DalpHi®

FORMWORK

SAVINGS | ADAPTABILITY | LIGHT WEIGHT

ECONOMICAL ALUMINIUM SLAB FORMWORK

ORIGINE FRANCE® GARANTIE

BV Cert. 6150814

Alphi®
Formwork and solutions

Site: Chambéry hospital maternity ward car park
Client: Bouygues Construction
Location: Chambéry

DalpHi®

The economical, high-performance Dalphi floor formwork system suits all types of buildings: offices, housing residential care homes, correction facilities, etc.

It can be installed at a productivity rate of 25 m^2/person/day.

Its aluminium components make it one of the **most lightweight formwork systems on the market.**

The drop-head integrated in the prop (patented by Alphi) ensures **safe removal.**

BV Cert. 6150814

PRODUCTIVITY

Installation
25 m²/person/day.

Quick equipment turnarounds
Small quantity of equipment used thanks to quick turnarounds.

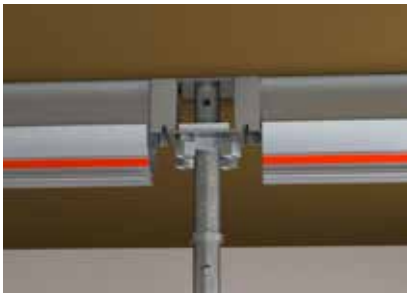
Easy removal
The drop-head for fast removal integrated in the technical support (Alphi patented system) keeps the slab supported during formwork removal.

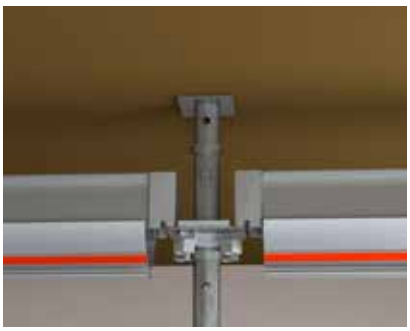
Easier identification
The beams are colour-coded, in compliance with the layout drawings drafted by the Alphi design office.

Hand-portable
The simple components in the Dalphi system make it possible to work independently, with no need for a crane. This leaves the crane available for other tasks.

LIGHTWEIGHT, HAND-PORTABLE EQUIPMENT

The integrated drop-head for fast removal enables a quicker turnaround of the aluminium structure





The drop-head integrated in the prop allows fast formwork removal without releasing pressure on the slab

ADAPTABILITY

Wide choice of lengths

The beam size is chosen to suit the needs of each project.
4 primary beam lengths and 3 secondary beam lengths are available.

Flexible use

- "Primary on primary" assembly allows the Dalphi system to adapt to the exact dimensions of the cells.
- Beams can also be fitted on shoring towers.

ALL DALPHI COMPONENTS HAVE BEEN TESTED BY THE **INDEPENDENT LABORATORY LOCIE AT THE UNIVERSITY OF SAVOIE MONT BLANC**.

UNIVERSITÉ SAVOIE MONT BLANC

QUALITY

Cast concrete thickness of up to 1.23 m

Regulations

The beams are designed in compliance with the formwork standard NF P 93-322.

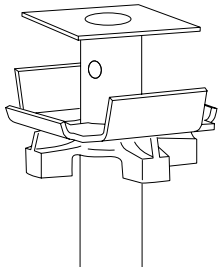
Theft protection

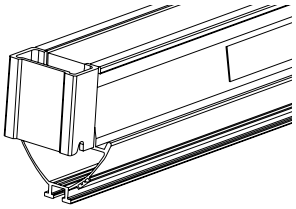
The chemical process developed by Alphi prevents fraudulent aluminium beam recycling.

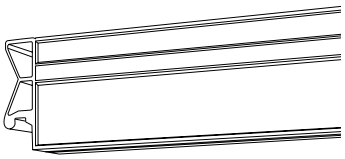
Protection identifiable by red insert

THEFT PROTECTION: **PROTECTED ALUMINIUM**

3 SIMPLE COMPONENTS

1 Technical supports	Technical support (ST) with integrated drop-head	Name	Colour	Height (cm)	Unit weight (kg)	Description
		ST1		197-300	18.50	▪ Integrated drop-head for fast removal (patented system) ▪ Base web ▪ Hot-dip galvanized ▪ Cast iron sleeve
		ST2		221-350	20.50	
		ST3		250-400	23.50	

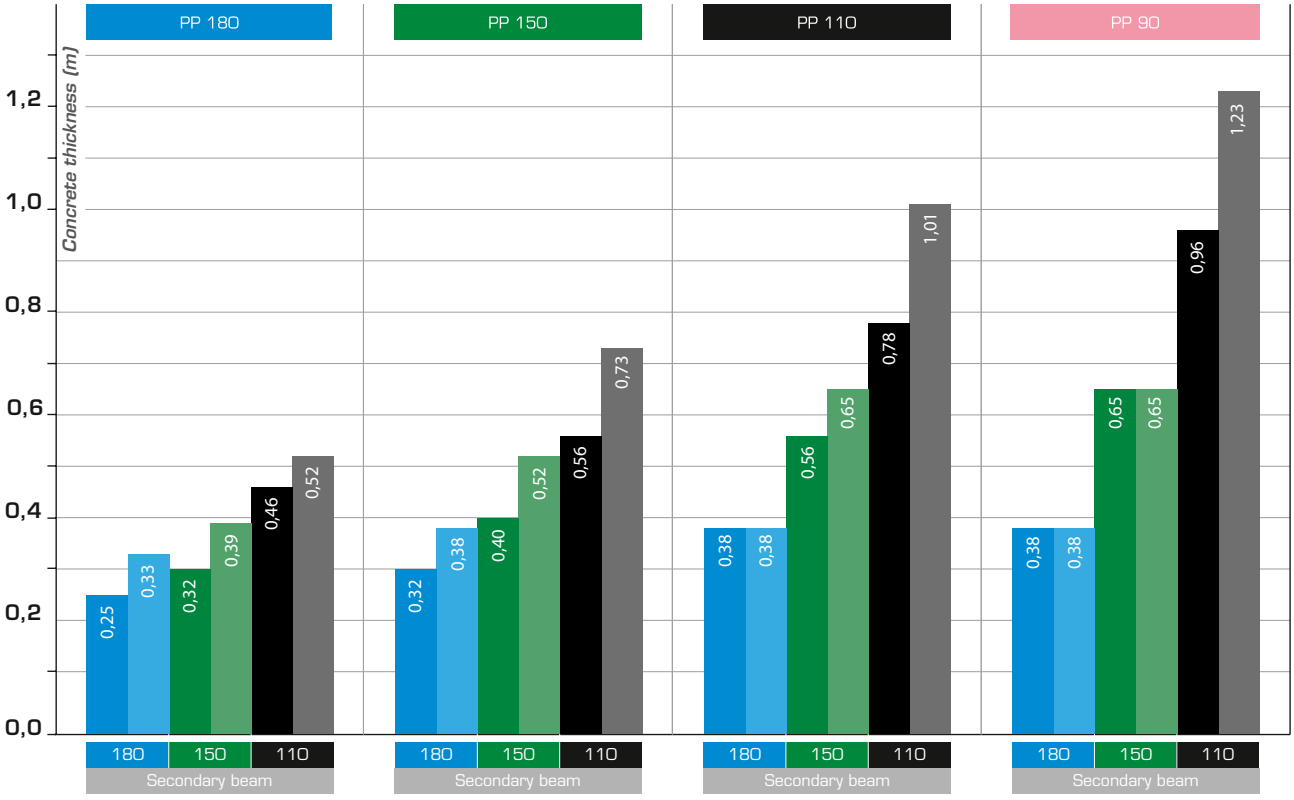
2 Primary	Primary beam	Name	Colour	Length (cm)	Unit weight (kg)	Description
		PP 90		90	5.40	▪ Theft protection ▪ Can be mounted in a drawer ▪ 30 mm timber inserts, for nailing on plywood using 40 mm nails
		PP 110		110	6.60	
		PP 150		150	9.00	
		PP 180		180	10.80	

3 Secondary	Secondary beam	Name	Colour	Length (cm)	Unit weight (kg)	Description
		PS 110		110	3.00	▪ Theft protection ▪ Timer inserts for nailing on plywood using 40 mm nails ▪ Compatible with other formwork solutions
		PS 150		150	4.10	
		PS 180		180	4.90	

USE CALCULATION CHARTS

Beams

According to the thickness of the floor to be cast, with a centre distance of up to 45 cm between the secondary beams, to observe a deflection of L/400.



Load on prop less than 32 kN

Load on prop greater than 32 kN (zone requiring specific study by Alphi design office)

PP Primary beam

PS Secondary beam

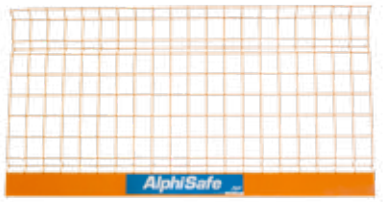
ST technical supports with integrated drop-head

Name	Colour	Height (cm)	Weight (kg)	*Shored height (m)* / Working load (kN)																						
		min-max		*1.9*	*2.0*	*2.1*	*2.2*	*2.3*	*2.4*	*2.5*	*2.6*	*2.7*	*2.8*	*2.9*	*3.0*	*3.1*	*3.2*	*3.3*	*3.4*	*3.5*	*3.6*	*3.7*	*3.8*	*3.9*	*4.0*
ST1		197-300	18.5	40	39	38	37	36	35	35	34	33	33	32	32										
ST2		221-350	20.5				40	39	39	38	37	36	36	35	35	34	34	33	32	32					
ST3		250-400	23.5							40	39	39	38	37	37	36	35	34	34	33	33	33	32	32	32

Hot-dip galvanized - Sleeve or nut colour coding - As per Eurocode safety coefficients 0 and 3.

DALPHI ACCESSORIES

Safety

Mesh*	Dimensions w x h (m)	Weight (kg)	Description
	1.25 x 1.30	7.60	▪ The wire mesh is galvanized, with polyester powder coating
	2.40 x 1.30	13.90	
	2.50 x 1.30	14.50	

Galvanized post*	Cross-section (cm^2)	Height (m)	Weight (kg)
	3.5 x 3.5	1.34	3.50

Alphi formwork adapters*		Weight (kg) Primary adapter	Weight (kg) Prop adapter
Primary adapter	Prop adapter		
		2.30	2.10

*Compliant with EN 13374 standard

Additional

Electrogalvanized insulated head	Bores (mm)	Height (cm)	Unit weight (kg)	Maximum allowable load (kN)
	4 x Ø12 x 80	33	3.80	40

Bracket	Non-tilt safety fork (FSAB)	Unit weight bracket (kg)	Maximum allowable load (kN)	Unit weight FSAB (kg)	Tube diameter (mm)	Description
		1.05	3.5	1.15	35	▪ Bracket: butterfly fastening nut ▪ FSAB: hammer head screw

Leborgne tools

Nanovib® range	Leborgne product characteristics
	▪ Tools suitable for fitting and removing Alphi formwork: hammers, hammer holder, prop key ▪ Vibration and noise reduction Alphi distributes LEBORGNE Click **here** to view details of Leborgne Tools

Handling

Rack	Ranges
	▪ Vertical storage rack ▪ Galvanized rack on wheels ▪ Galvanized handling rack Click **here** to view details of racks
TransEtais Housing	**Description**
	▪ Easier prop handling ▪ Makes it possible to pass through door openings Click **here** to view details of TransEtais Housing

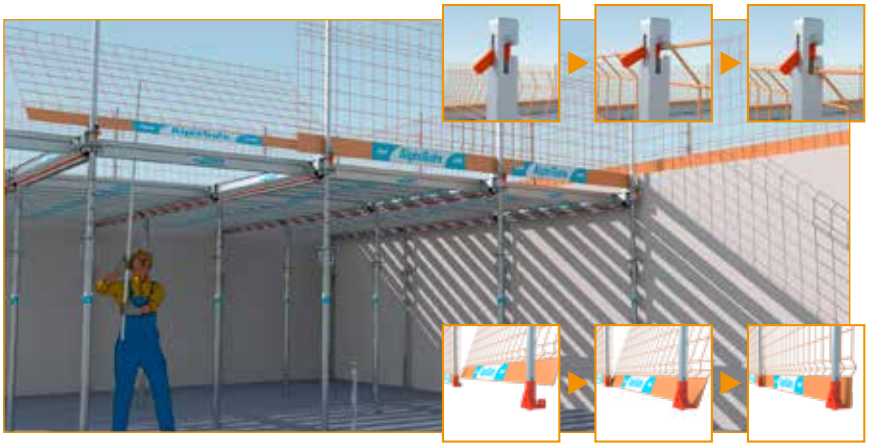
DALPHI ACCESSORIES

Aids for use

Plywood cutting support	Dimensions W x L x H (m)	Description
	140 x 2.06 x 86	▪ For sale only ▪ Circular saw kit and electrical extension available as an option
Rolling safety ladder	**Working height (m)**	**Description**
	2.5 to 4.33	▪ For sale only

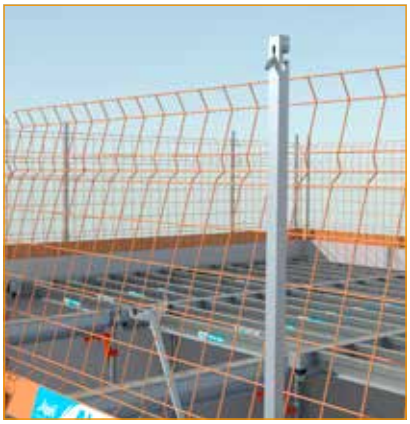
ALPHISAFE COLLECTIVE PROTECTION

AlphiSafe is a collective protection system for formwork and slab edges.
The technical innovations in the system allow **safe installation** and **automatic locking**.
Robust AlphiSafe is certified by Ginger CEBTP, **as per the EN 13374 standard of July 2013**, as class A and B for some components.
AlphiSafe is distinguished by its **height of 1.30 m,** which is above the minimum height of 1.00 m set by the standard, and protects traditional slab formwork up to 30 cm thick.



The mesh is locked at the top by the anti-lifting pin and locked in rotation at the base.

Installation of AlphiSafe safety system in cantilever configuration



Installation of AlphiSafe safety system on technical support (progressive fitting)

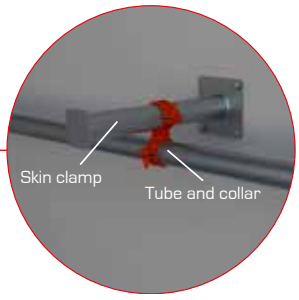
CLAMPING

Depending on the configuration, stabilisation may be recommended.
Contact our Design Office to validate the solution. The different systems are featured below.

Skin clamp

- Skin clamp + tube system.

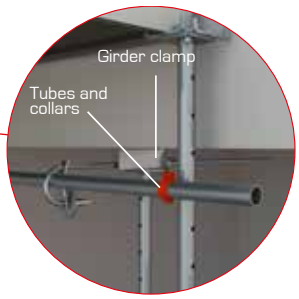
- Set up the stabilisation of the first components. Once stabilised, the tripods can be removed.



Girder clamp

- Girder clamp + tube system.

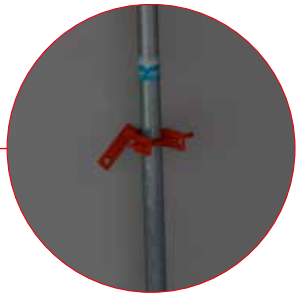
- Set up the stabilisation of the first components. Once stabilised, the tripods can be removed.



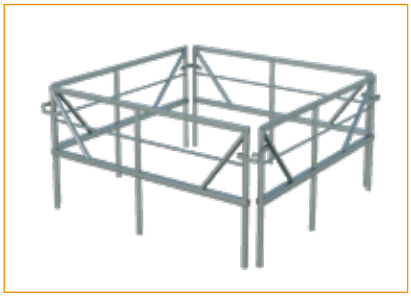
Prop clamp

- Prop clamp to be driven into the wall with concrete screws.

- This clamp can be fitted before or after positioning the prop.



Prop frame



- The prop frame can be used to join 4 props with a rigid connection.

- Position the 4 props as desired then fasten the prop frame.

WARNING

- To use our products safely, please observe the regulations in force in each country.
- The elements and set-ups presented in this brochure match the characteristics of the equipment on the date of publication of the document. There might have been some changes since then.
- The use of our systems in combination with systems from other manufacturers may involve some risk, and would require special inspection.
- Before starting to set up, remember to secure the area.

Click **here** or scan the QR code to view the video of the procedure.

PREPARATORY STAGE


Do not place the props against the wall

Caution: it is essential to lock the head

N.B.: even if they are not always shown in the image, Dalphi is to be installed by 2 form fitters.

- Reception of equipment on the worksite: check quantities and validate delivery note.
- Precise distribution of the equipment according to the first phases of formwork defined by the layout drawing.
- Adjustment of prop height and positioning of formwork heads in formed position: locking with hammer.

USER GUIDE: FORMWORK

- Starting from one corner of the room, mount one primary beam on 2 technical supports (ST) stabilised by tripods.
- Start mounting a secondary beam on a third ST.
- Store the plywood panels on the floor or in wheeled racks.
- Use a rolling safety ladder in compliance with the regulations.

Caution: engage the primary beams on the large bushings of the technical support.

- Place a second primary beam on another ST.

➔ Refer to calculation chart.

- Finish setting up the secondary beams.
- Do not leave gaps greater than 39 cm.
- Use a template to ensure compliance with 39 cm spacing.

➔ Observe the layout plan.

- Set up another primary beam on ST.

- Move the secondary beams forwards from one to the next.

- Finish setting up the secondary beams.

- Set up another secondary beam on ST.

- Set up another primary beam on ST.

USER GUIDE: FORMWORK

- Move the secondary beams forwards from one to the next.

- Set up another primary beam on ST.

- Move the secondary beams forwards from one to the next, keeping a gap of 39 cm.

- Finish setting up the secondary beams.

USER GUIDE: FORMWORK, FINISHING & CASTING

13

- Adjust the level using a laser level, ST by ST.
- A gauge stick hanging from the formwork allows laser adjustment to be performed by one person.

Conduct a final head locking check at this stage.

14

- When the structure is finished and the height has been adjusted: lay the plywood.
- Use the plywood cutting support (see Accessories p. 10).

➔ Peripheral safety (skin, girder, etc.) ensured beforehand.

15

- Nailing using 40 mm (max.) nails.
- Ensure that a load-bearing member is present under the plywood sheet joins.
- Check the sealing of the formwork between plywood sheets and edges.

It is prohibited to walk on the plywood panels, with the exception of trained personnel authorised to fit plywood panels.

16

- Concrete slab formation.

➔ Spread the concrete on the formwork without overloading the beams and the technical supports.

USER GUIDE: FORMWORK REMOVAL

- Formwork removal from slab: strike down the formwork heads from the STs as you progress.
- The primary beams and the secondary beams drop by 19 cm.
- The STs remain in position.

- Formwork removal from slab: remove the secondary beams and finally the primary beams as you progress.
- Store them in the wheeled racks.

- Formwork removal from slab: remove the STs placed at the edge of the cells.
- Leave the other STs in place **for at least 3 days** (depending on the type of concrete and the external temperature).

- Lower the panel elevator to mid-height.
- Remove the plywood sheet.

USER GUIDE: FORMWORK REMOVAL

- Position the panel elevator and remove the corresponding ST.
- Remove the plywood panel using the panel elevator.

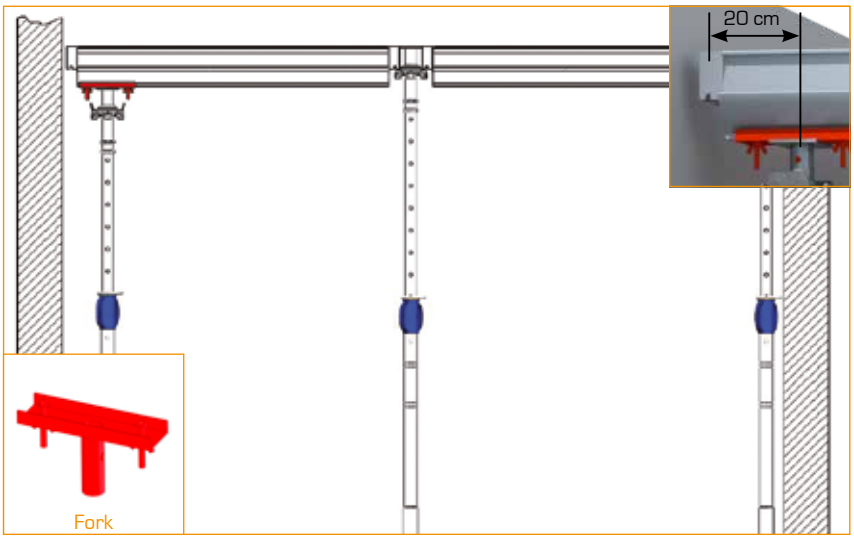
- Install the first drying prop, allowing one prop per 5 m^2 (general case).

- Repeat steps 21 and 22.

- Repeat the operations from step 1 on a higher level.

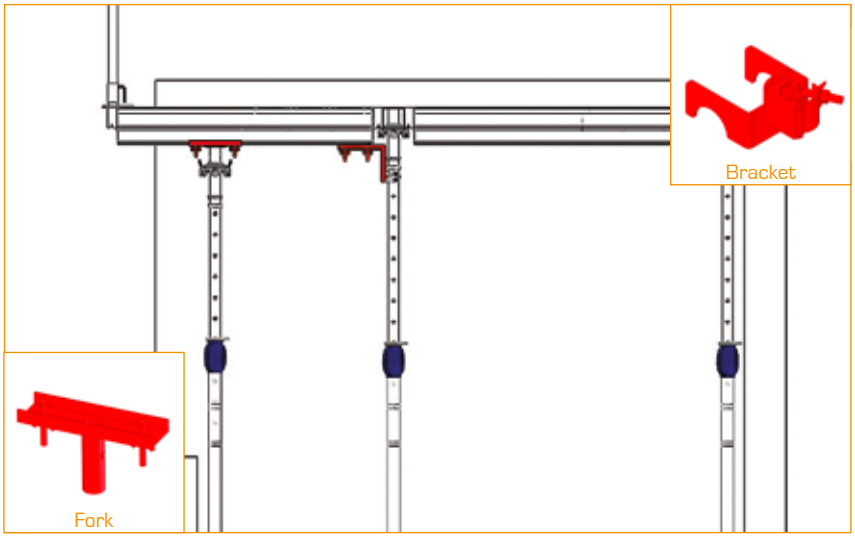
SPECIAL CASES

USE WITH NON-TILT FORK



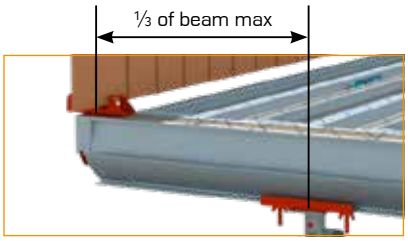
Reduced gap

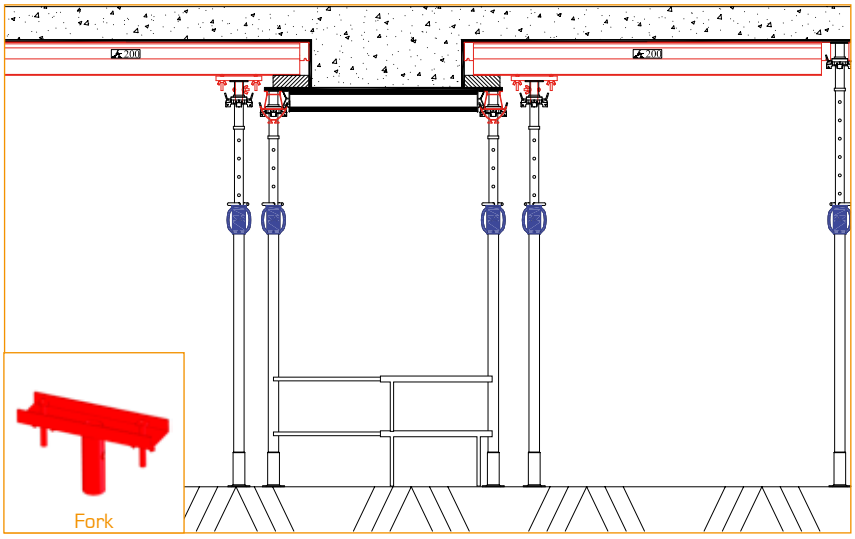
- Use the fork (mounted without using fast formwork removal).



Handling face overhangs

- Use in cantilever configuration with fork and bracket.
- The fork allows you to position the STs under the primary beams and not at the ends, thus offering additional adjustment.



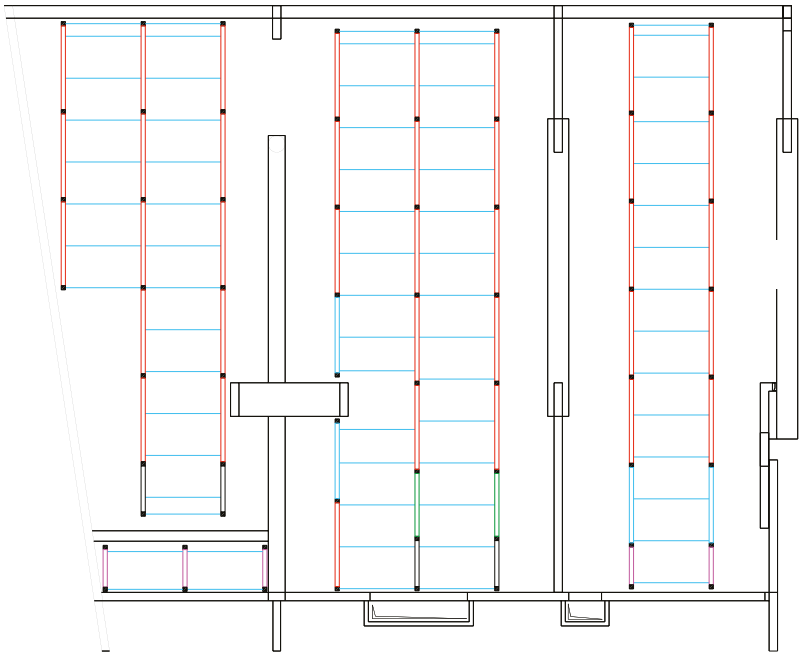


Girder formwork

- Drop less than 35 cm.

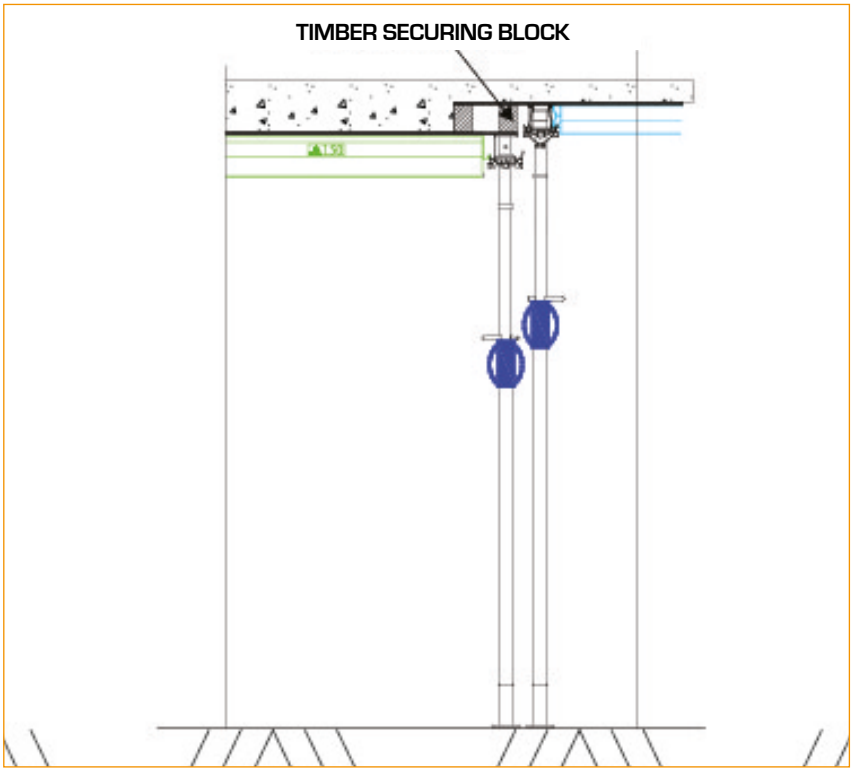
SPECIAL APPLICATIONS

PRE-SLAB SHORING



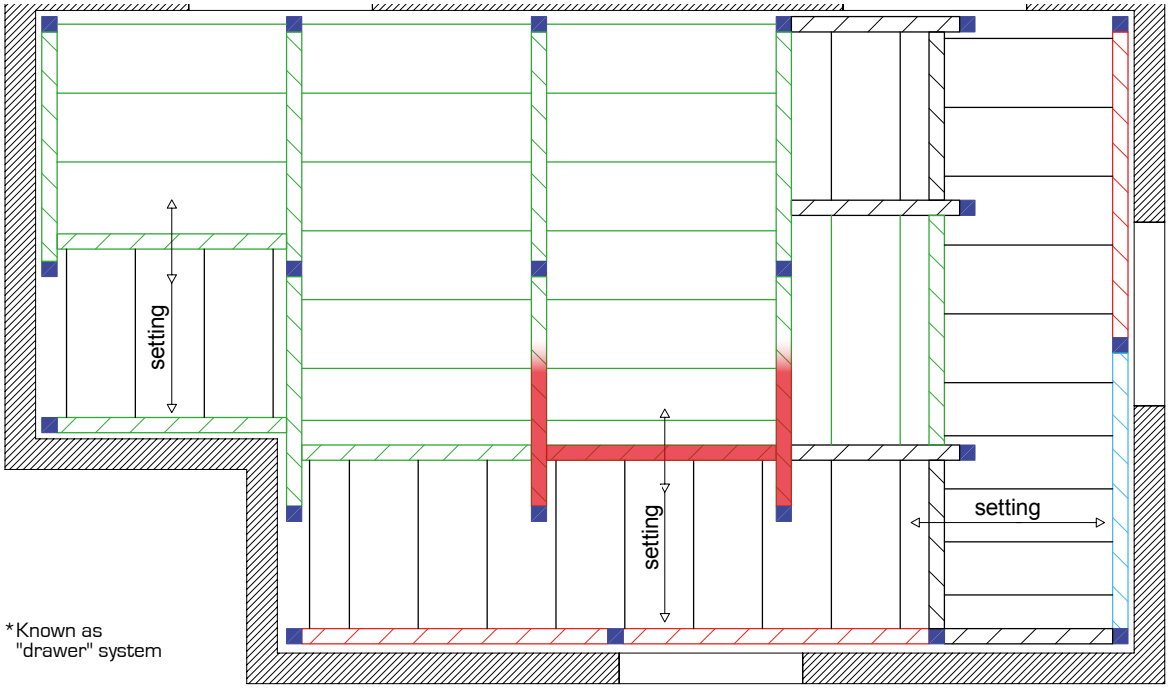
- Lines of piles defined as per pre-slab specialist's guidelines. Provide for stability (see layout drawing).

OFFSET SLAB FORMWORK



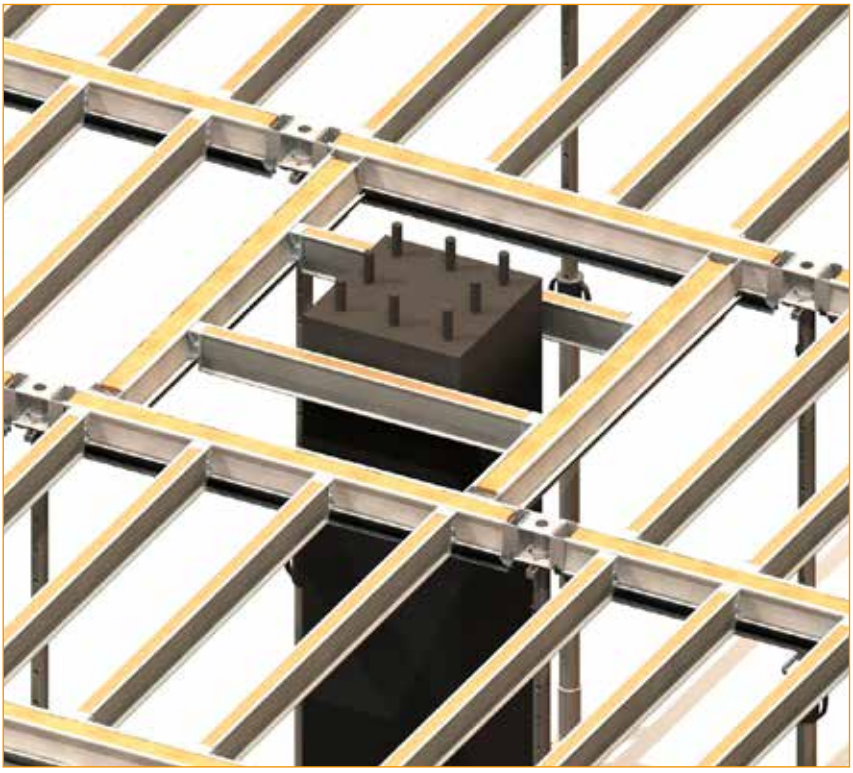
SPECIAL APPLICATIONS

PRECISE ADAPTABILITY TO CELL DIMENSIONS*

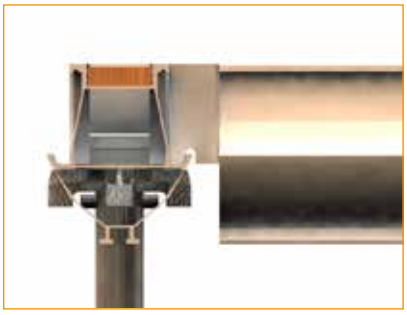


Drawer mounting consists of a primary beam resting in the grooves of two perpendicular primary beams.

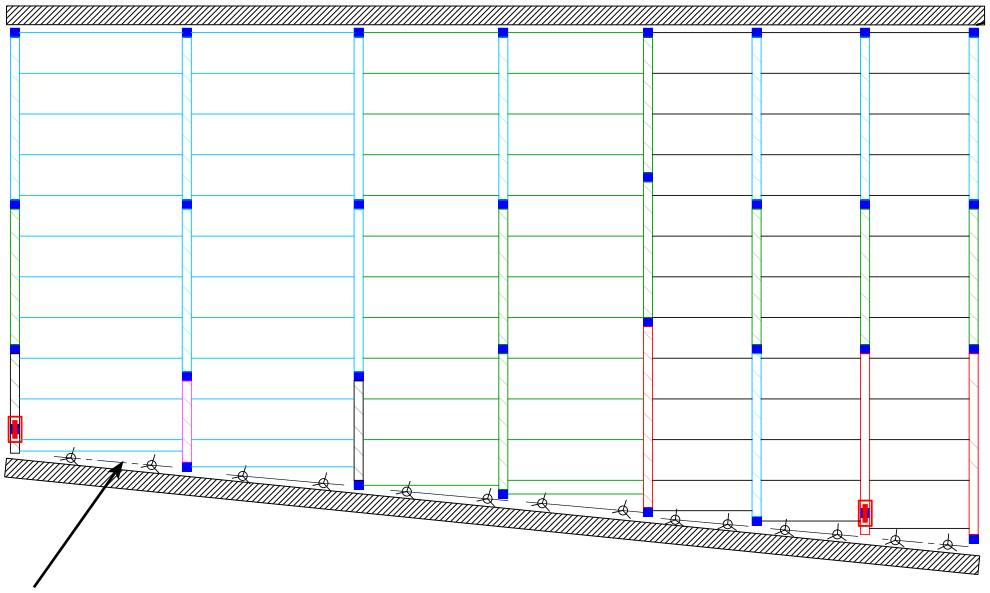
JOIST FORMWORK



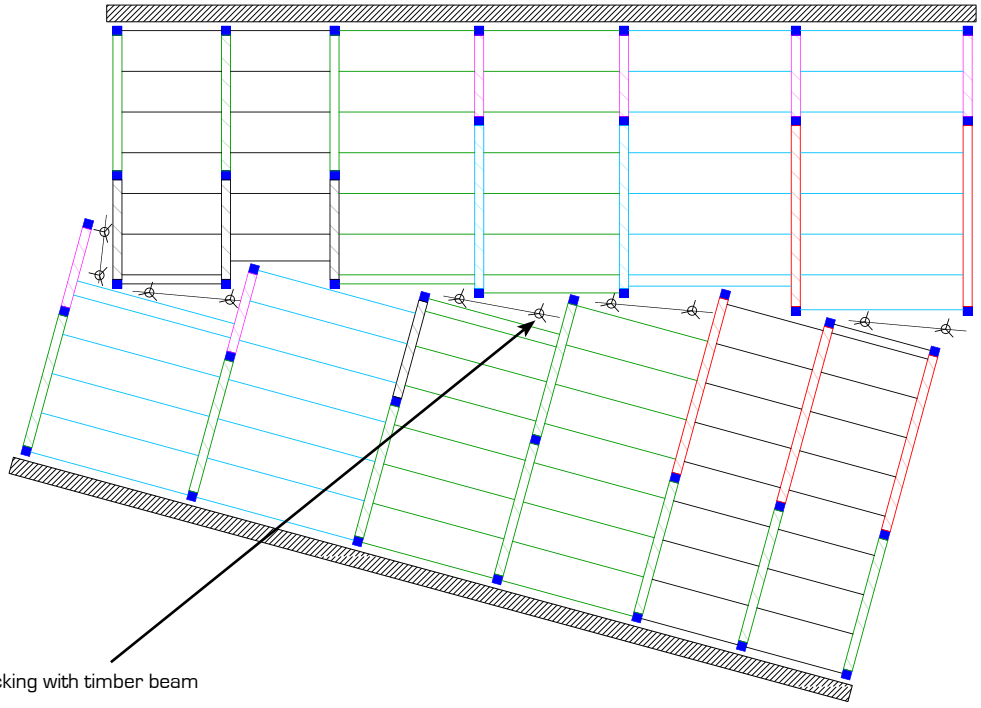
- Primary on primary assembly.



FORMWORK AGAINST OBLIQUE WALL



Chocking with timber beam



Chocking with timber beam

DALPHI FORMWORK INSTALLATION AT EXTRA-HIGH HEIGHTS

1

- Starting from one corner of the room, mount one primary beam on 2 technical supports (ST) stabilised by a prop frame.
- Start mounting a secondary beam on a third ST.
- Store the plywood panels on the floor or in wheeled racks.
- Use a rolling safety ladder.

➔ Refer to calculation chart.

2

- Place a second primary beam on another ST.

DALPHI FORMWORK INSTALLATION AT EXTRA-HIGH HEIGHTS

- Finish setting up the secondary beams.
- Do not leave gaps greater than 39 cm.
- Use a template to ensure compliance with 39 cm spacing.
- Observe the layout plan.

- Set up another primary beam on ST.
- Repeat the operation as for standard heights.

➔ Use frames instead of tripods: 1 prop frame for 40 m² of formwork.

PRIMARY BEAM GRID

GRID FOR PRIMARY BEAMS FROM 0 TO 10 M				
P180	P150	P110	P90	Distance between walls (in cm)
0	0	0	1	120
0	0	1	0	140
0	1	0	0	180
1	0	0	0	210
0	0	0	2	220
0	0	1	1	240
0	0	2	0	260
0	1	0	1	280
0	1	1	0	300
1	0	0	1	310
0	0	0	3	320
1	0	1	0	330
0	2	0	0	340
0	0	1	2	340
0	0	2	1	360
1	1	0	0	370
0	1	0	2	380
0	0	3	0	380
2	0	0	0	400
0	1	1	1	400
1	0	0	2	410
0	1	2	0	420
0	0	0	4	420
1	0	1	1	430
0	2	0	1	440
0	0	1	3	440
1	0	2	0	450
0	2	1	0	460
0	0	2	2	460
1	1	0	1	470
0	1	0	3	480
0	0	3	1	480
1	1	1	0	490
2	0	0	1	500
0	3	0	0	500
0	1	1	2	500
0	0	4	0	500
1	0	0	3	510
2	0	1	0	520
0	1	2	1	520
0	0	0	5	520
1	2	0	0	530
1	0	1	2	530
0	2	0	2	540
0	1	3	0	540
0	0	1	4	540
1	0	2	1	550
2	1	0	0	560
0	2	1	1	560
0	0	2	3	560

P180	P150	P110	P90	Distance between walls (in cm)
1	1	0	2	570
1	0	3	0	570
0	2	2	0	580
0	1	0	4	580
0	0	3	2	580
3	0	0	0	590
1	1	1	1	590
2	0	0	2	600
0	3	0	1	600
0	1	1	3	600
0	0	4	1	600
1	1	2	0	610
1	0	0	4	610
2	0	1	1	620
0	3	1	0	620
0	1	2	2	620
0	0	5	0	620
0	0	0	6	620
1	2	0	1	630
1	0	1	3	630
2	0	2	0	640
0	2	0	3	640
0	1	3	1	640
0	0	1	5	640
1	2	1	0	650
1	0	2	2	650
2	1	0	1	660
0	4	0	0	660
0	2	1	2	660
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0	2	3	0	700
0	1	1	4	700
0	0	4	2	700
3	0	1	0	710
1	1	2	1	710
1	0	0	5	710
2	2	0	0	720
2	0	1	2	720
0	3	1	1	720
0	1	2	3	720

Using the non-tilt safety fork provides an additional adjustment allowance of 15 cm (see page 19).

P180	P150	P110	P90	Distance between walls (in cm)
0	0	5	1	720
0	0	0	7	720
1	2	0	2	730
1	1	3	0	730
1	0	1	4	730
2	0	2	1	740
0	3	2	0	740
0	2	0	4	740
0	1	3	2	740
0	0	6	0	740
0	0	1	6	740
3	1	0	0	750
1	2	1	1	750
1	0	2	3	750
2	1	0	2	760
2	0	3	0	760
0	4	0	1	760
0	2	1	3	760
0	1	4	1	760
0	0	2	5	760
1	2	2	0	770
1	1	0	4	770
1	0	3	2	770
4	0	0	0	780
2	1	1	1	780
0	4	1	0	780
0	2	2	2	780
0	1	5	0	780
0	1	0	6	780
0	0	3	4	780
3	0	0	2	790
1	3	0	1	790
1	1	1	3	790
1	0	4	1	790
2	1	2	0	800
2	0	0	4	800
0	3	0	3	800
0	2	3	1	800
0	1	1	5	800
0	0	4	3	800
3	0	1	1	810
1	3	1	0	810
1	1	2	2	810
1	0	5	0	810
1	0	0	6	810
2	2	0	1	820
2	0	1	3	820
0	5	0	0	820
0	3	1	2	820
0	2	4	0	820
0	1	2	4	820
0	0	5	2	820
0	0	0	8	820

P180	P150	P110	P90	Distance between walls (in cm)
3	0	2	0	830
1	2	0	3	830
1	1	3	1	830
1	0	1	5	830
2	2	1	0	840
2	0	2	2	840
0	3	2	1	840
0	2	0	5	840
0	1	3	3	840
0	0	6	1	840
0	0	1	7	840
3	1	0	1	850
1	4	0	0	850
1	2	1	2	850
1	1	4	0	850
1	0	2	4	850
2	1	0	3	860
2	0	3	1	860
0	4	0	2	860
0	3	3	0	860
0	2	1	4	860
0	1	4	2	860
0	0	7	0	860
0	0	2	6	860
3	1	1	0	870
1	2	2	1	870
1	1	0	5	870
1	0	3	3	870
4	0	0	1	880
2	3	0	0	880
2	1	1	2	880
2	0	4	0	880
0	4	1	1	880
0	2	2	3	880
0	1	5	1	880
0	1	0	7	880
0	0	3	5	880
3	0	0	3	890
1	3	0	2	890
1	2	3	0	890
1	1	1	4	890
1	0	4	2	890
4	0	1	0	900
2	1	2	1	900
2	0	0	5	900
0	4	2	0	900
0	3	0	4	900
0	2	3	2	900
0	1	6	0	900
0	1	1	6	900
0	0	4	4	900
3	2	0	0	910
3	0	1	2	910

PRIMARY BEAM GRID

P180	P150	P110	P90	Distance between walls (in cm)
1	3	1	1	910
1	1	2	3	910
1	0	5	1	910
1	0	0	7	910
2	2	0	2	920
2	1	3	0	920
2	0	1	4	920
0	5	0	1	920
0	3	1	3	920
0	2	4	1	920
0	1	2	5	920
0	0	5	3	920
0	0	0	9	920
3	0	2	1	930
1	3	2	0	930
1	2	0	4	930
1	1	3	2	930
1	0	6	0	930
1	0	1	6	930
4	1	0	0	940
2	2	1	1	940
2	0	2	3	940
0	5	1	0	940
0	3	2	2	940
0	2	5	0	940
0	2	0	6	940
0	1	3	4	940
0	0	6	2	940
0	0	1	8	940
3	1	0	2	950
3	0	3	0	950
1	4	0	1	950
1	2	1	3	950
1	1	4	1	950
1	0	2	5	950
2	2	2	0	960
2	1	0	4	960
2	0	3	2	960
0	4	0	3	960
0	3	3	1	960
0	2	1	5	960
0	1	4	3	960
0	0	7	1	960
0	0	2	7	960
5	0	0	0	970
3	1	1	1	970
1	4	1	0	970
1	2	2	2	970
1	1	5	0	970
1	1	0	6	970
1	0	3	4	970
4	0	0	2	980
2	3	0	1	980

P180	P150	P110	P90	Distance between walls (in cm)
2	1	1	3	980
2	0	4	1	980
0	6	0	0	980
0	4	1	2	980
0	3	4	0	980
0	2	2	4	980
0	1	5	2	980
0	1	0	8	980
0	0	8	0	980
0	0	3	6	980
3	1	2	0	990
3	0	0	4	990
1	3	0	3	990
1	2	3	1	990
1	1	1	5	990
1	0	4	3	990
4	0	1	1	1000
2	3	1	0	1000
2	1	2	2	1000
2	0	5	0	1000
2	0	0	6	1000

SECONDARY BEAM GRID

GRID FOR SECONDARY BEAMS FROM 0 TO 10 M			
PS180	PS150	PS110	Distance between walls (in cm)
0	0	1	140
0	1	0	180
1	0	0	210
0	0	2	260
0	1	1	300
1	0	1	330
0	2	0	340
1	1	0	370
0	0	3	380
2	0	0	400
0	1	2	420
1	0	2	450
0	2	1	460
1	1	1	490
0	3	0	500
0	0	4	500
2	0	1	520
1	2	0	530
0	1	3	540
2	1	0	560
1	0	3	570
0	2	2	580
3	0	0	590
1	1	2	610
0	3	1	620
0	0	5	620
2	0	2	640
1	2	1	650
0	4	0	660
0	1	4	660
2	1	1	680
1	3	0	690
1	0	4	690
0	2	3	700
3	0	1	710
2	2	0	720
1	1	3	730
0	3	2	740
0	0	6	740
3	1	0	750
2	0	3	760
1	2	2	770
4	0	0	780
0	4	1	780
0	1	5	780
2	1	2	800
1	3	1	810

PS180	PS150	PS110	Distance between walls (in cm)
1	0	5	810
0	5	0	820
0	2	4	820
3	0	2	830
2	2	1	840
1	4	0	850
1	1	4	850
0	3	3	860
0	0	7	860
3	1	1	870
2	3	0	880
2	0	4	880
1	2	3	890
4	0	1	900
0	4	2	900
0	1	6	900
3	2	0	910
2	1	3	920
1	3	2	930
1	0	6	930
4	1	0	940
0	5	1	940
0	2	5	940
3	0	3	950
2	2	2	960
5	0	0	970
1	4	1	970
1	1	5	970
0	6	0	980
0	3	4	980
0	0	8	980
3	1	2	990
2	3	1	1,000
2	0	5	1,000

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