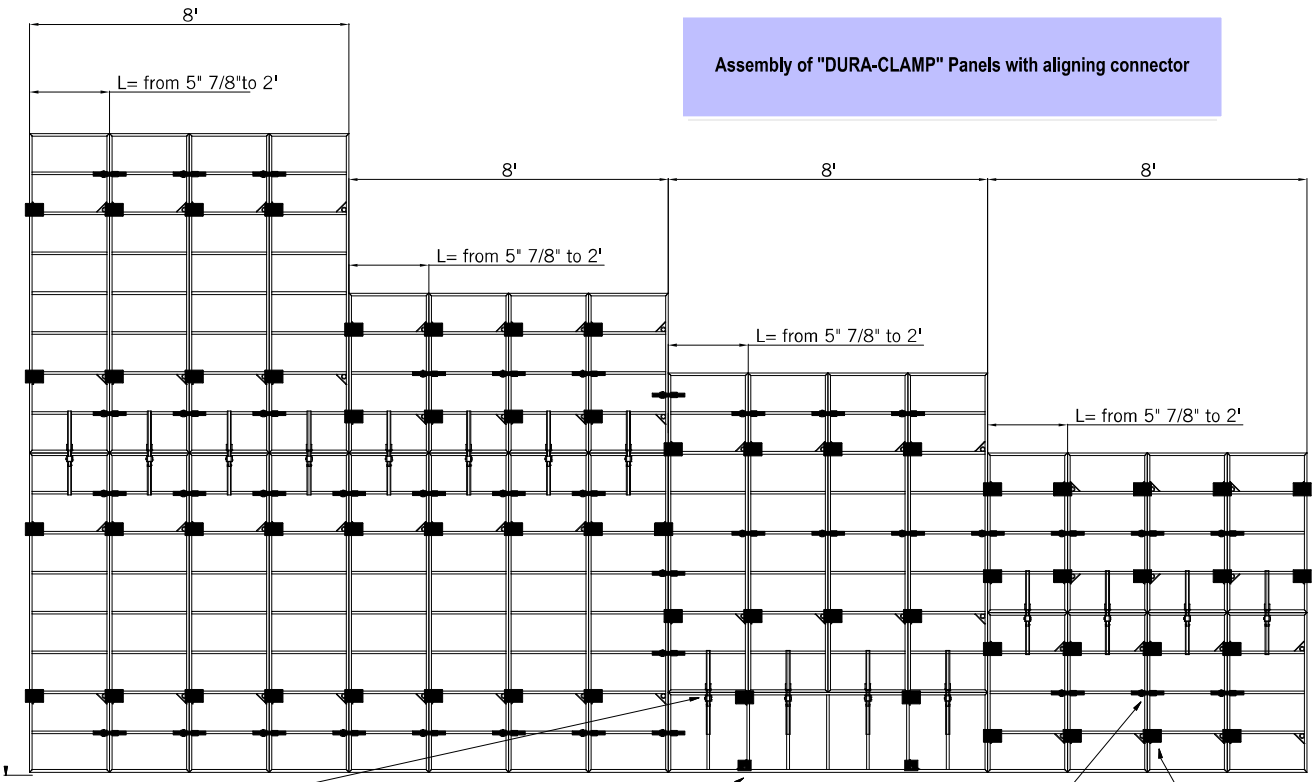
Closing formwork: when both panels are positioned, tighten tie rods; parallelism and distances between panels are guaranteed by tie rod with spacers.

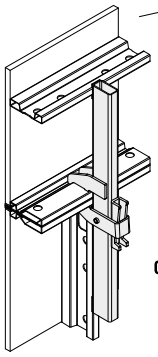




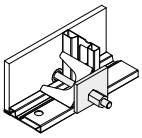
TIGHTENING OF TIE ROD

Formwork assembly

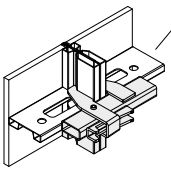




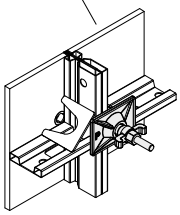
CONNECTOR FOR ALIGNMENT



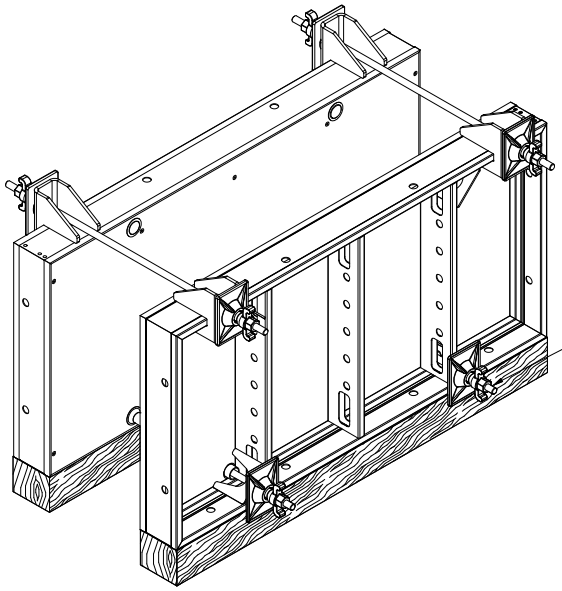
TIE-ROD WITH PLATE + NUT

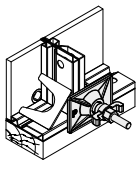


ALIGNING CONNECTOR



D15 SWIVEL PLATE

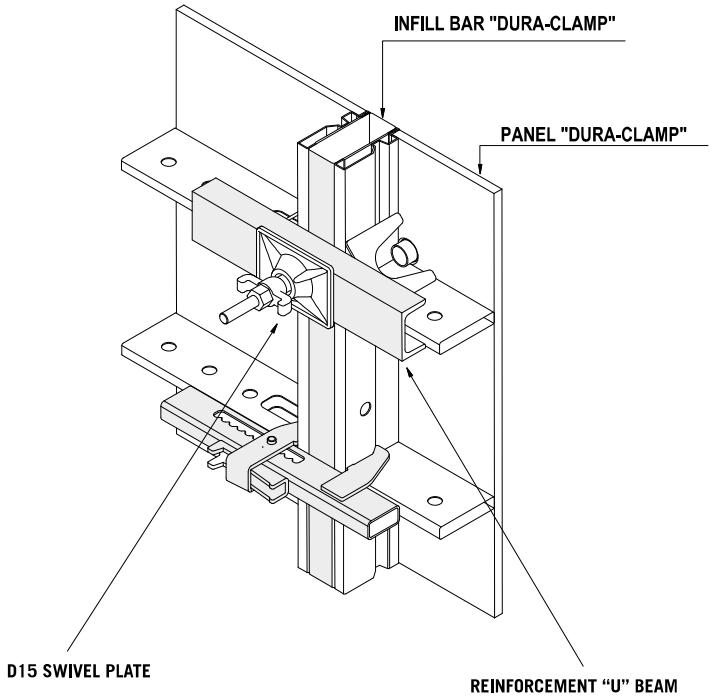


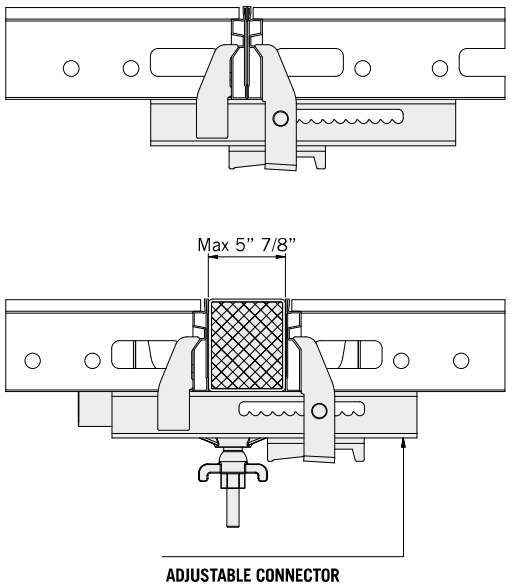


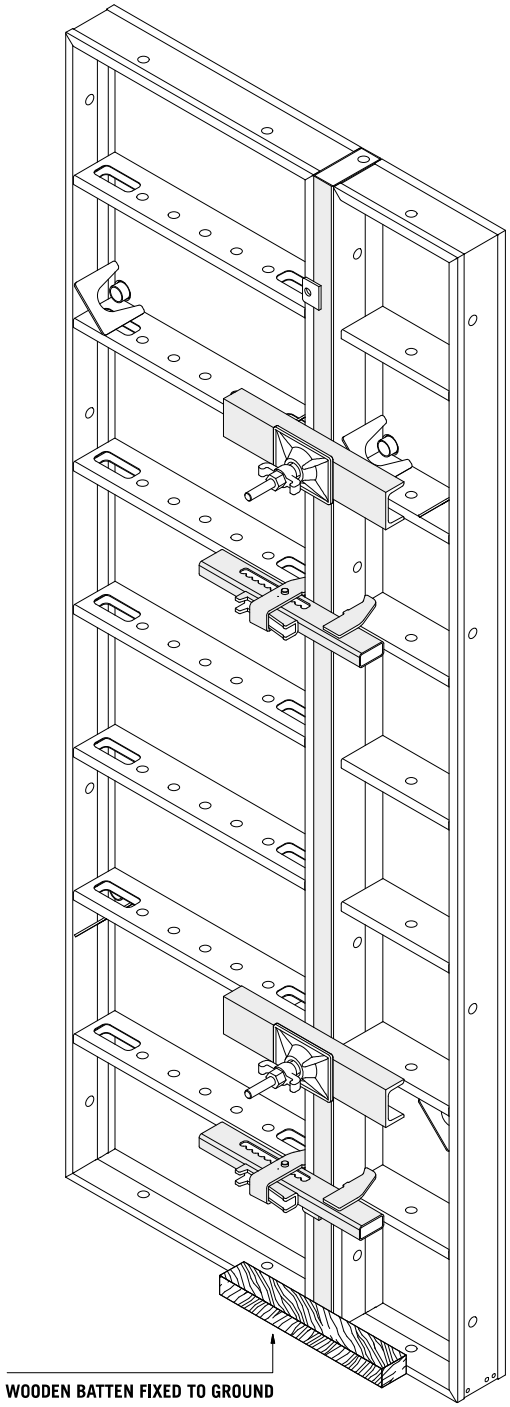
WOODEN BASE

Infill bar and panel

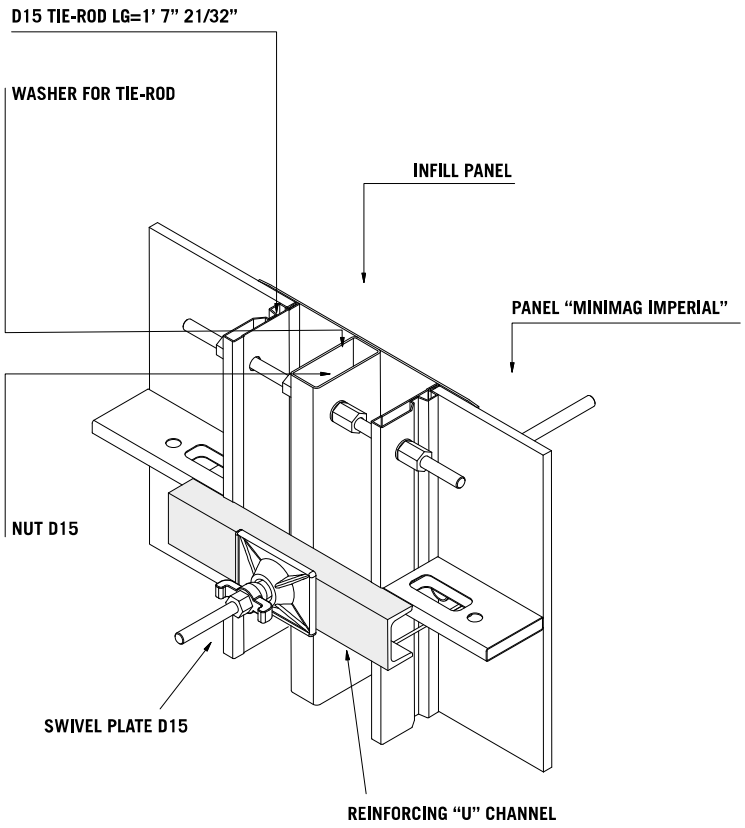
DURA- CLAMP

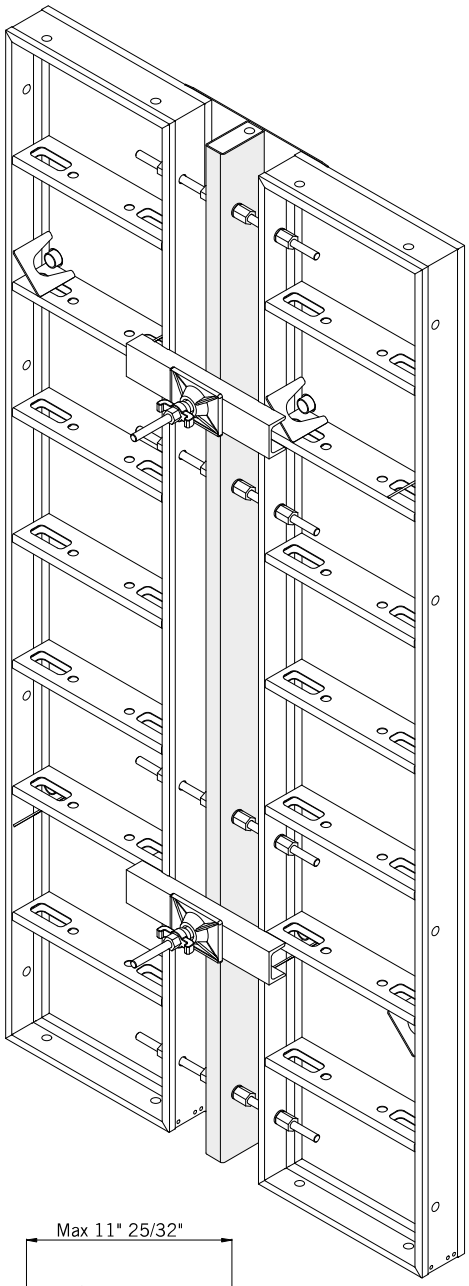


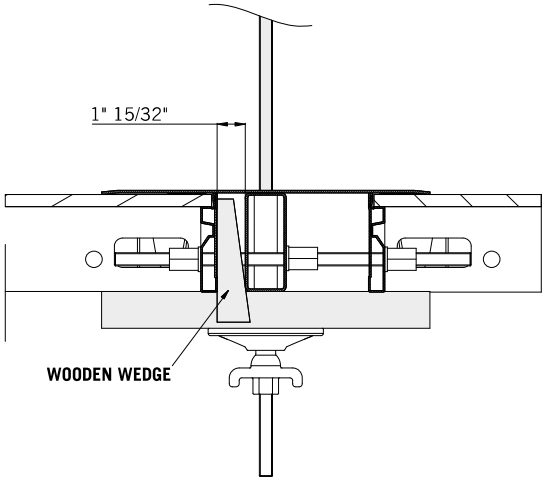


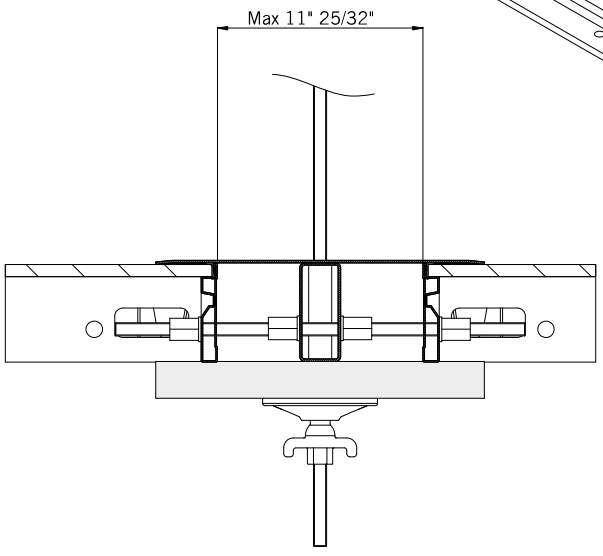


Infill bar and panel *"NOT AVAIABLE IN USA"*





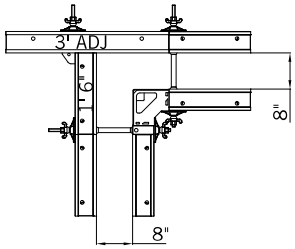


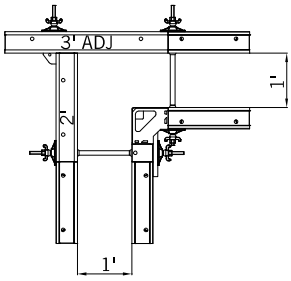


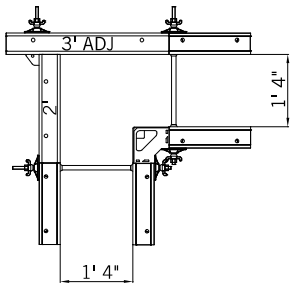
DURA- CLAMP

Making corners

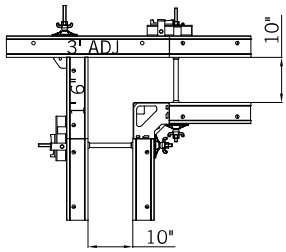
Alternative systems for making corners

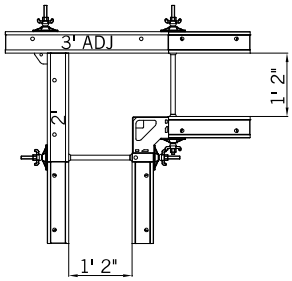


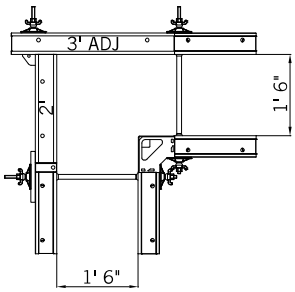


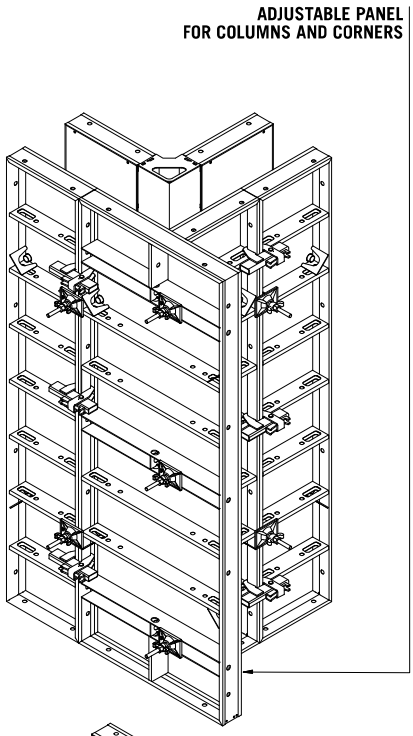


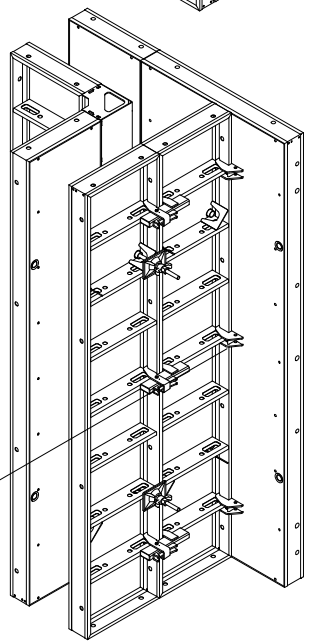
Making corners with column panels

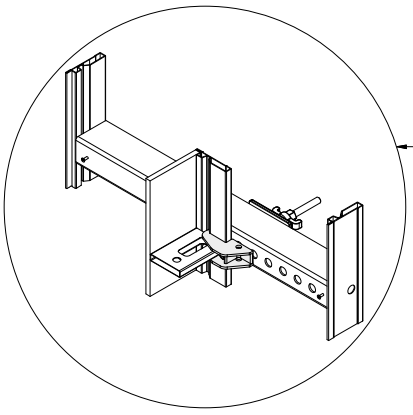






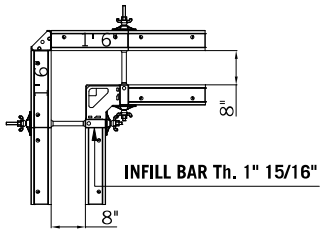


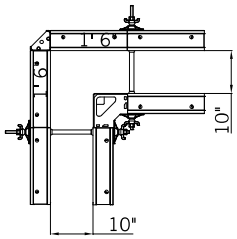


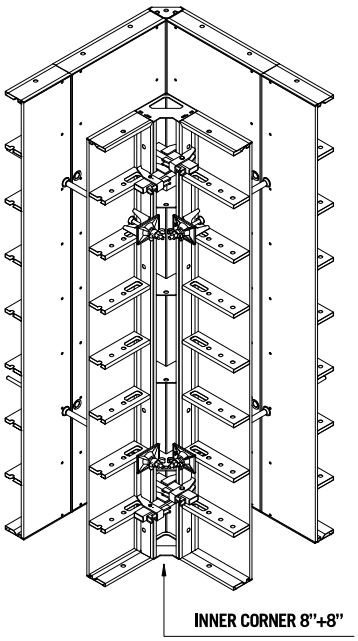


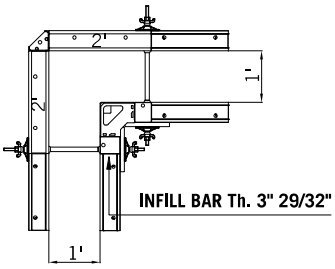
Making corners

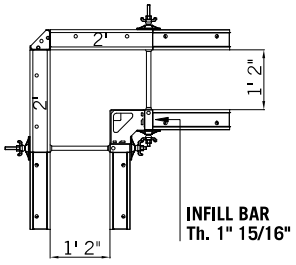
Marking corners with outer corner

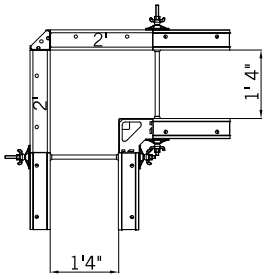


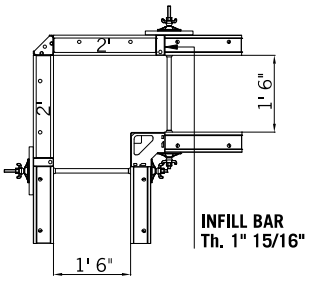


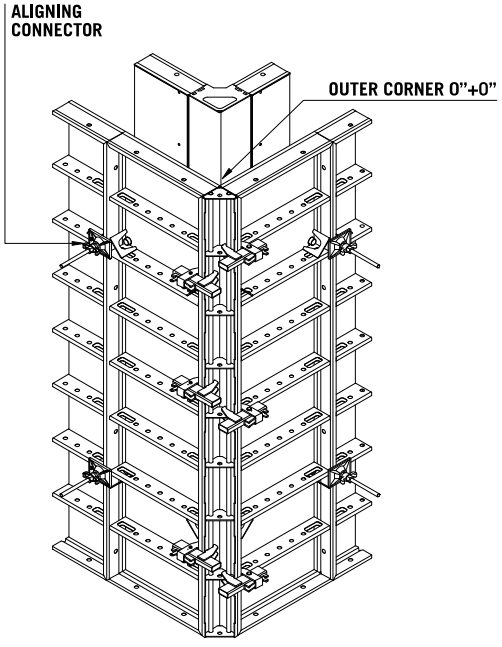


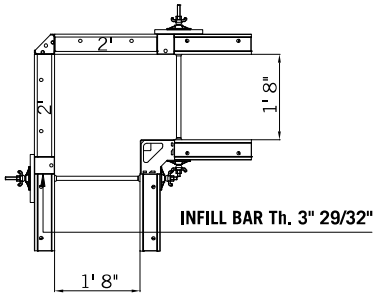


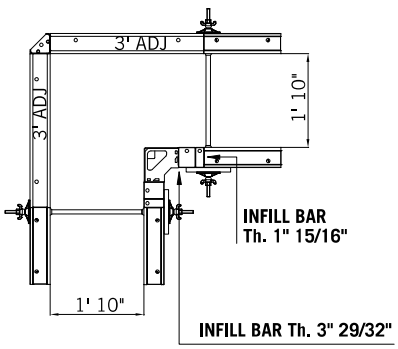


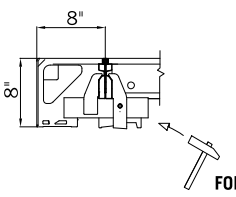








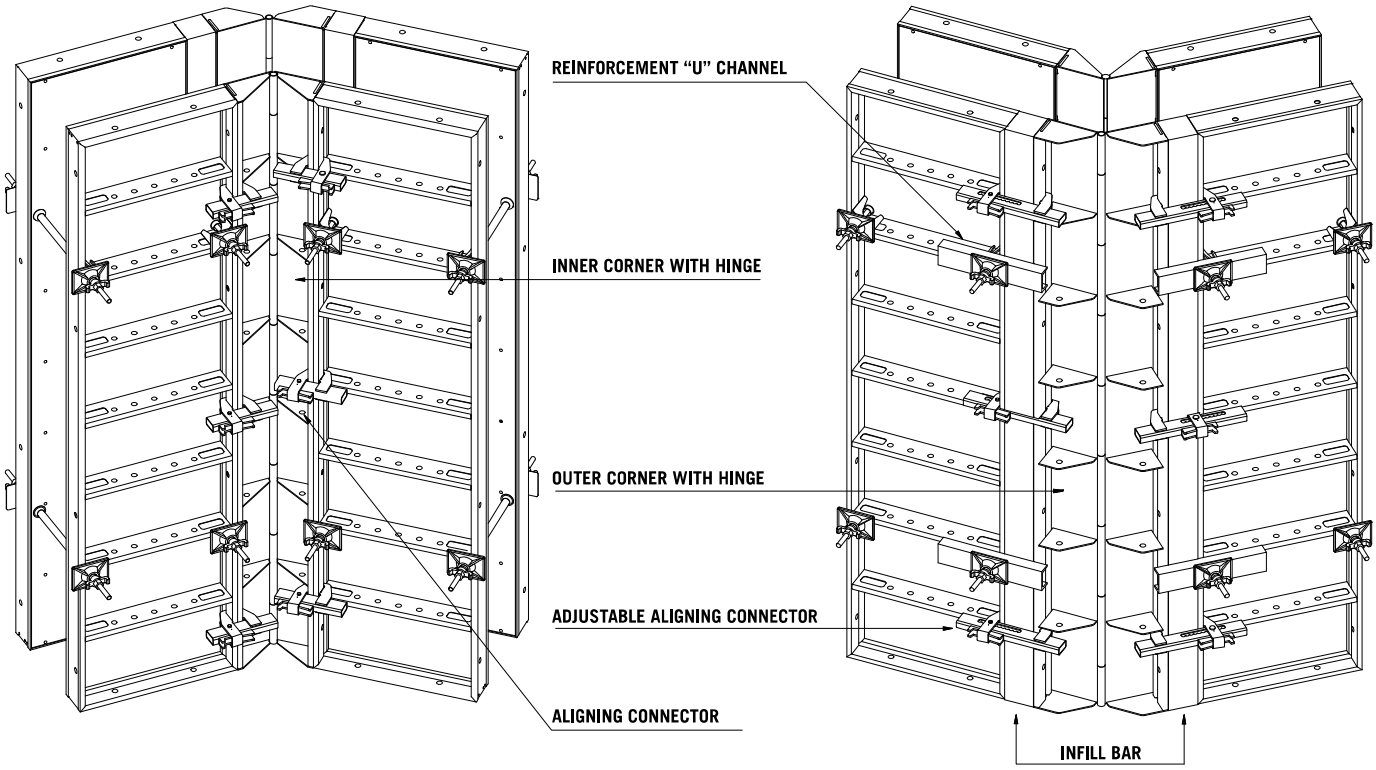


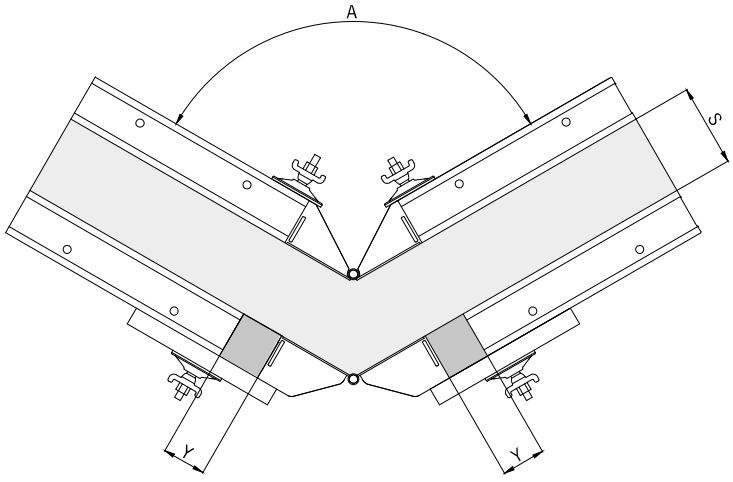


Making corners

DURA- CLAMP

Corner junctions: solution with variable opening corners





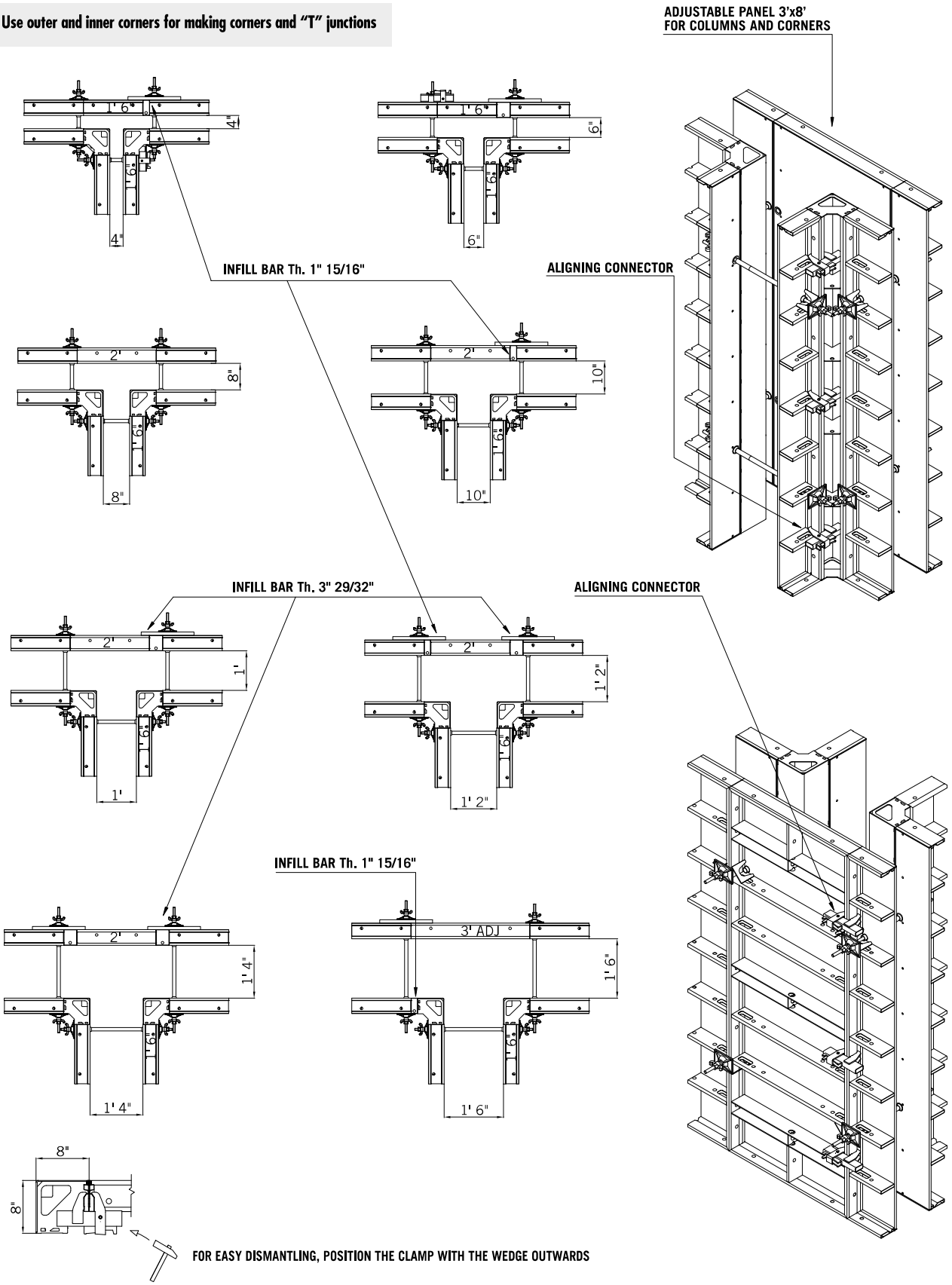
THE TABLE SHOWS THE CORRECT WIDTH *Y* OF THE OUTER INFILL BAR TO BE USED DEOENDING ON THE SIZE OF THE CORNER TO BE CREATED *A* AND THE THICKNESS OF THE WALL *S*

A / S	75°	90°	120°	135°	150°
8"	10" 21/32"	8"	4" 1/4"	2" 13/16"	1" 17/32"
10"	1' 1" 9/32"	10"	5" 13/32"	3" 21/32"	2" 1/16"
12"	1' 3" 7/8"	1'	6" 9/16"	4" 15/32"	2" 19/32"
1'2"	1' 6" 1/2"	1' 2"	7" 23/32"	5" 5/16"	3" 1/8"
1'4"	1' 9" 3/32"	1' 4"	8" 7/8"	6" 1/8"	3" 21/32"
1'6"	1' 11" 23/32"	1' 6"	10" 1/32"	6" 31/32"	4" 3/16"
1'8"	2' 2" 5/16"	1' 8"	11" 3/16"	7" 25/32"	4" 3/4"
1'10"	2' 4" 29/32"	1' 10"	1' 11/32"	8" 5/8"	5" 9/32"

Y

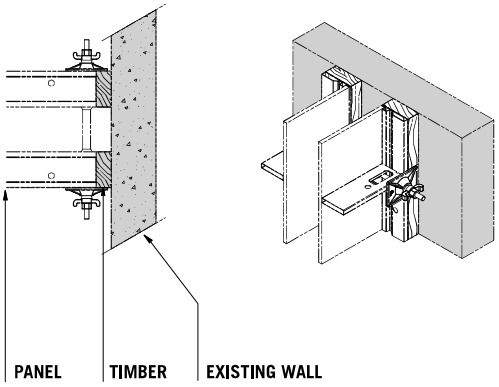
Making "T" junctions

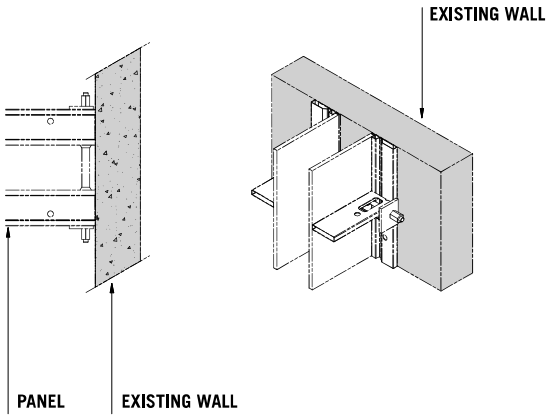
Use outer and inner corners for making corners and "T" junctions

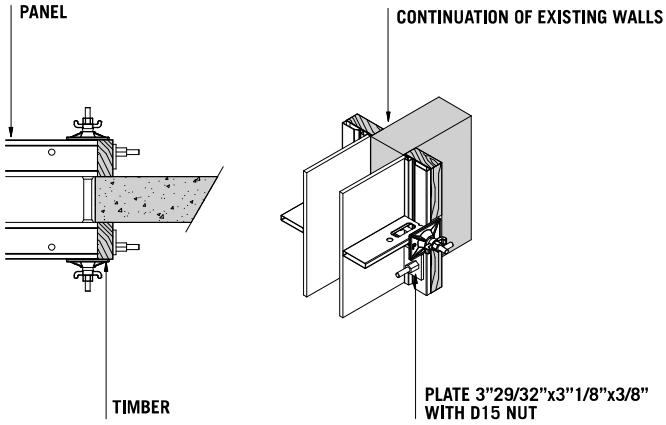


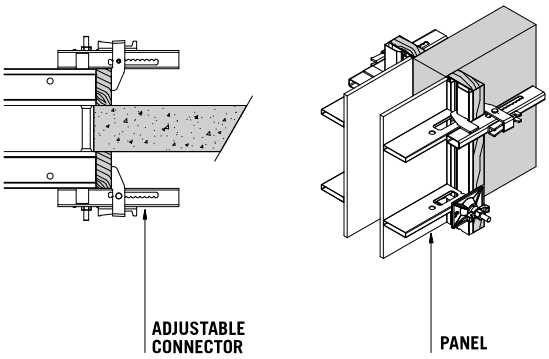
Continuation of existing walls

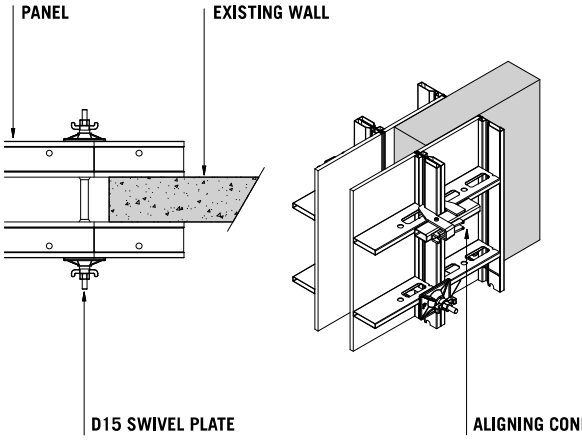
DURA- CLAMP

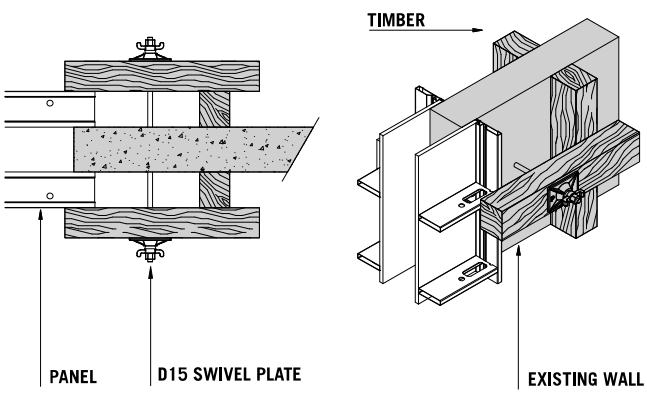




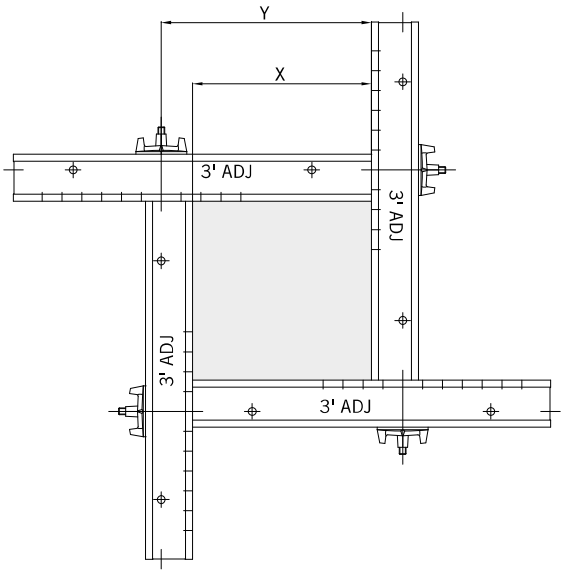


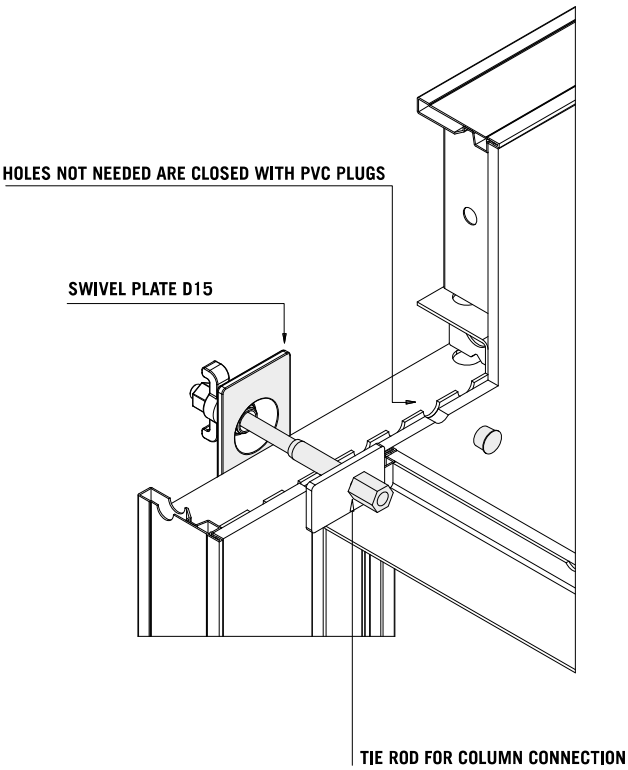




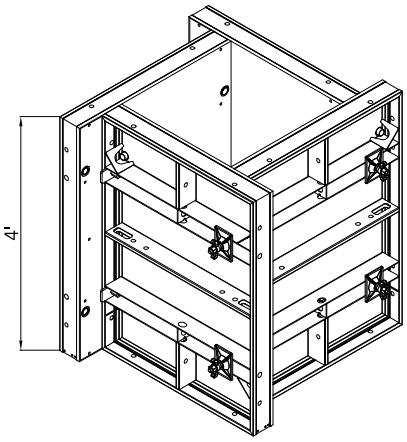


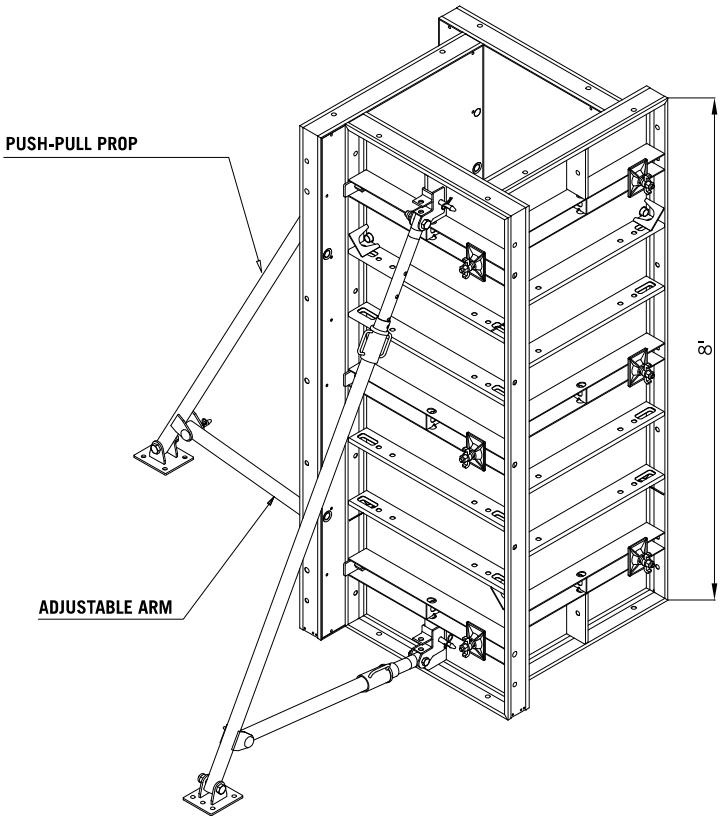
Columns setting up with adjustable panel





X	Y
8"	11"
10"	13"
12"	15"
14"	17"
16"	19"
18"	21"
20"	23"
22"	25"
24"	27"
26"	29"
28"	31"
30"	33"

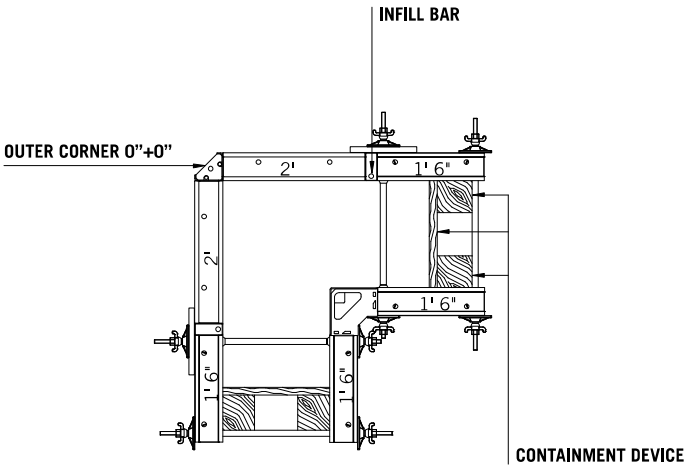


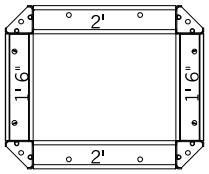


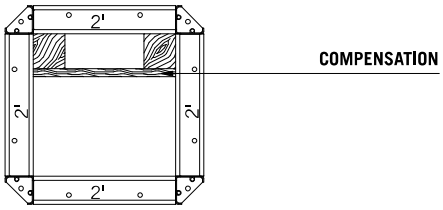
Columns setting up with panel

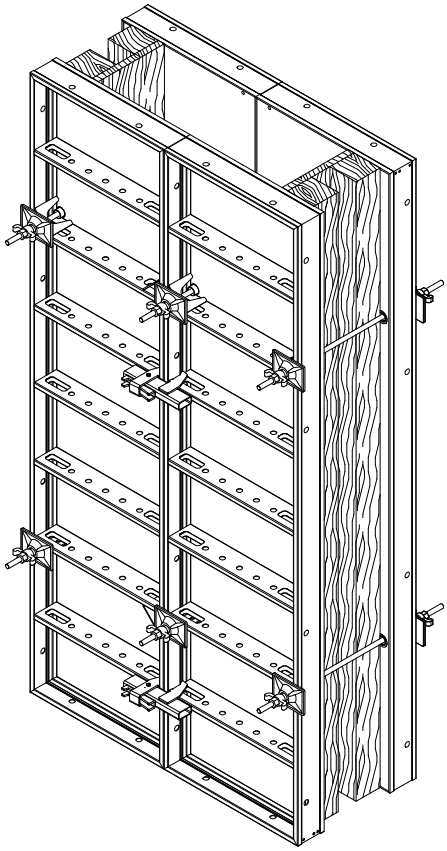
DURA- CLAMP

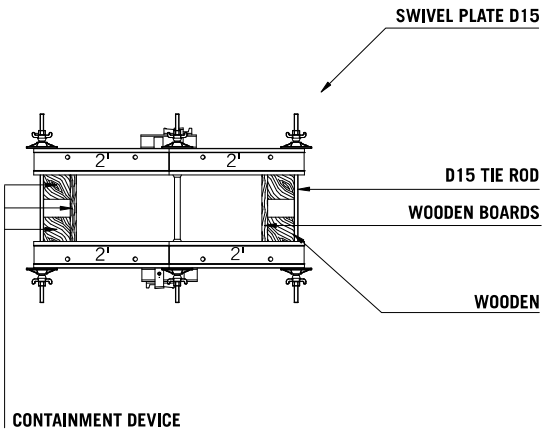
Example of columns setting up



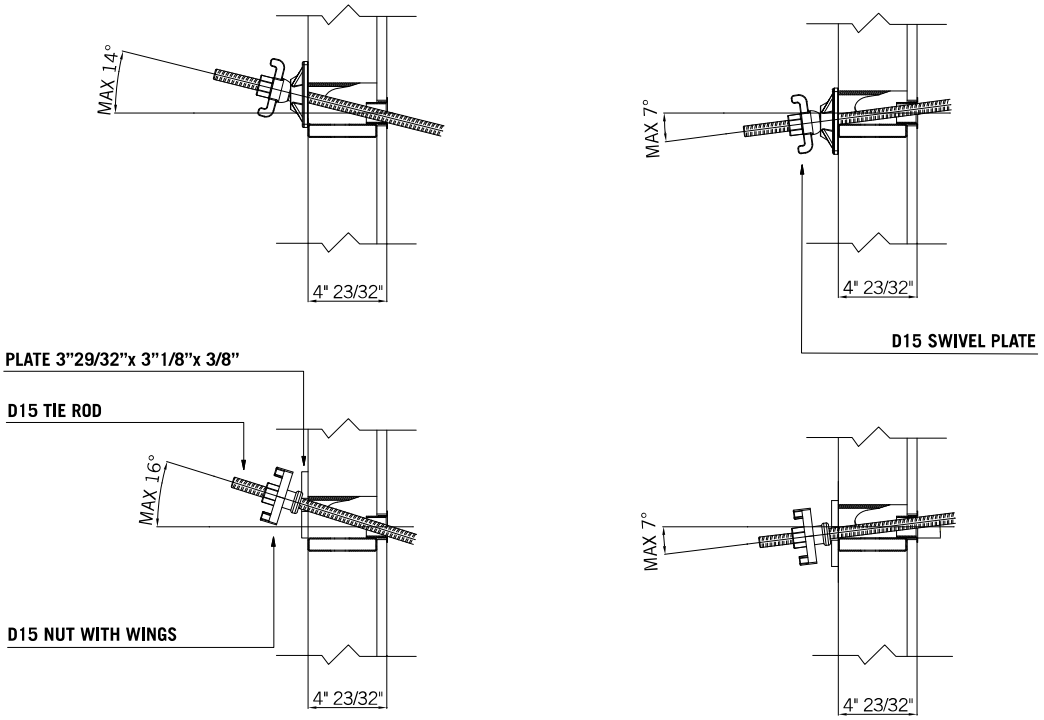


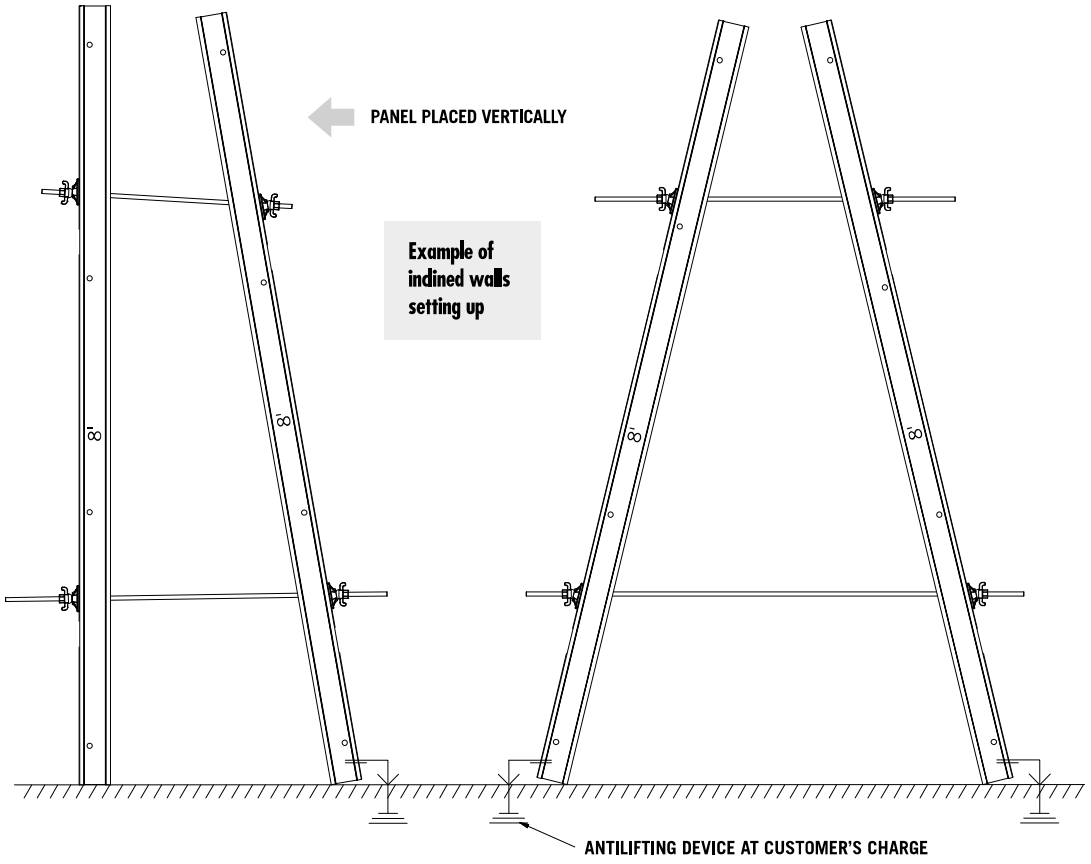






Example of inclined walls setting up



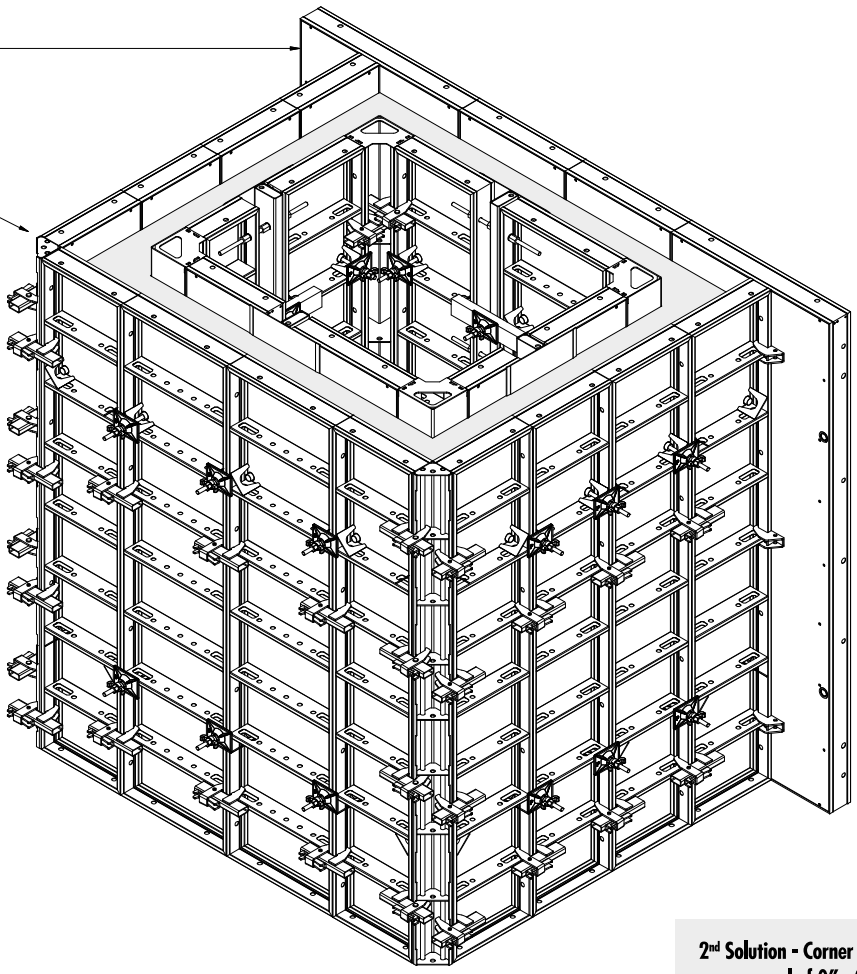


Example of inclined walls setting up

Lift shaft setting up

DURA- CLAMP

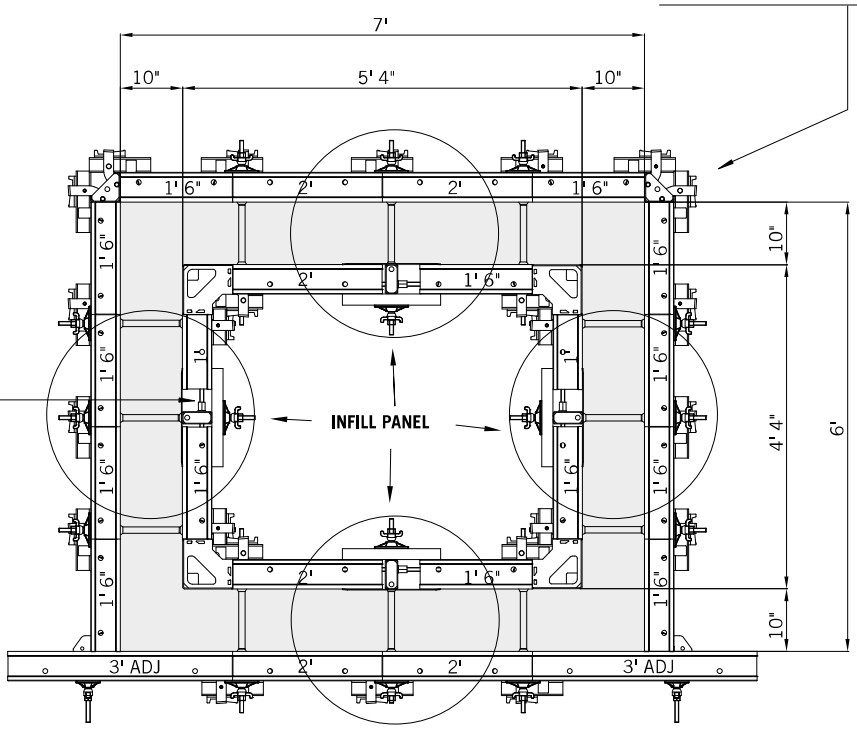
EXAMPLE WITH OTHER CORNER 0"+ 0"
AND ADJUSTABLE PANEL



Example with infill panel

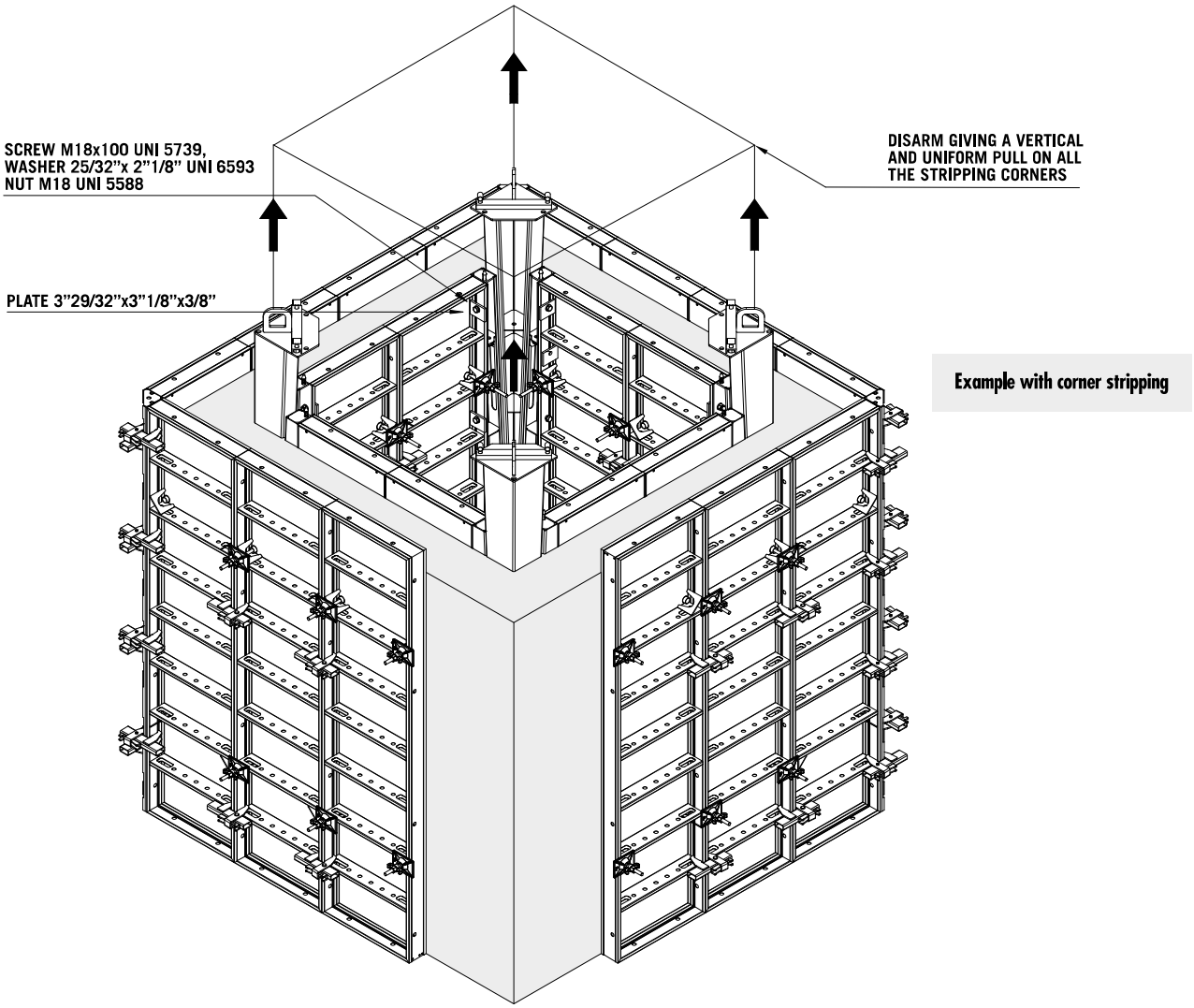
2nd Solution - Corner made with outer corner panel of 0"+ 0"

1st Solution - Corner made with adjustable panel

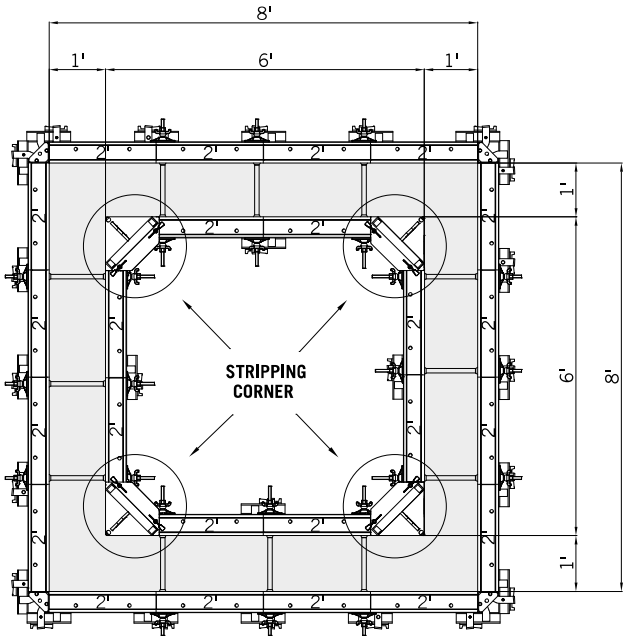


TIE ROD LG=1' 7" 21/32"
WITH D15 NUT AND PLATE

Lift shaft setting up

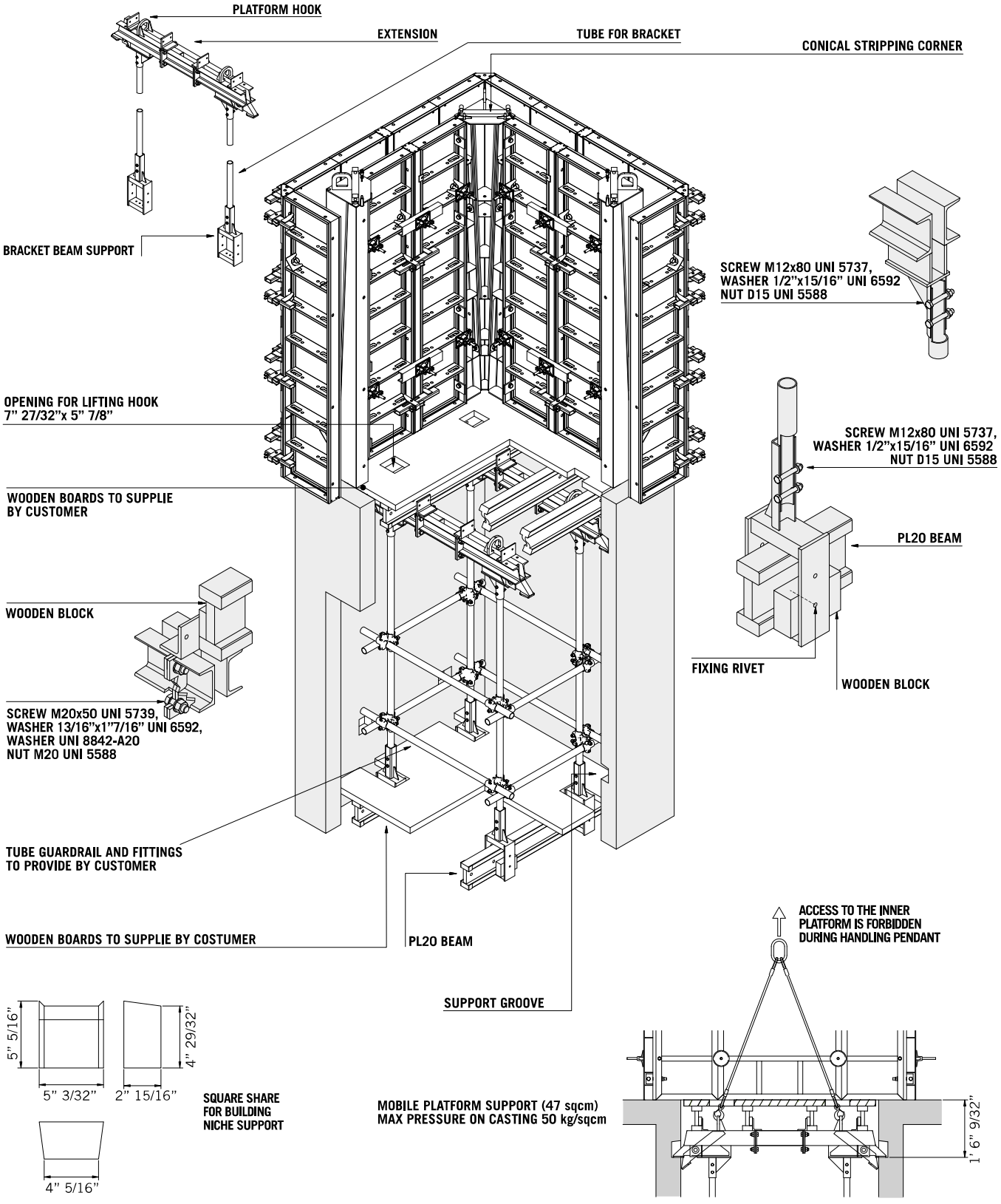


Example with corner stripping



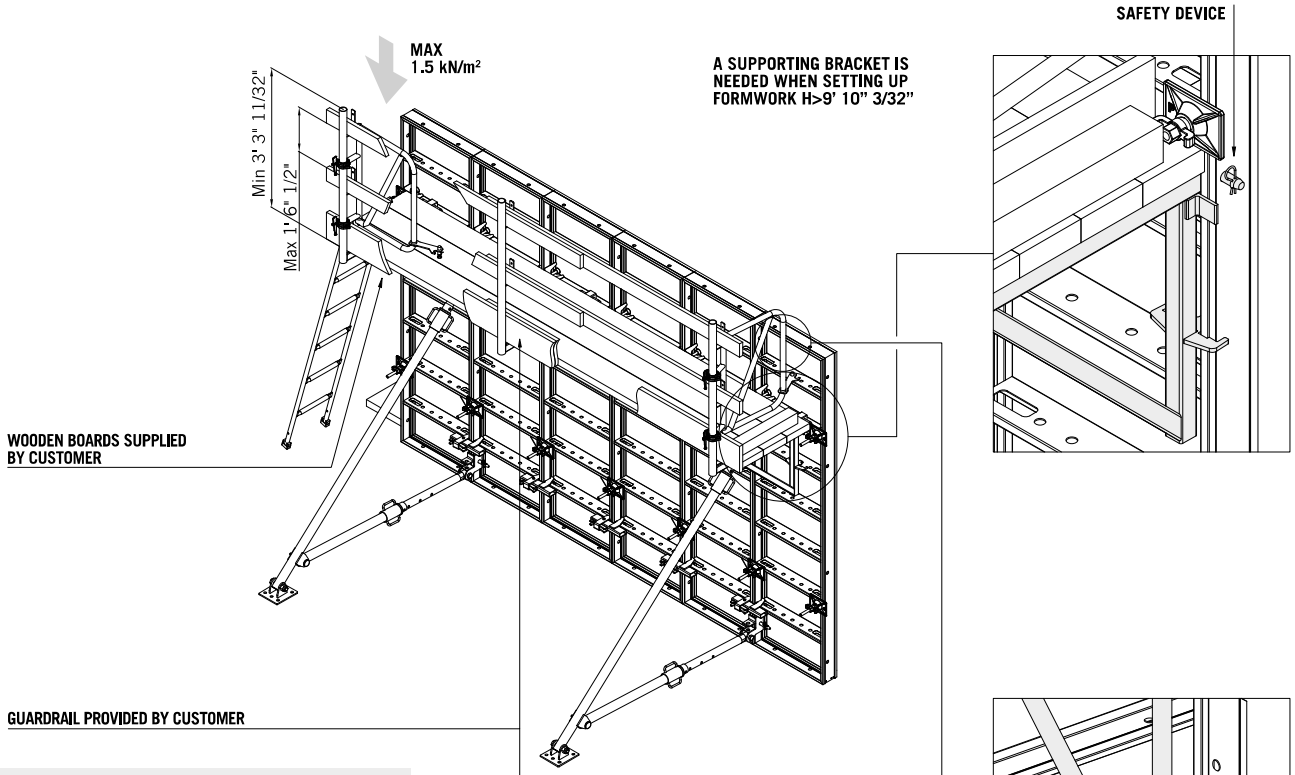
Working platform for lift shaft

DURA- CLAMP

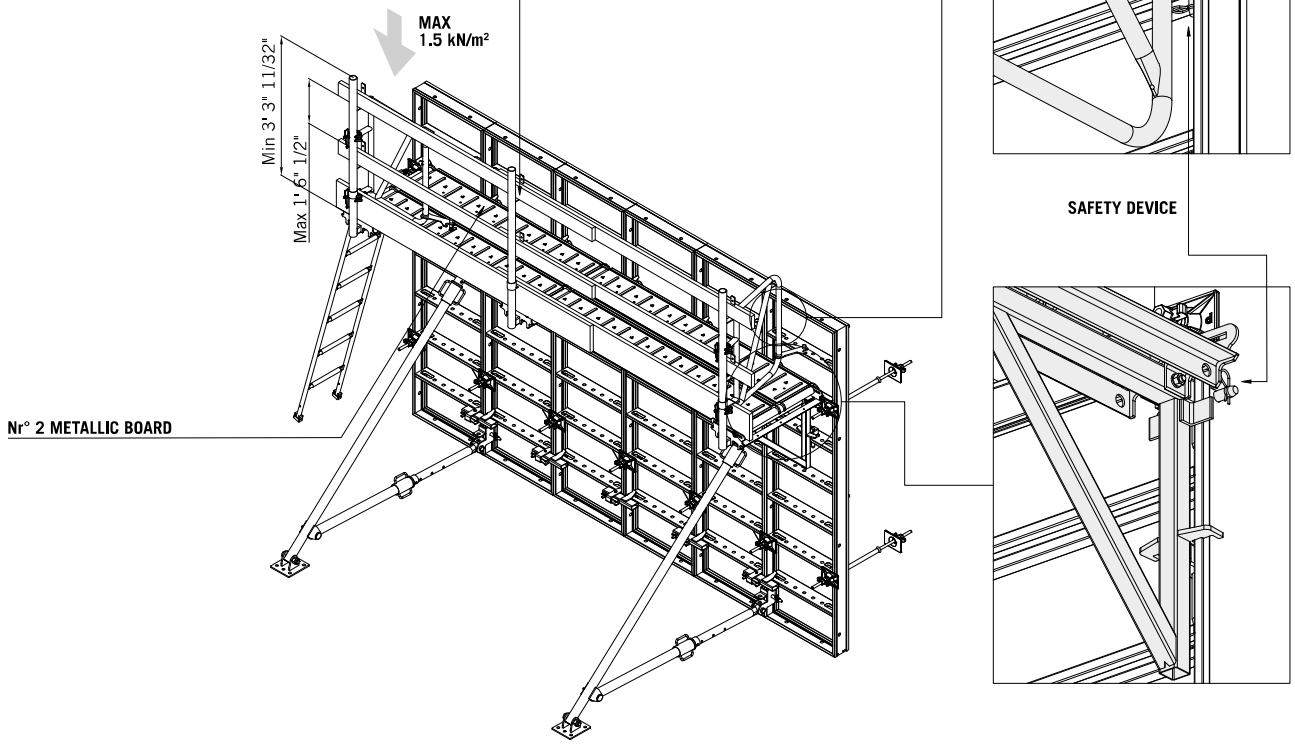


Fittings for formwork

1st Solution - Working bracket with wooden boards

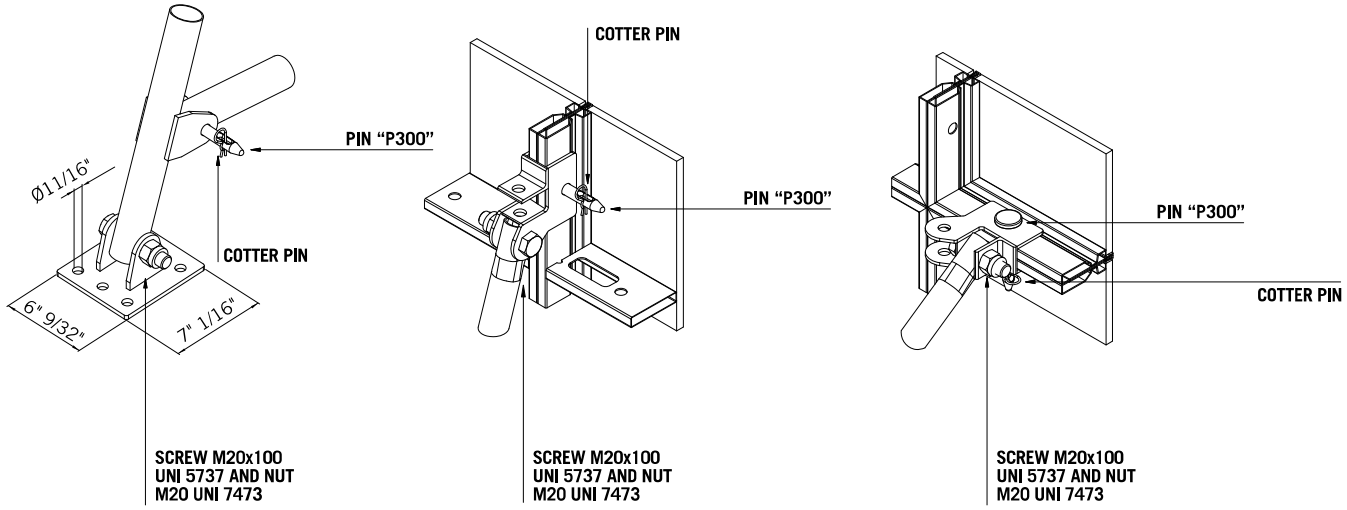


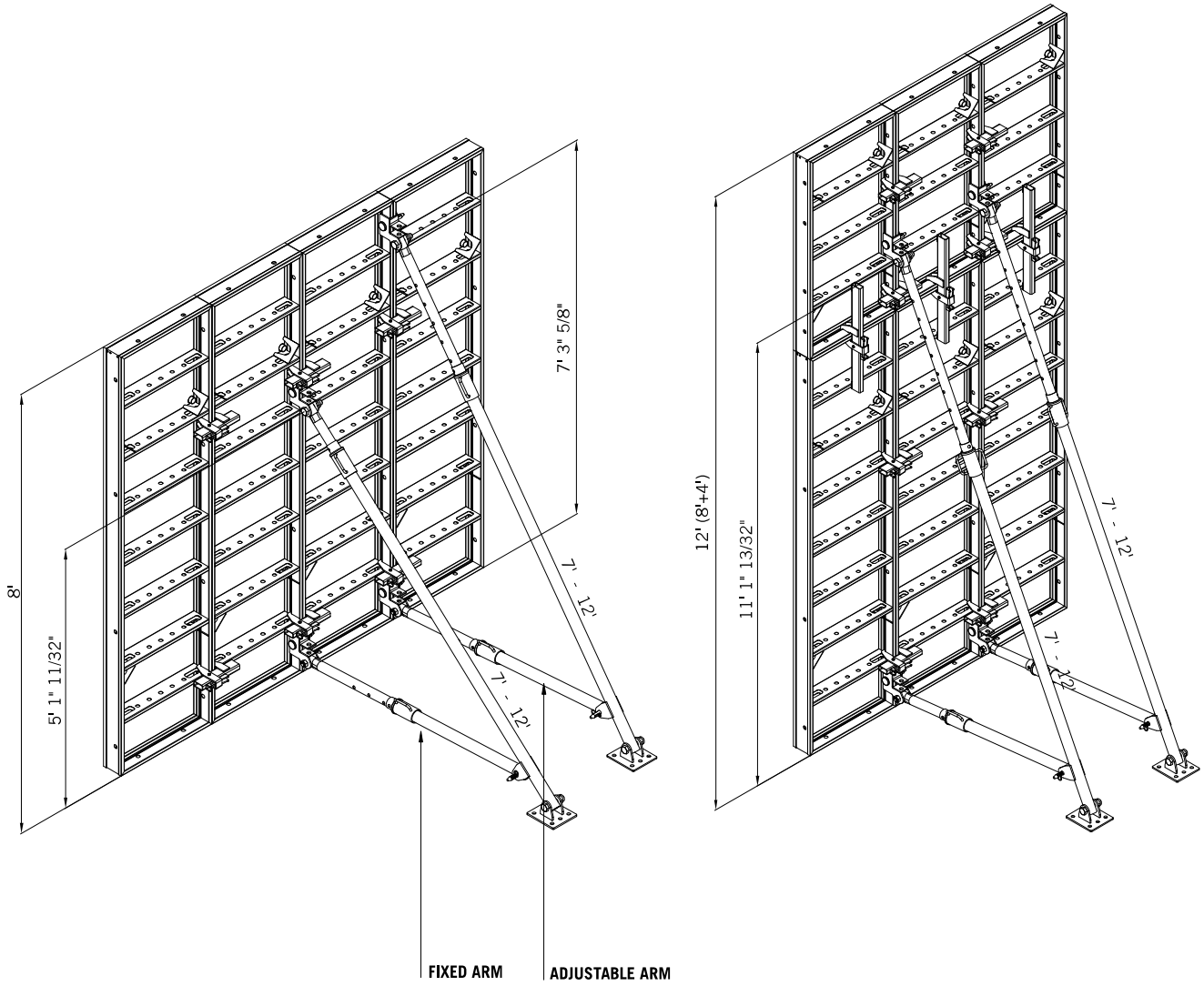
2nd Solution - Working bracket with metal boards



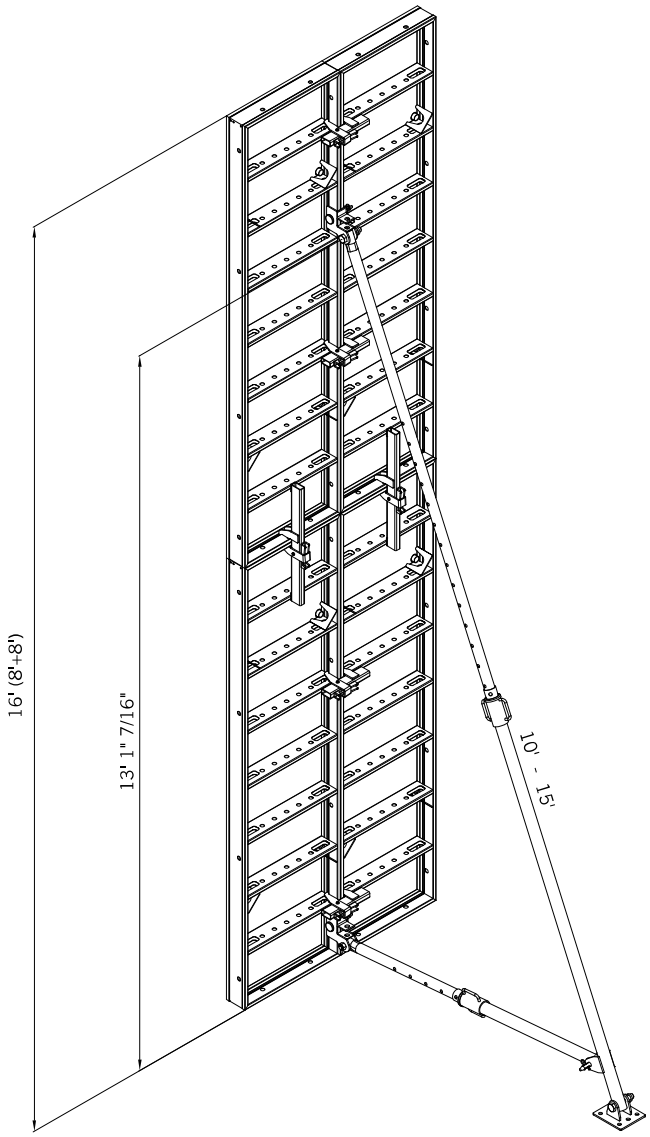
DURA- CLAMP

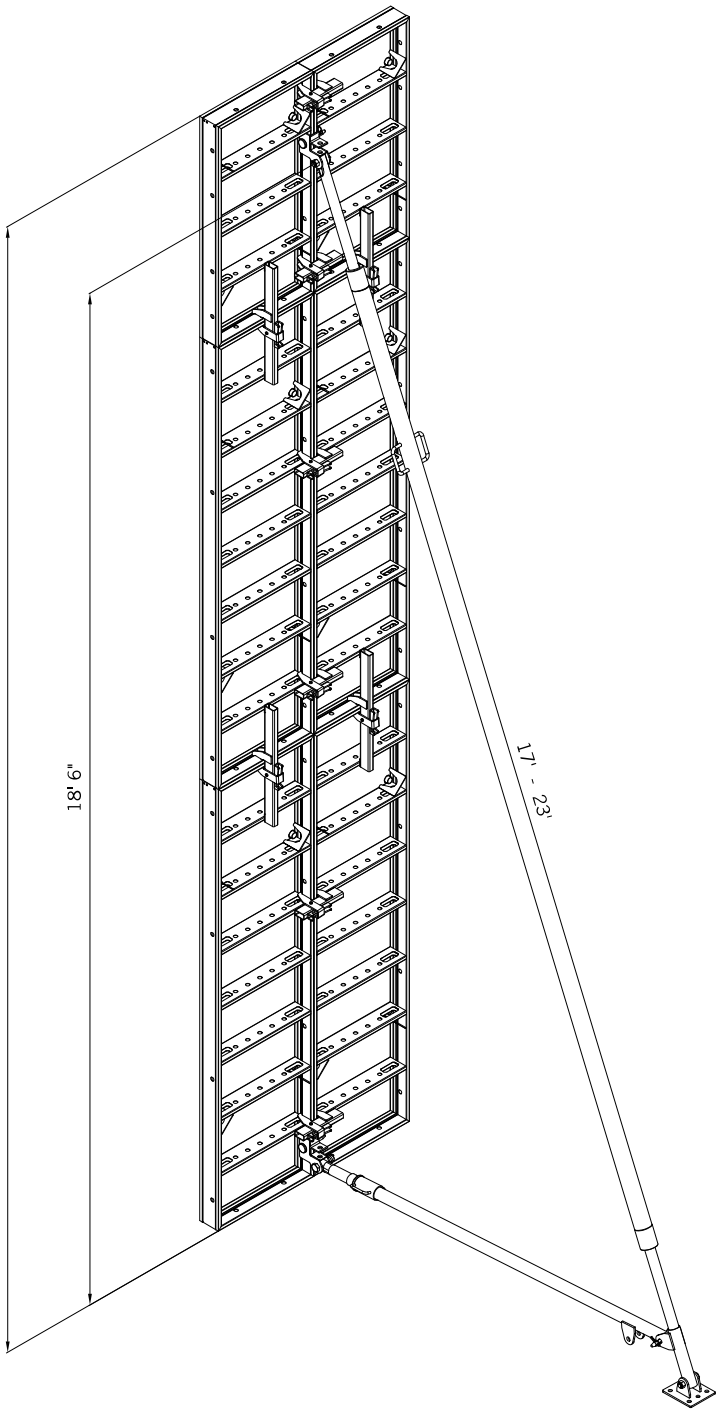
Adjustable props: used to stabilise the formwork





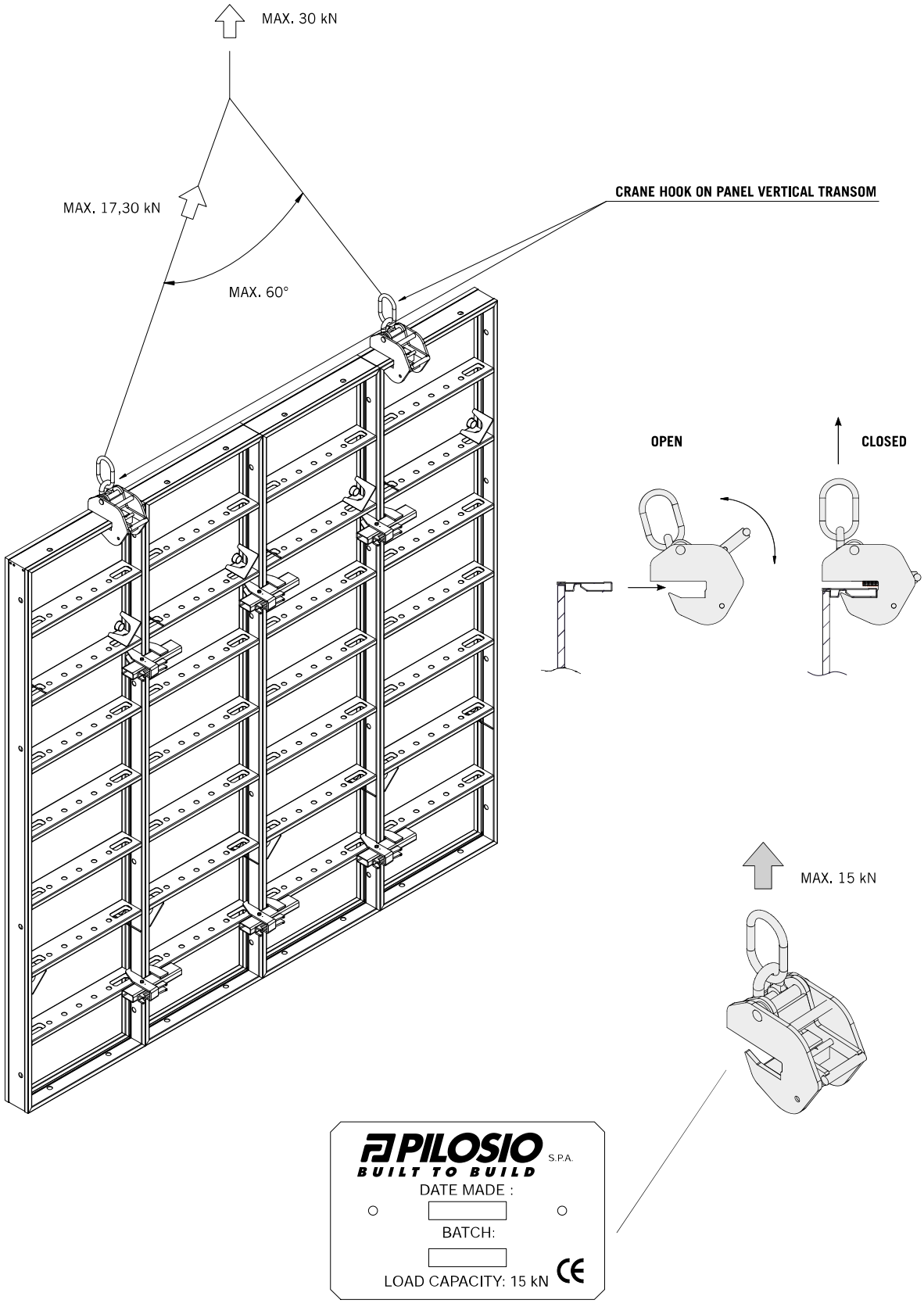
Fittings for formwork





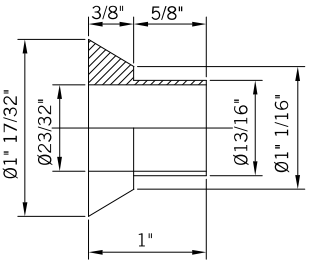
DURA- CLAMP

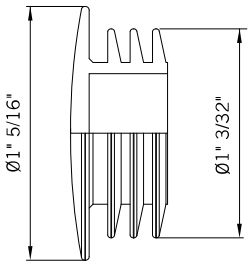
Lifting hook

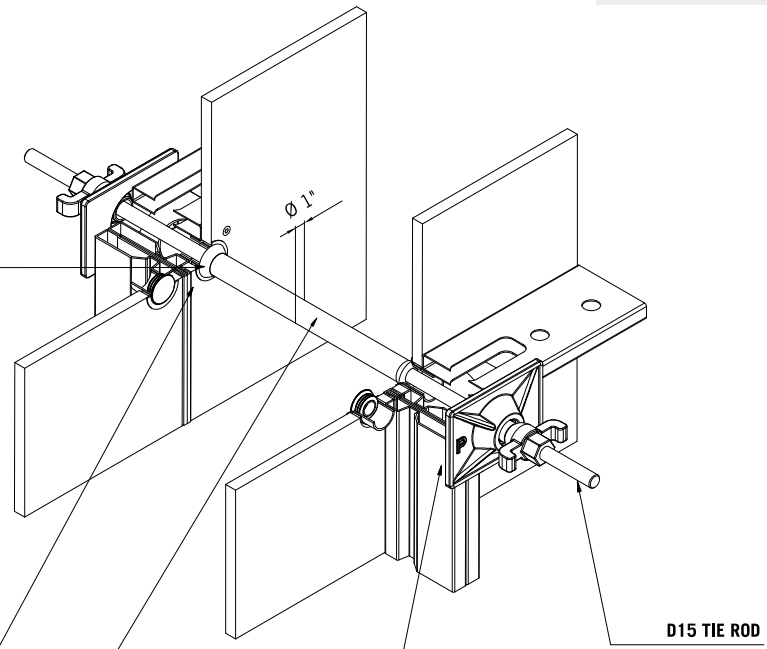


Fittings for formwork

Assembly of tie rod and plastic fittings







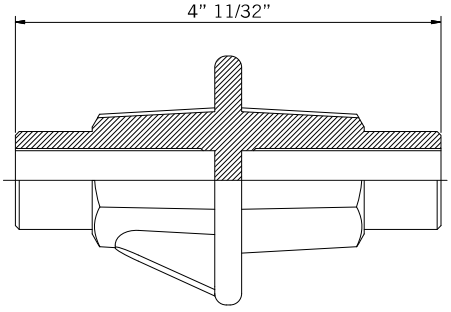
PVC PLASTIC CONE Art. 584101

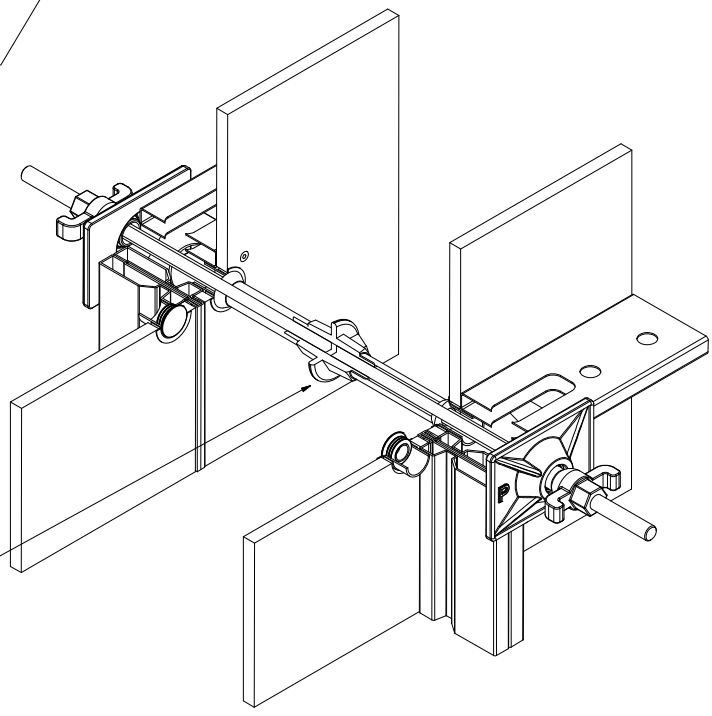
PLUG D24 Art. 584024

PVC SPACER Art. 584201

D15 TIE ROD

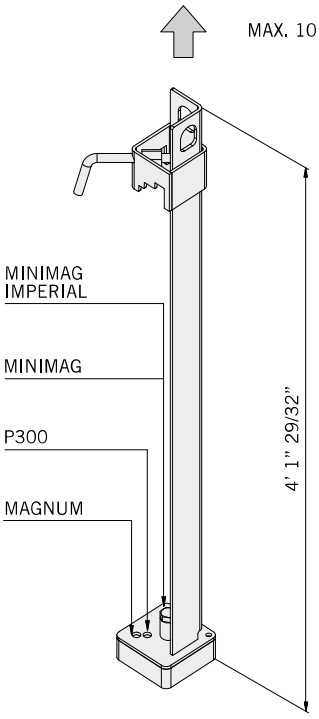
D15 SWIVEL PLATE





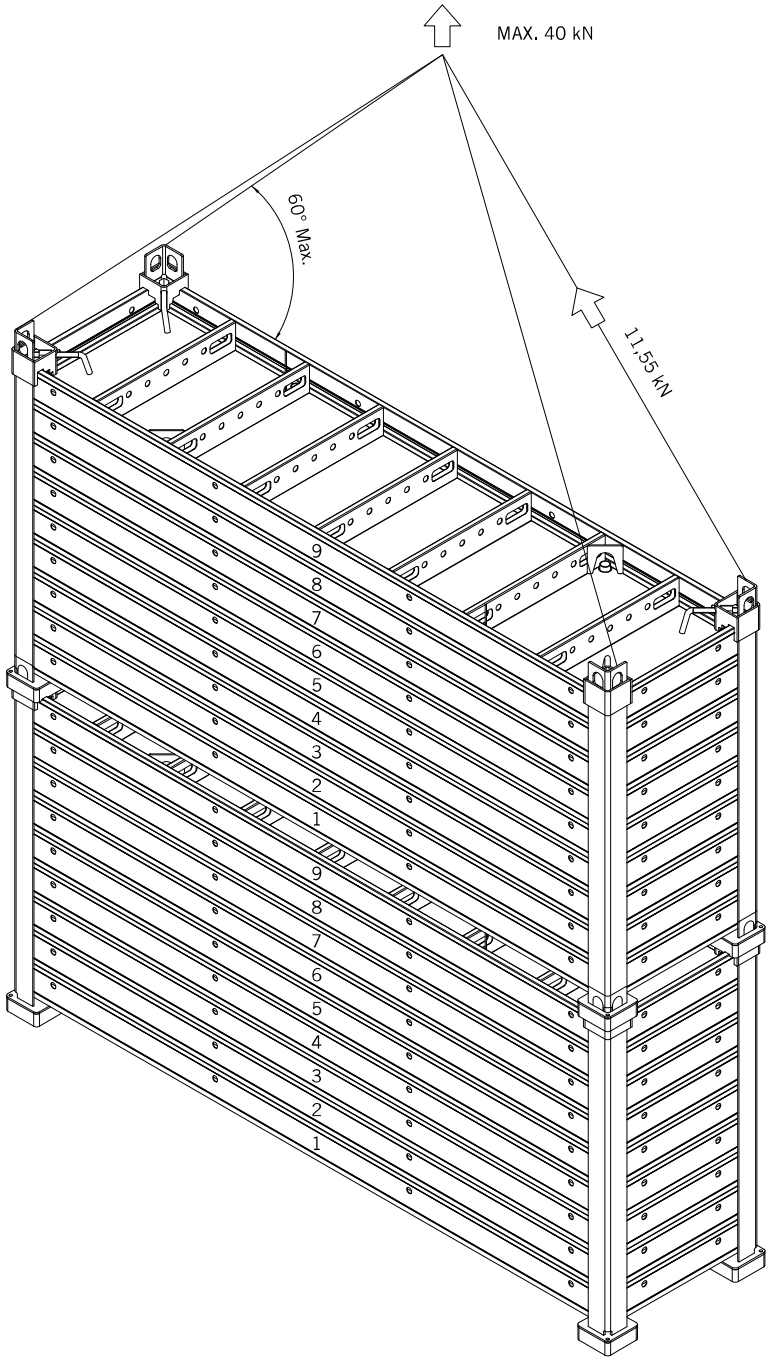
WATER STOP D15 Art. 583940

DURA- CLAMP



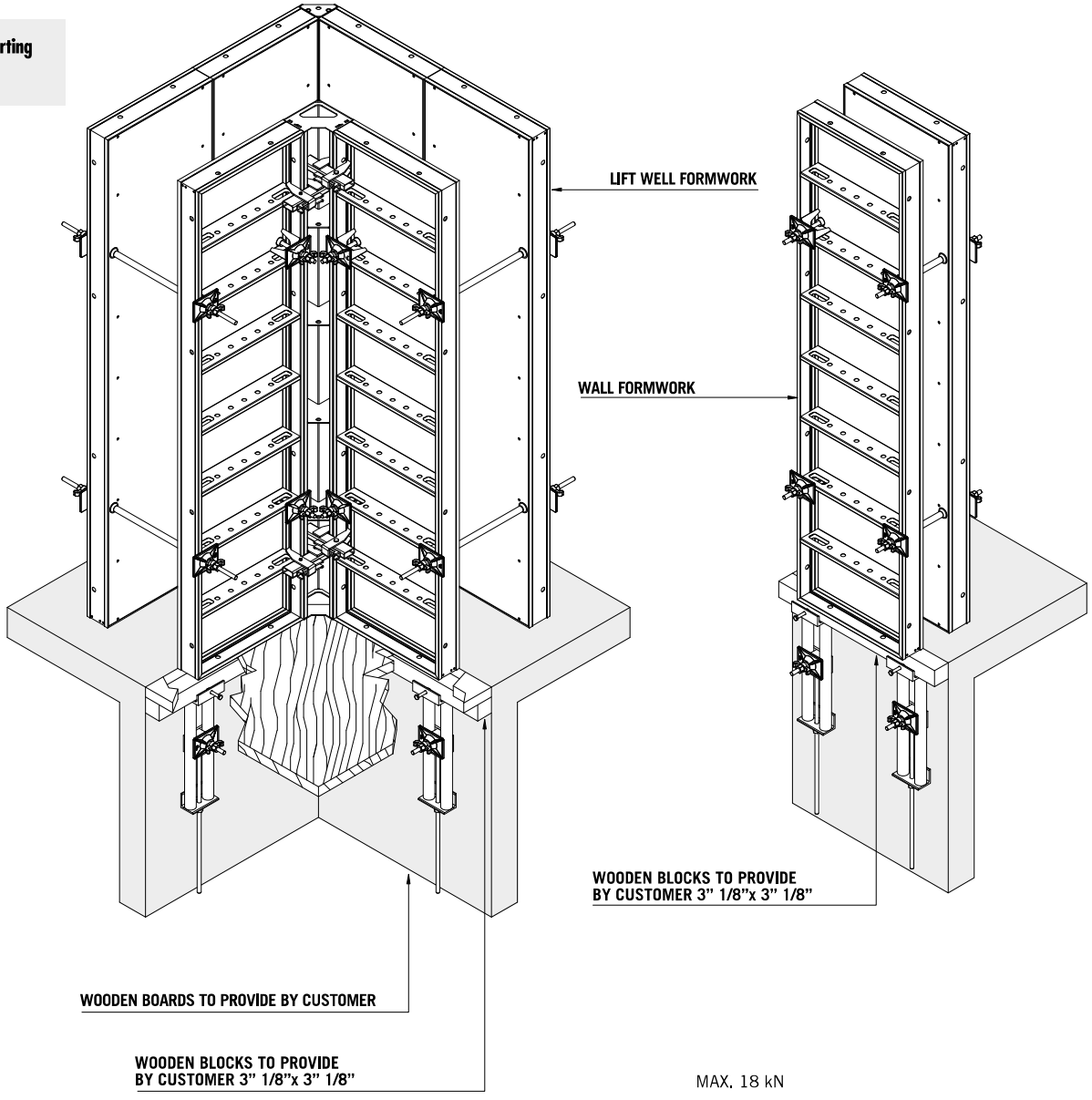
STACKING POSSIBLE FOR FORMWORK WITH WIDTH < = 3' 11" 7/32"

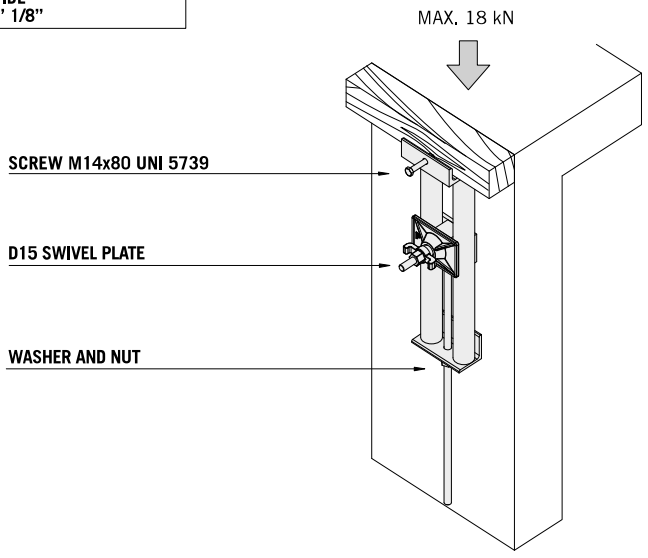
Panels container frame



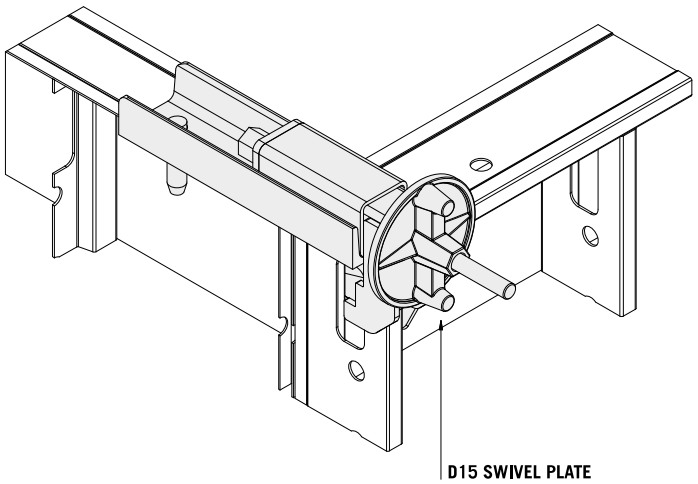
Fittings for formwork

Adjustable supporting anchor

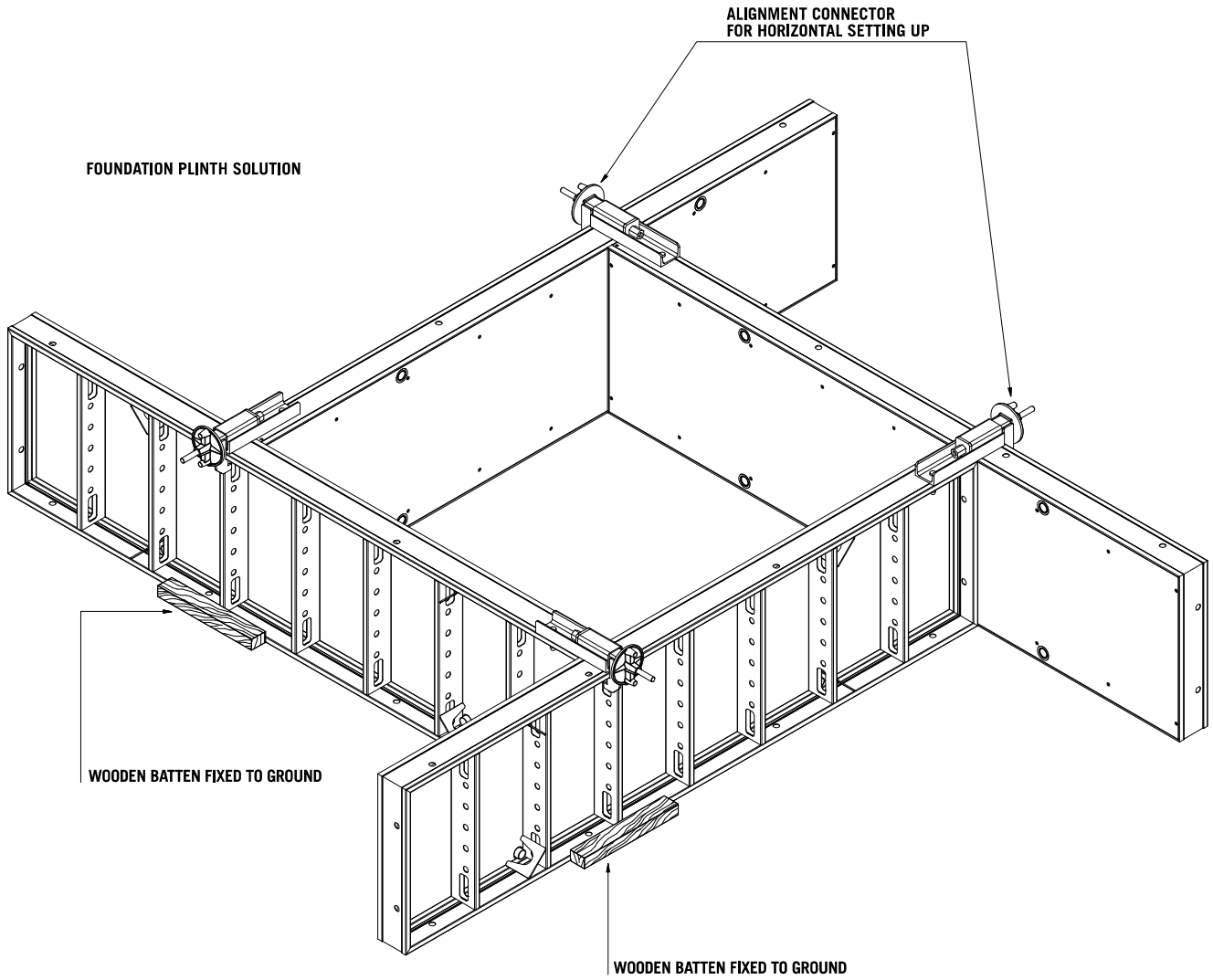




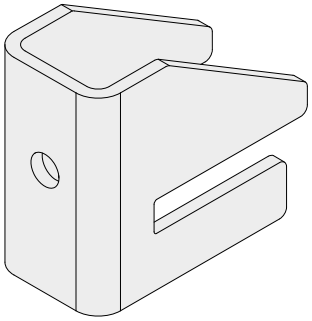
DURA- CLAMP



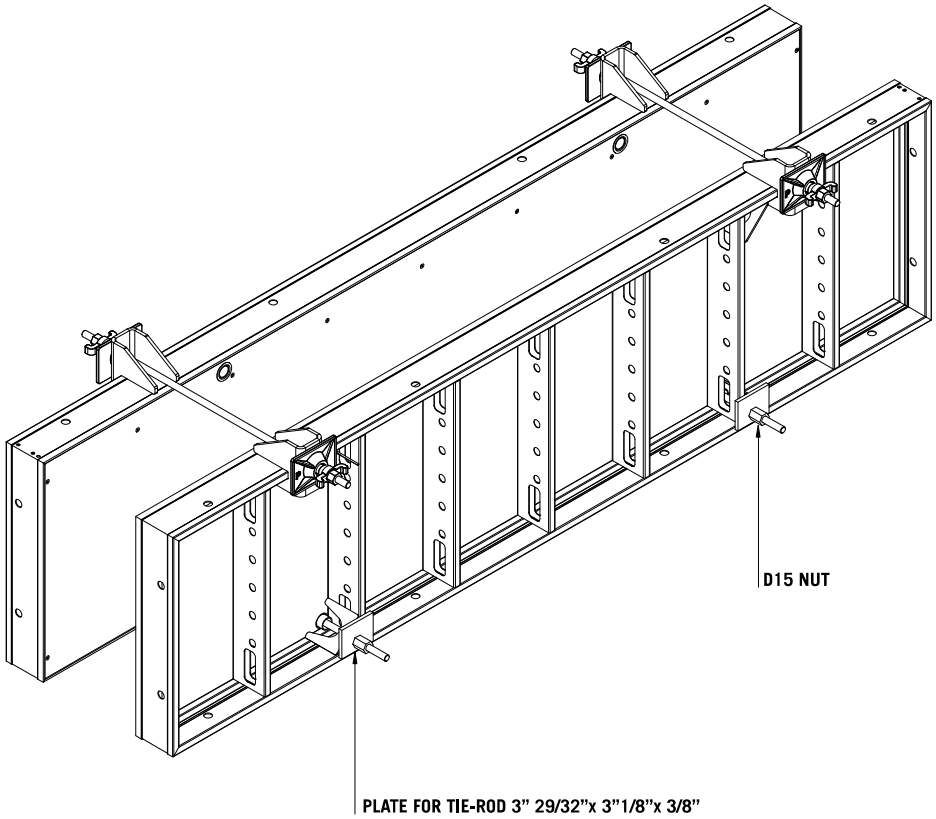
Alignment connector for horizontal setting up



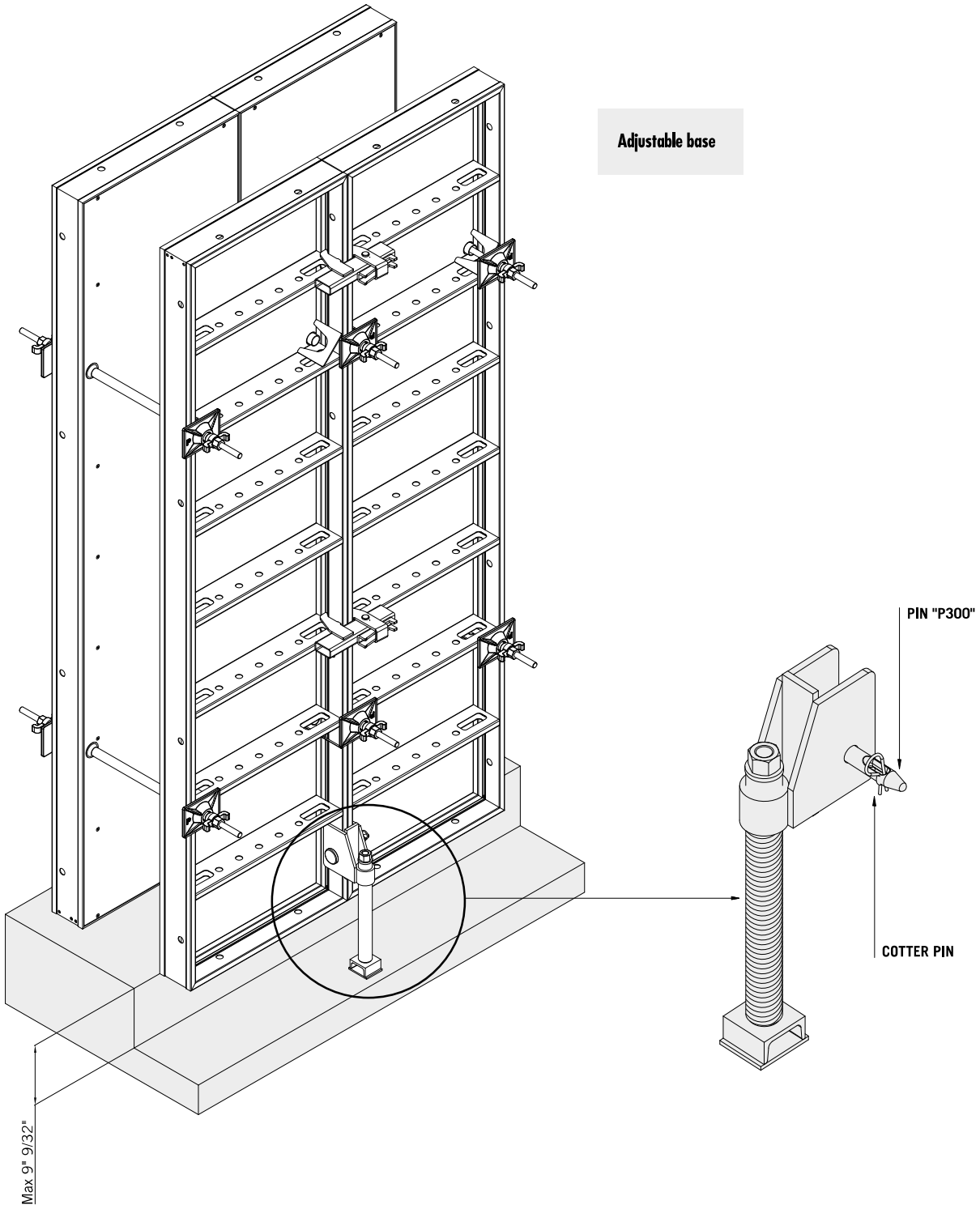
Fittings for formwork



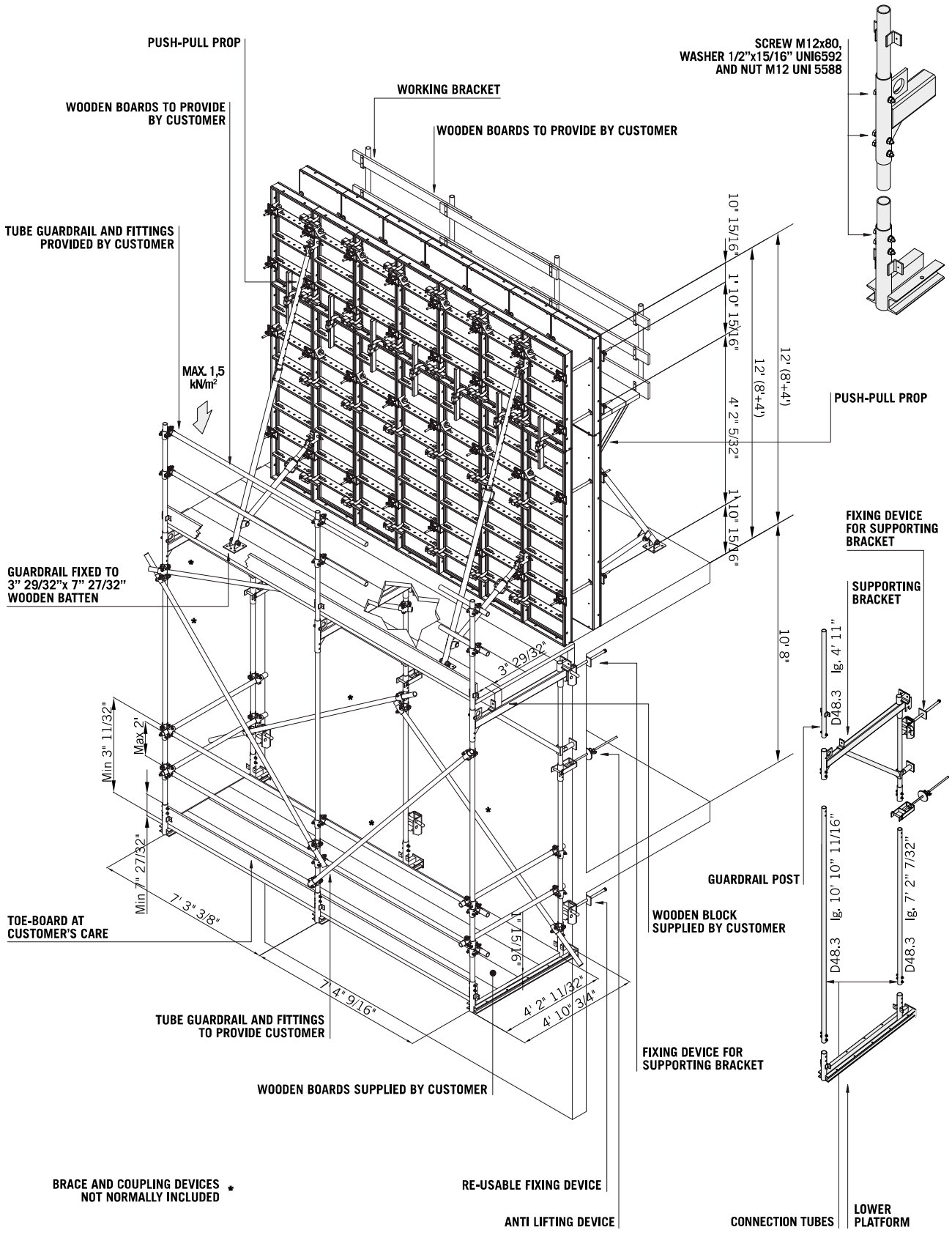
Mobile tie passage



DURA- CLAMP



Climbing supporting bracket



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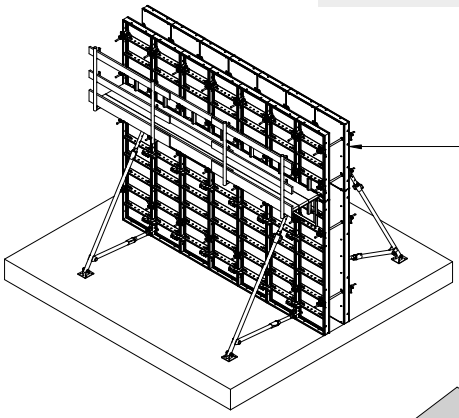
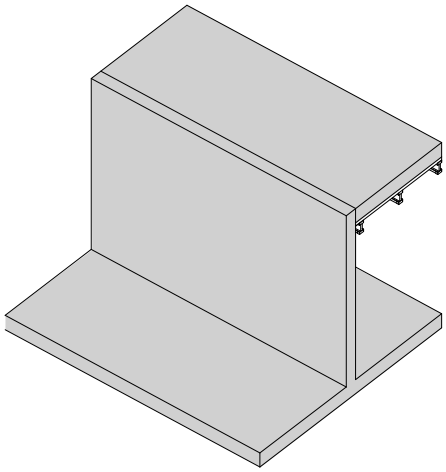
DURA- CLAMP

Phase 1: Casting





Phase 2: Slab casting

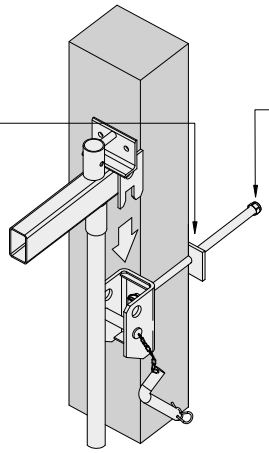
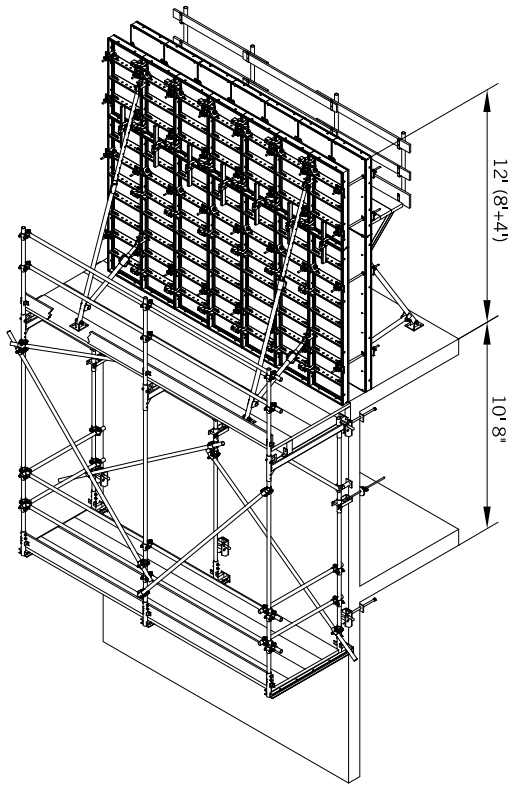


PLATE
3"29/32"x 3"29/32"x3"29/32"

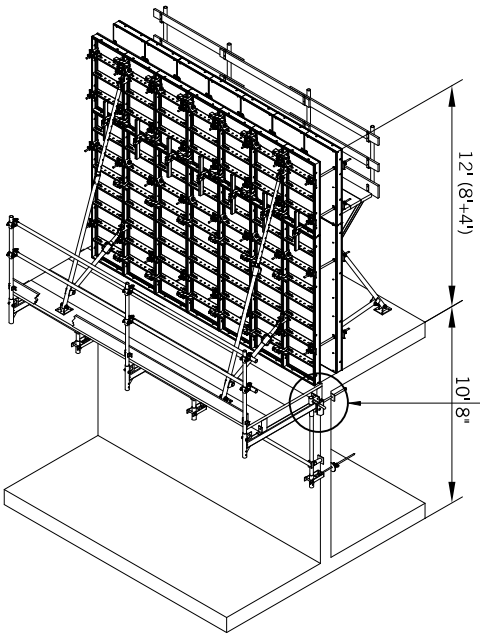
M24 TIE-ROD WITH WELDED NUT

PLASTIC TUBE Ø1"5/32" TO BE FITTED FOR THE TIE-ROD TO FIX THE SUPPORTING BRACKET

Phase 4: Resumption with bracket for lower platform and cast



Phase 3: Resumption with bracket then next cast



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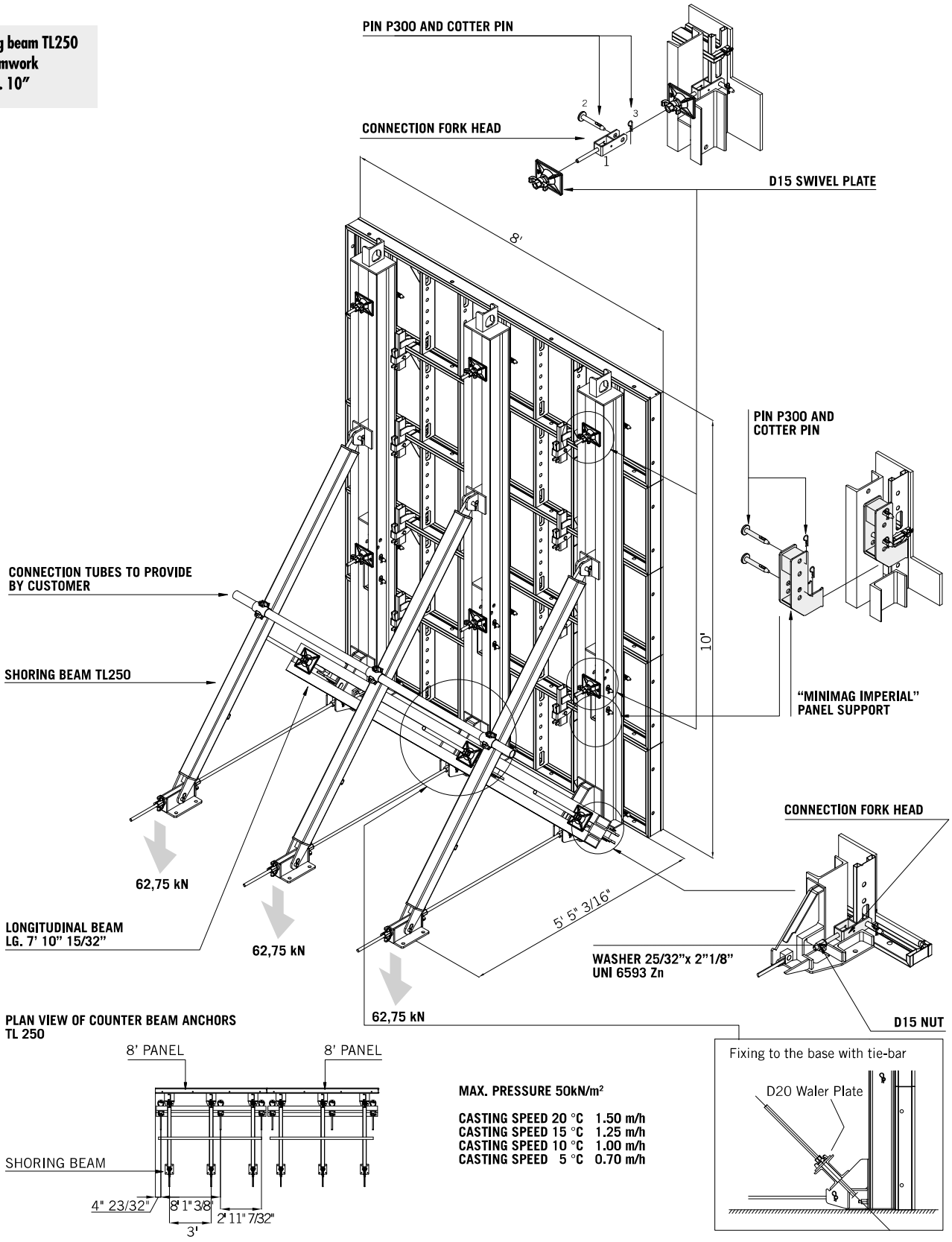
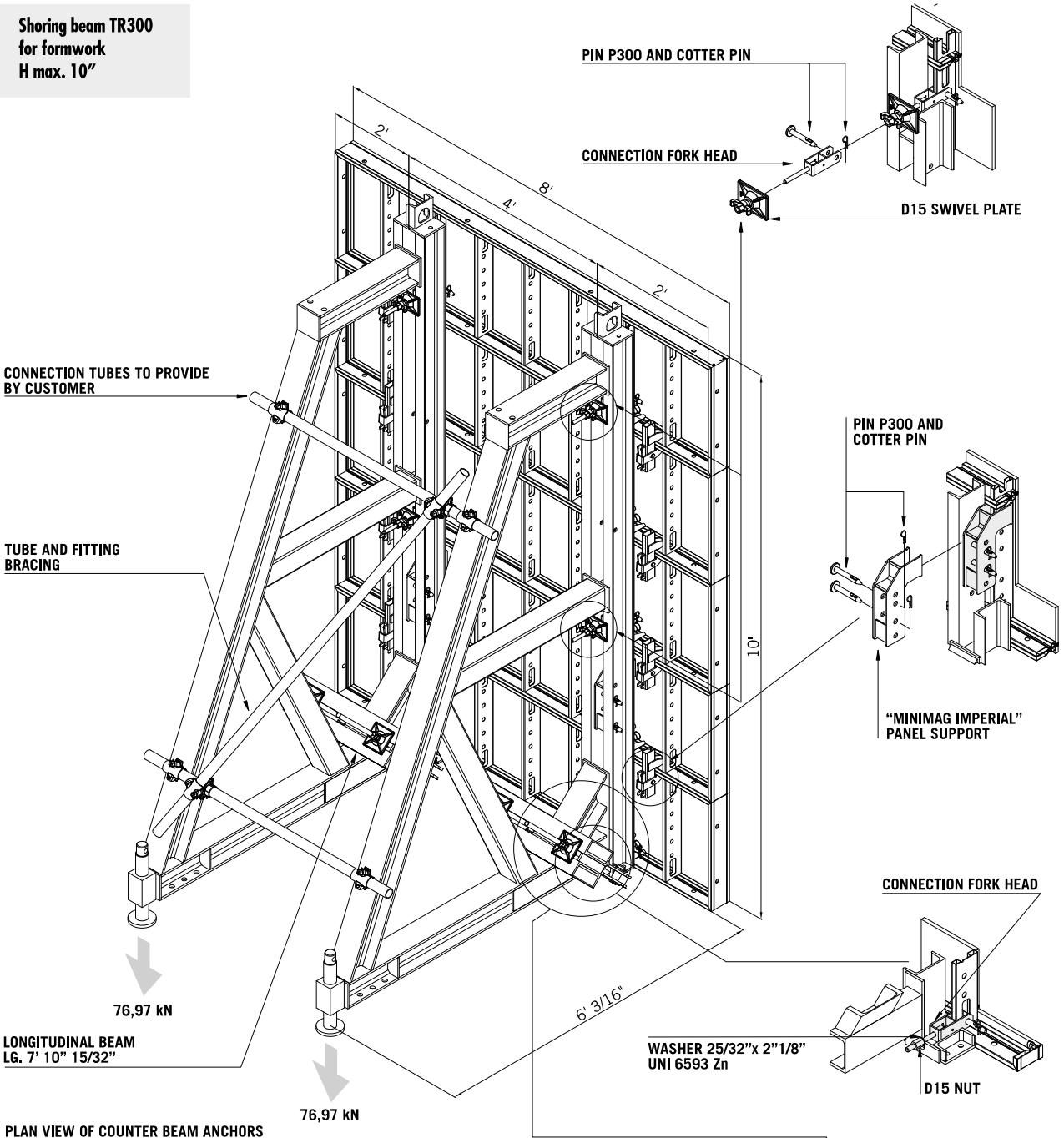
Examples of special applications

Shoring beam TL250 for formwork H max. 10"

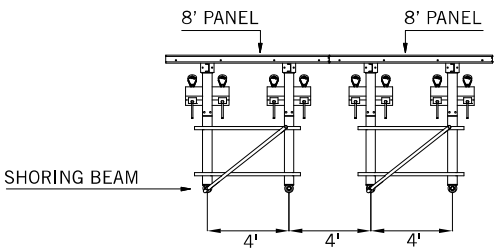


DURA- CLAMP

Shoring beam TR300 for formwork H max. 10"

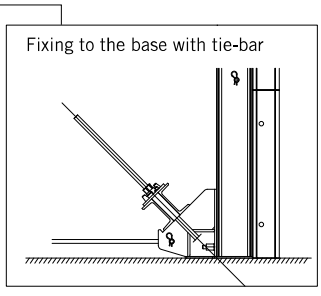


PLAN VIEW OF COUNTER BEAM ANCHORS TR 300



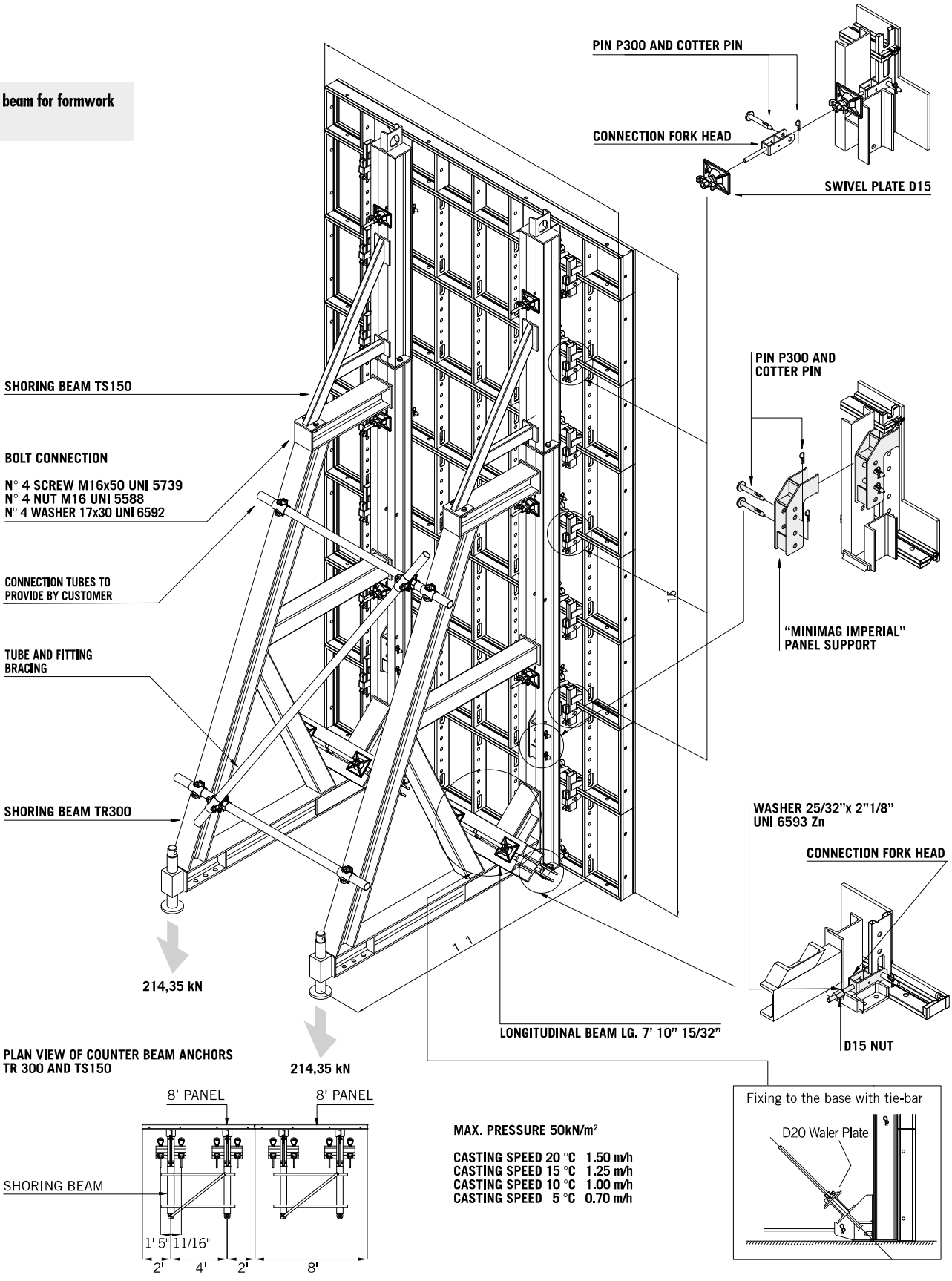
MAX. PRESSURE 50kN/m²

CASTING SPEED 20 °C 1.50 m/h
CASTING SPEED 15 °C 1.25 m/h
CASTING SPEED 10 °C 1.00 m/h
CASTING SPEED 5 °C 0.70 m/h



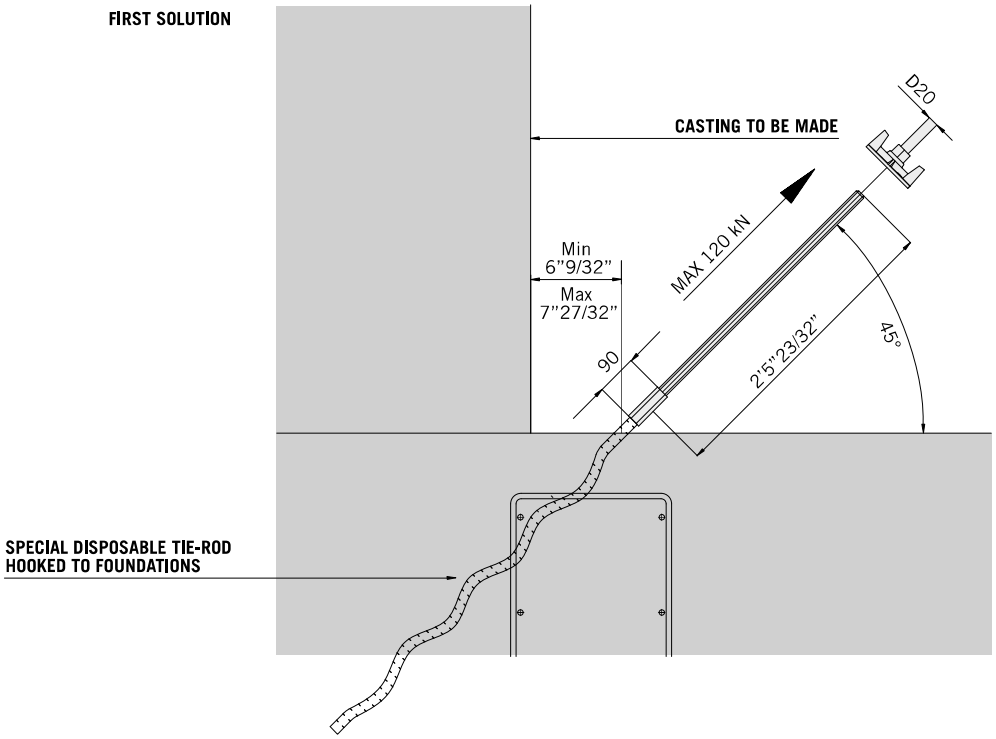
Examples of special applications

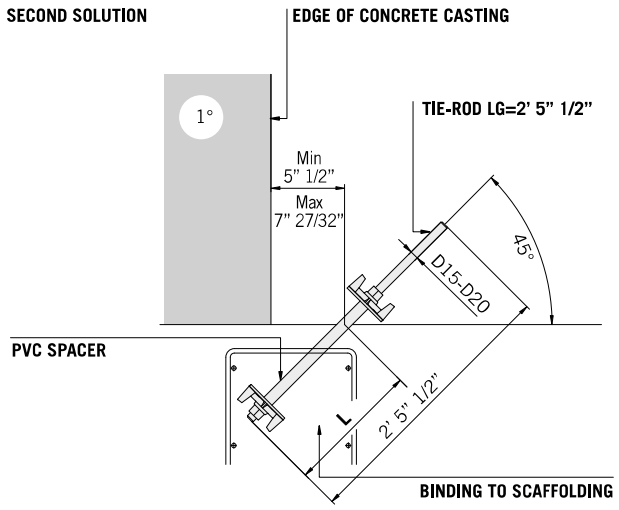
Shoring beam for formwork H 15'

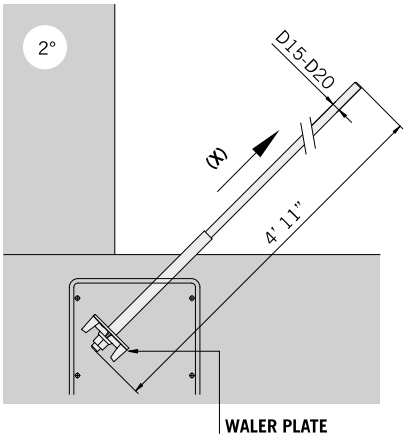


DURA- CLAMP

Shoring beam anchor detail





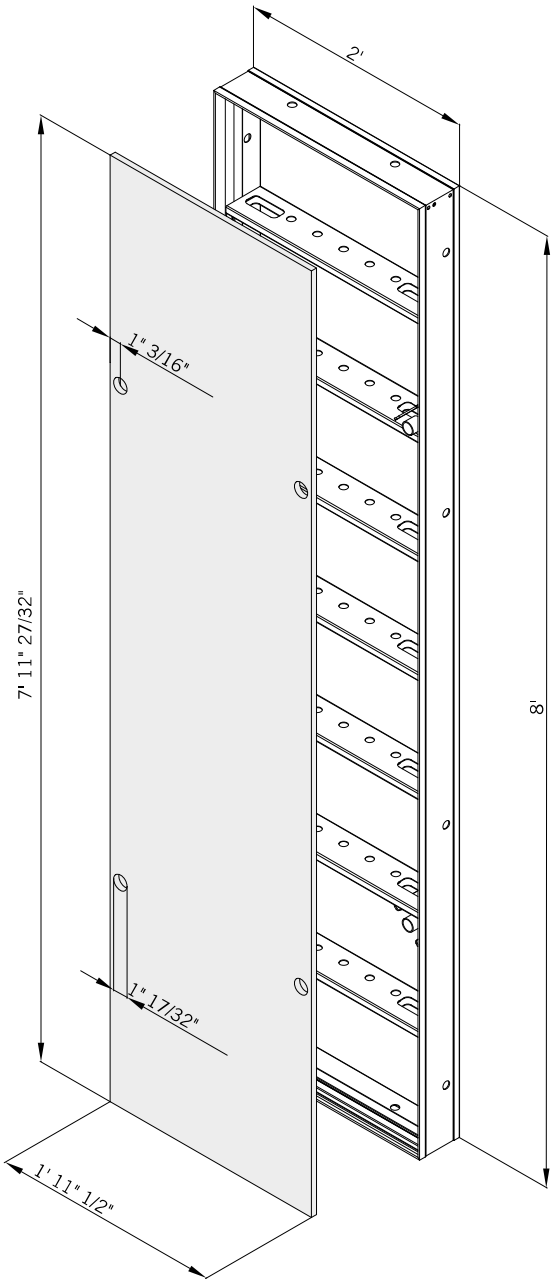


L = LENGTH TO BE DEFINED BY THE CUSTOMER ACCORDING TO THE LOAD INDICATED AND THE REINFORCED CONCRETE CHARACTERISTICS

D15 SWIVEL PLATE (CODE 583905) CAN BE USED FOR (X) UP TO 120 kN

D20 WALER PLATE (CODE 583900) MUST BE USED FOR (X) UP TO 220 kN

Replacement and maintenance of alkus panel

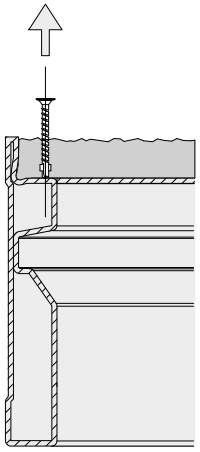


Main features of alkus panel

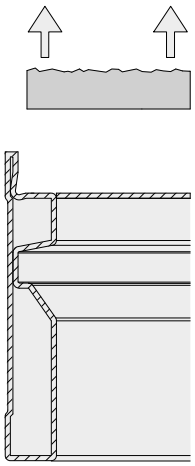
	ALKUS
THICKNESS	9/16"
WEIGHT	12.8 kg/m²
MODULE OF ELASTICITY (3-POINTS) LONGITUDINAL E 21° C (N/mm²) DIAGONAL	2500 1700
SIDE EDGES	PROTECTED WITH PAINT
MOISTURE ABSORPTION (WHOLE PANEL)	NONE
NAIL HOLDING ABILITY	COMPARABLE WITH PLYWOOD SHEETS COATED WITH PHENOLIC RESIN
SCRATCH RESISTANCE (N)	0.7
NUMBER OF RE-USES	100 EACH SIDE
DISMANTLING SOLUTION	INDISPENSABLE
THERMAL CONDUCTIVITY	0.12 W/mK

DURA- CLAMP

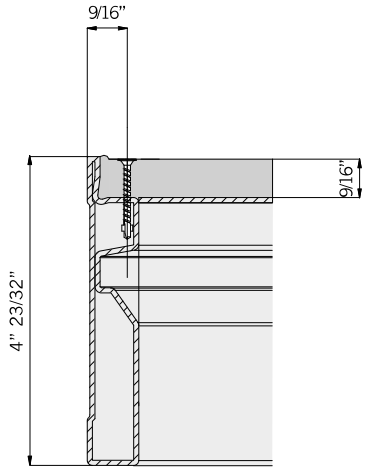
Alkus panel surface replacement



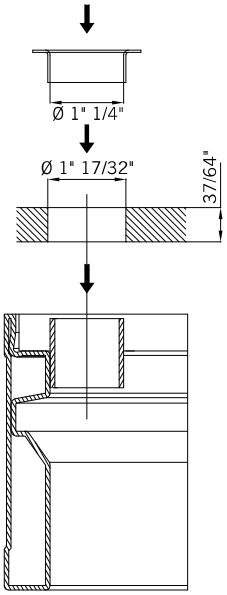
REMOVE THE SCREWS



REMOVE THE USED COUNTER-CASTING PANEL



SECURE THE ALKUS PANEL
WITH THE SCREWS PROVIDED



INSERT THE NEW ALKUS PANEL POSITIONING THE PVC
GUIDE BUSH INTO THE PREVIOUSLY PREPARED HOLES

Replacement and maintenance of alkus panel

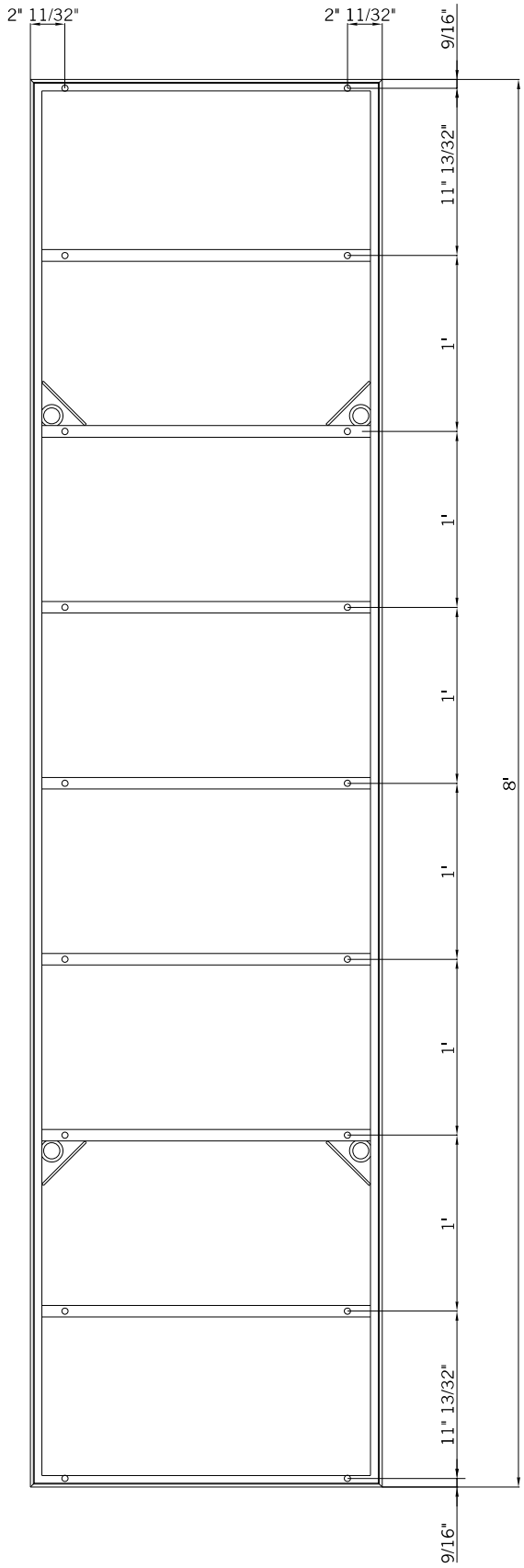
MAINTENANCE INSTRUCTIONS

In addition to the usual maintenance works, consisting of cleaning the formwork and the various fittings and application of dismantling fluid on the counter-casting surface of the alkus, the following instructions must be followed to ensure full maintenance of the frame, brackets and push-pull props.
Small damages, stains peeling etc. of the metallic frame of the formwork, the working brackets and the push-pull props can be repaired with the usual methods. If the damage seems more serious then it is advisable to substitute the parts.

Lifting Accessories
Hooks, lifting pins and equalizers must be replaced even if they are only slightly damaged.

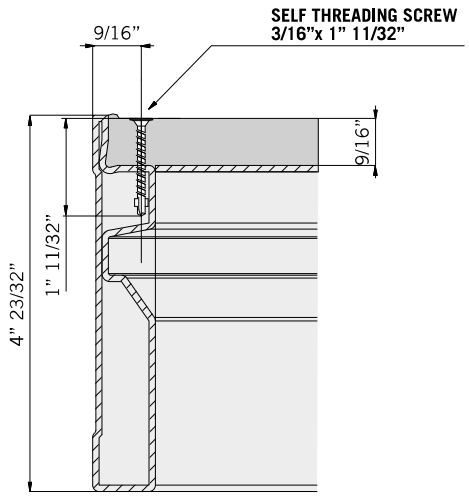
Alkus panel
Minor damage to the alkus, such as holes etc, may be filled. For better results, repair kits are available on the market consisting of alkus disks which are glued to a hole made in the damaged part by using a special tool. If the alkus board is more seriously damaged, or shows signs of swelling due to water absorption, etc, it is advisable to fit a new alkus board.

DURA- CLAMP



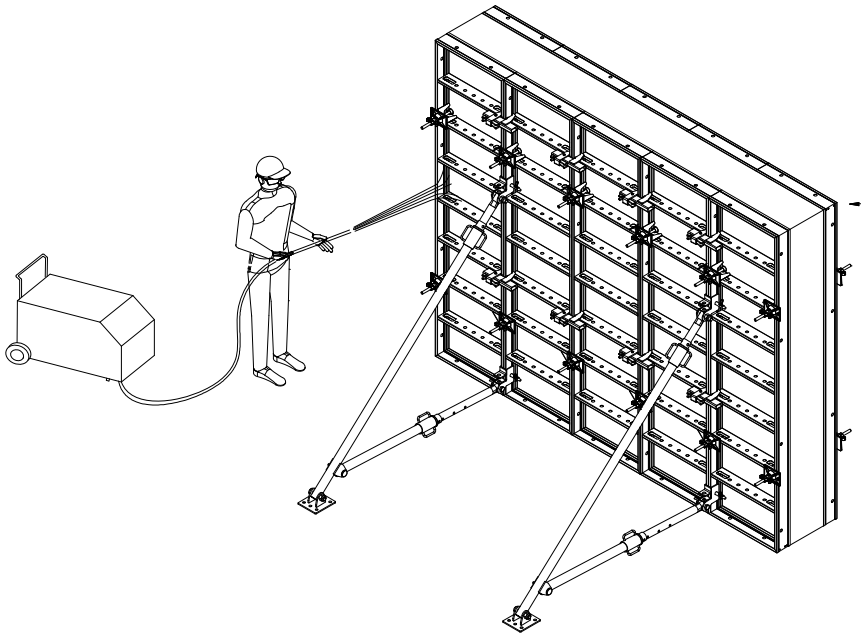
Position of fixing screws on alkus panel

PANELS	BUSH	SCREW
PANELS H=8'	4	18
PANELS H=4'	4	10
PANELS H=2'	4	6

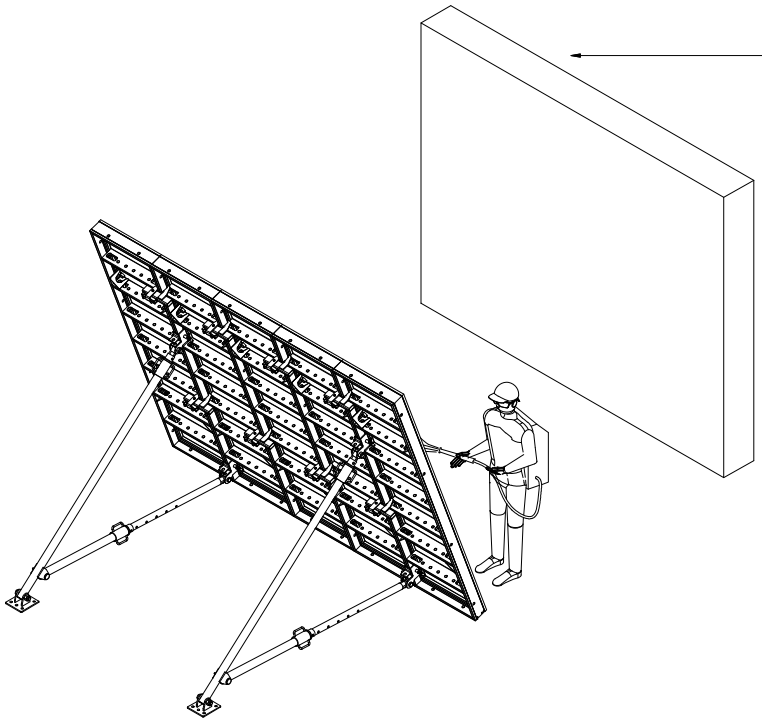


Cleaning of the formwork "MINIMAG IMPERIAL"

We recommend cleaning the formwork before each concrete casting in order to keep it in good working order

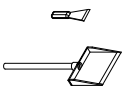


1st AFTER THE CONCRETE CASTING, IF NECESSARY, USE WATER TO REMOVE ANY CONCRETE REMAINING ON THE OUTSIDE OF THE FORMWORK.



2nd IMMEDIATELY AFTER DISMANTLING THE PANELS OR BEFORE THE NEXT CASTING, REMOVE ANY CONCRETE WITH A SCRAPER AND APPLY A THIN LAYER OF DISMANTLING FLUID OVER THE ENTIRE SURFACE.

BRUSH AND SCRAPER



Project data

DURA- CLAMP

Max. allowable concrete pressure on formwork (Rodin)

X

R (m/h)	Hm (m) in funzione di t e R 25°C	20°C	15°C	10°C	5°C	Hm (m)	Pm (daN/m²) CN	CV
0.50	1.22	1.34	**1.50**	1.68	2.02	1.25	2150	2950
1.00	1.55	1.70	1.90	2.15	2.60	1.30	2250	3100
1.50	1.80	2.00	2.25	2.50	3.00	1.35	2325	3225
2.00	2.00	2.20	2.45	2.75	3.35	1.40	2400	3350
2.50	2.15	2.40	2.70	3.05	3.65	1.45	2475	3450
3.00	2.35	2.55	2.85	3.25	3.90	**1.50**	2575	**3550**
3.50	2.45	2.70	3.05	3.45	4.15	1.55	2675	3675
4.00	2.55	2.85	3.15	3.60	4.30	1.60	2750	3800
4.50	2.70	2.95	3.30	3.75	4.50	1.65	2850	3925
5.00	2.80	3.10	3.45	3.90	4.70	1.70	2925	4050
						1.75	3025	4150
						1.80	3100	4275
						1.85	3200	4400
						1.90	3275	4500
						1.95	3350	4625
						2.00	3400	4750
						2.05	3500	4900
						2.10	3600	5000
						2.15	3700	5100
						2.20	3800	5225
						2.25	3900	5350
						2.30	3975	5475
						2.35	4050	5600
						2.40	4125	5700
						2.45	4225	5850
						2.50	4300	5950
						2.55	4400	6075
						2.60	4500	6200
						2.65	4576	6300
						2.70	4650	6400
						2.75	4725	6500
						2.80	4800	6600
						2.85	4900	6750
						2.90	4975	6850
						2.95	5075	7000
						3.00	5125	7100
						3.10	5300	7400
						3.20	5500	7600
						3.30	5675	7800
						3.40	5800	8075
						3.50	6000	8300
						3.60	6200	8500
						3.70	6400	8800
						3.80	6550	9000
						3.90	6700	9250
						4.00	6875	9500
						4.20	7200	10000
						4.40	7550	10500
						4.60	7900	11000

R = (m/h) = ELEVATION SPEED OF CASTING

H = (m) = TOTAL CASTING HEIGHT

Hm = (m) = DEPTH OF MAX. PRESSURE

Pm = (daN/m²) = MAX. PRESSURE

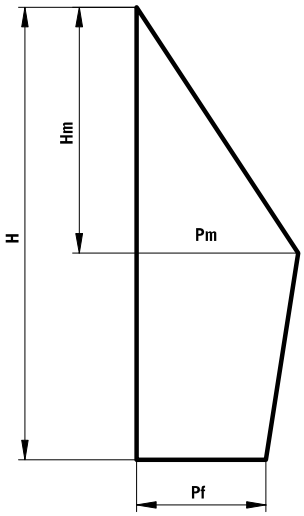
Pf = (daN/m²) = PRESSURE AT THE BOTTOM

t = (°C) = AMBIENT TEMPERATURE

CN = NORMAL CONCRETE

CV = VIBRATED CONCRETE

$$Pf = \frac{3R - (H-Hm)}{3R} \times Pm$$



IN ORDER TO USE THE TABLE, CHOOSE
THE (Pm) OF THE CONCRETE ON THE FORMWORK UNDER COLUMN (CN) OR (CV). THE VALUE (Hm) IS SHOWN ON THE SAME LINE. THE VALUE OF (R) IS THEN FOUND ALONGSIDE BOX (X) WHICH SHOWS THE VALUES OF (t) AND (Hm).
EXAMPLE:
CONSIDERING A (CV) CON (Pm) ON THE FORMWORK OF 3550 kg/m², THE (Hm) VALUE CORRESPONDS TO 1.5 m. WITH (t) = 15°C AND (Hm) = 1.5 m. THE VALUE OF R = 0.5 m/h

	Pm (daN/m2)
MAGNUM	6000
P300	6000
MINIMAG	6000
✳ DURA-CLAMP	6000

DURA-CLAMP
MODULAR FORMWORK

t (°C)	R (m/h)
5°C ------>	0,9 m/h
10°C ------>	1,5 m/h
15°C ------>	2,0 m/h
20°C ------>	2.8 m/h
25°C ------>	3.7 m/h

MAGNUM
DURA-CLAMP
CIRCA FLEX
MODULAR
AL-SPEED

UNISPAN
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PILOSIO
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