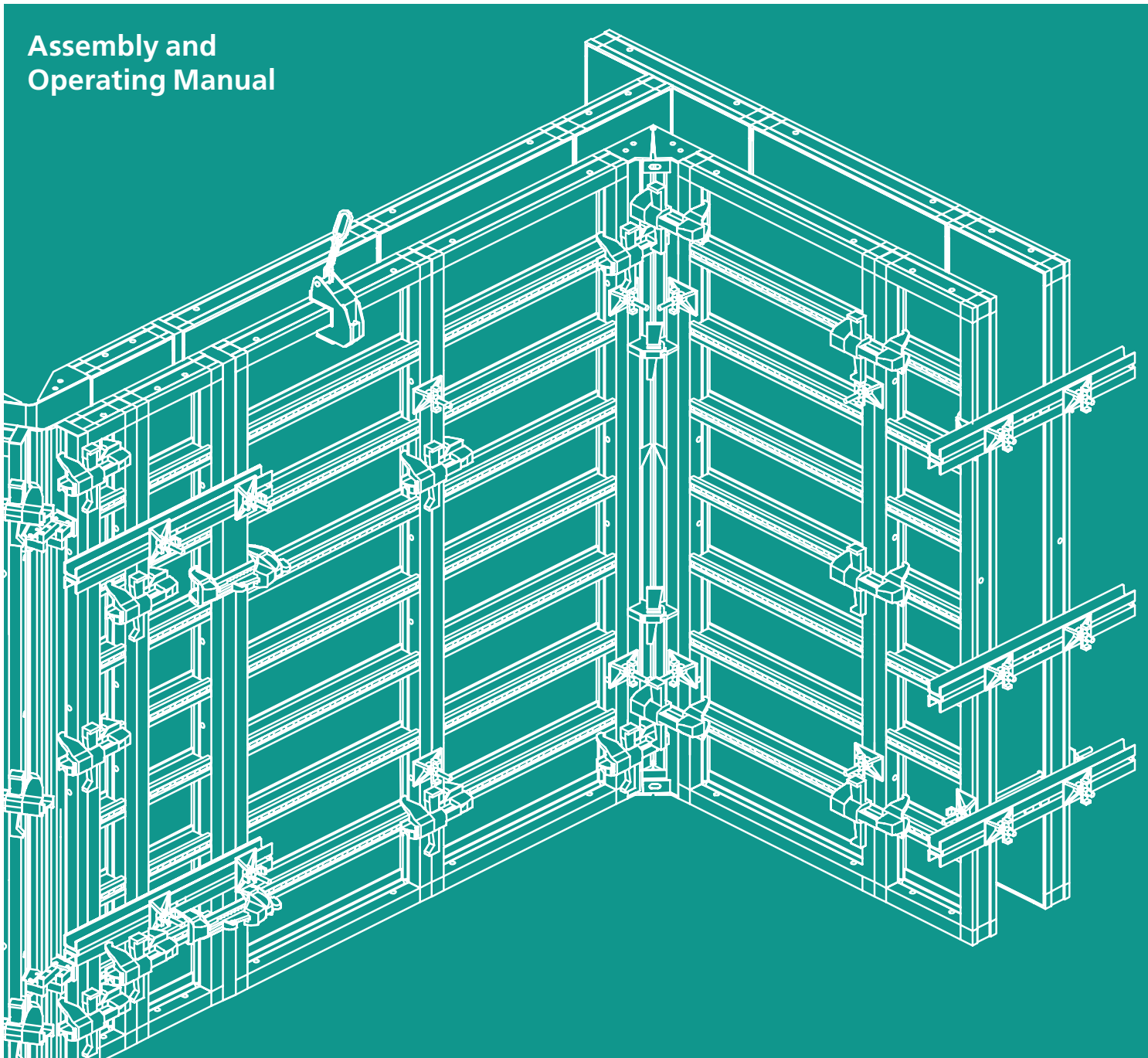
THE FORMWORK

NOE® top Imperial

Dated: 11.2015

Assembly and Operating Manual



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1. Safety advice

- *Local regulations concerning health and safety must always be observed when using NOE Systems and equipment.*

- *Our technical instructions, system drawings and assembly instructions are to be followed for the use and of assembly of our products and systems. They may not always include every detail. However, their functional principles must be strictly observed. For modifications call for specific static calculations.*

- *Our technical department provides technical assistance to customers on request. Fully qualified advisers will assist you if required.*

- *Before using the formwork, read through the assembly and use manual and observe the safety advice given in each chapter at all times!*

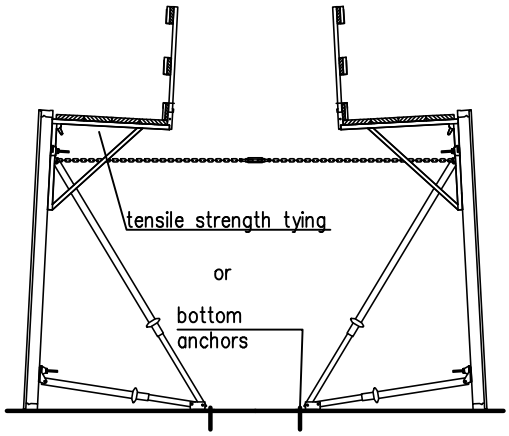
- *Everyone who works with the product must receive instruction from a suitably qualified member of the site supervisory staff. A risk analysis covering all situations on site must be carried out by a responsible person.*

- *Components must be free of defects. Therefore visual inspection and/or testing of each component are essential at all stages of the work!*

1. Safety advice

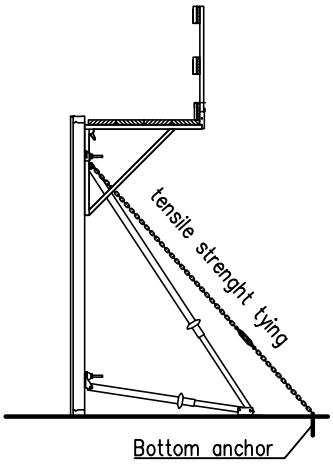
1.1 Safe storing of panels

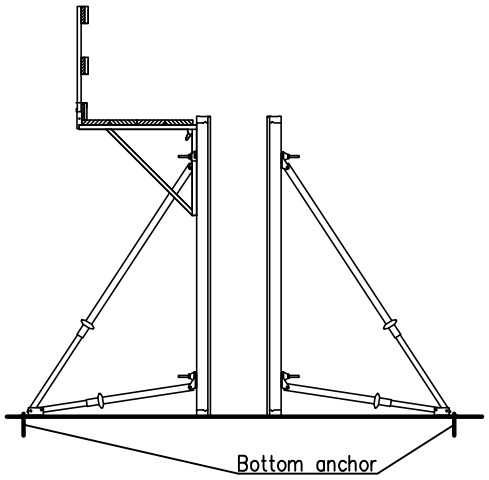
Two forms opposite

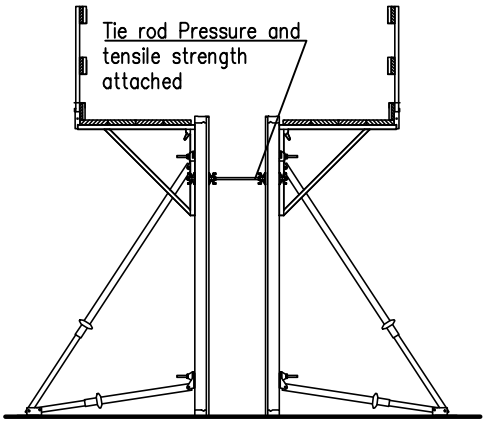


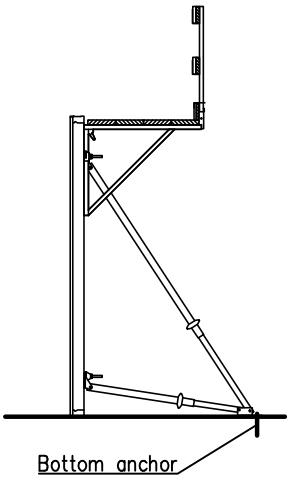
If the braces are connected with a bottom anchor, they must withstand appropriate pressure and tensile strength.
For length and connection of the braces see Technical Instructions.

Stand alone forms

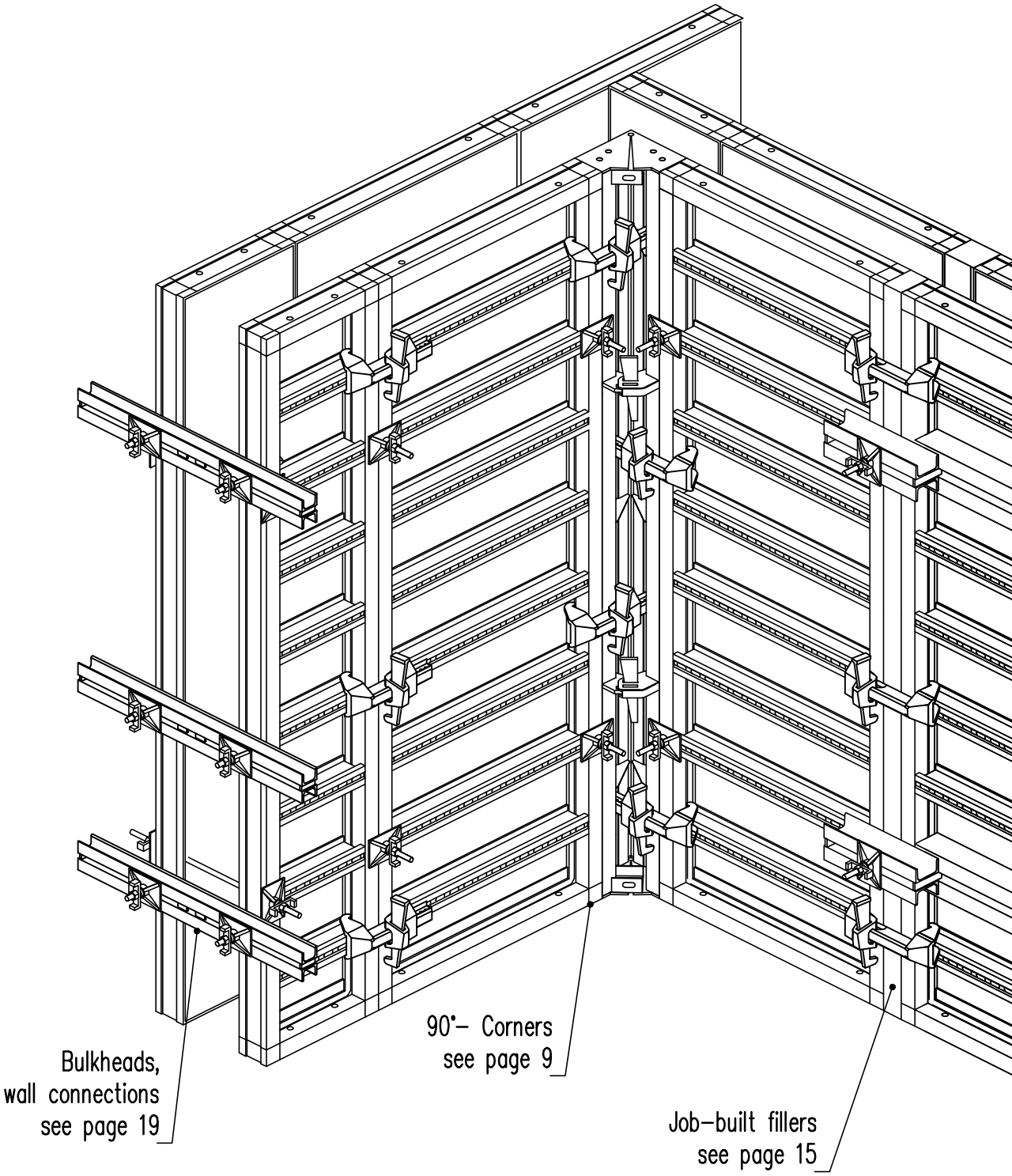






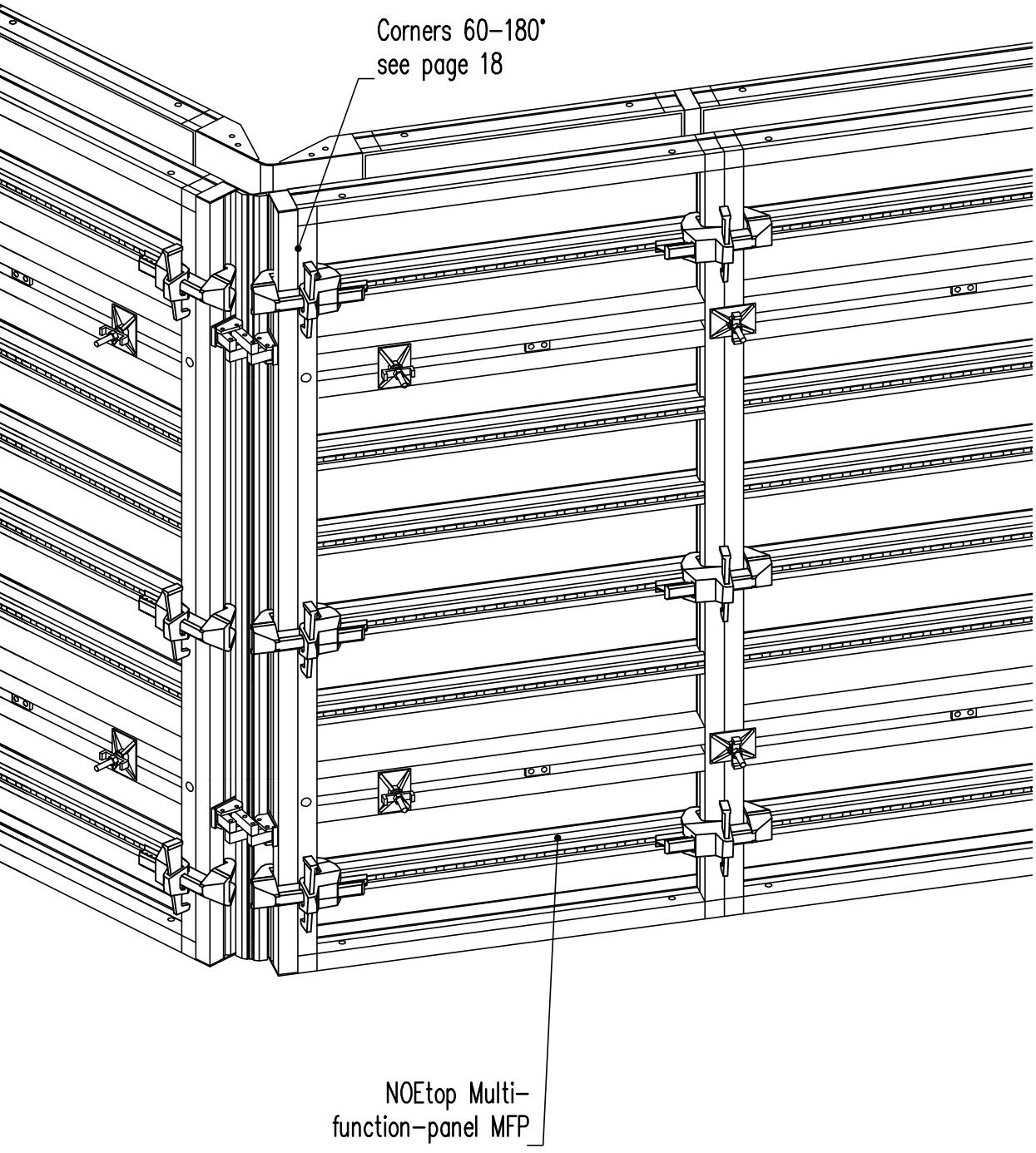


2. NOEtop system overview



2. NOEtop system overview

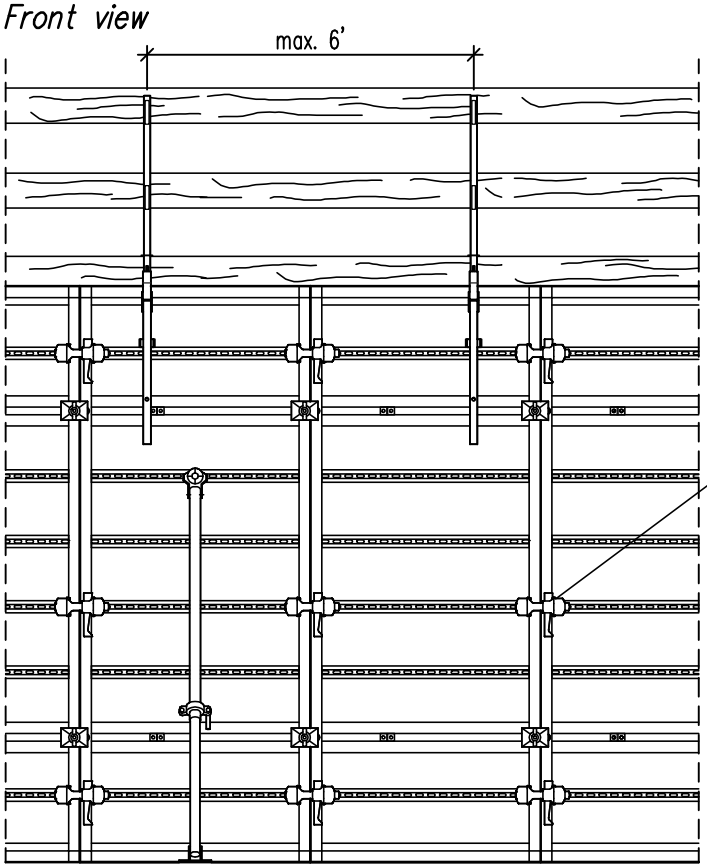
– *Page 21 T–walls*
– *Page 22 Pilasters*
– *Page 22 Change of wall thickness*
– *Page 23 Rectangular columns*
– *Page 24 Foundations*



3. NOEtop typical section

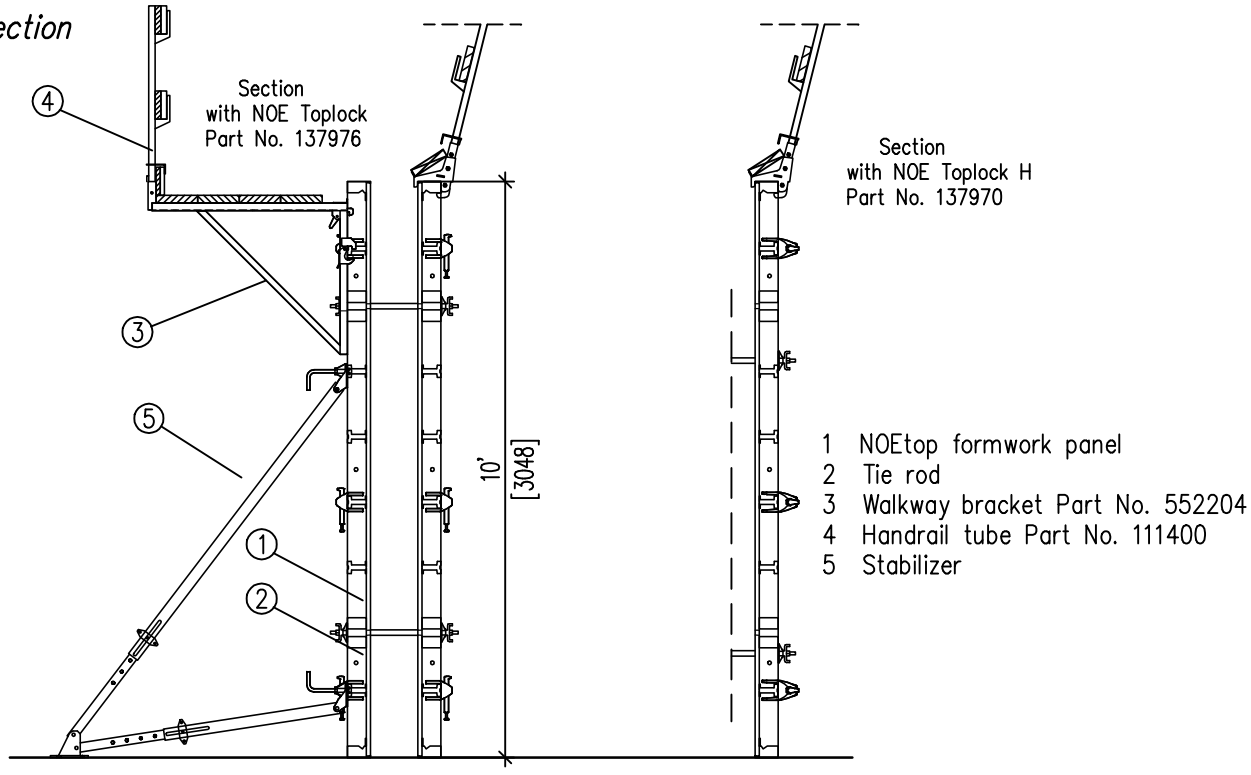
Formwork height 10'

Front view



Only use taper ties with a minimum tensile strength of 33,000 lb.

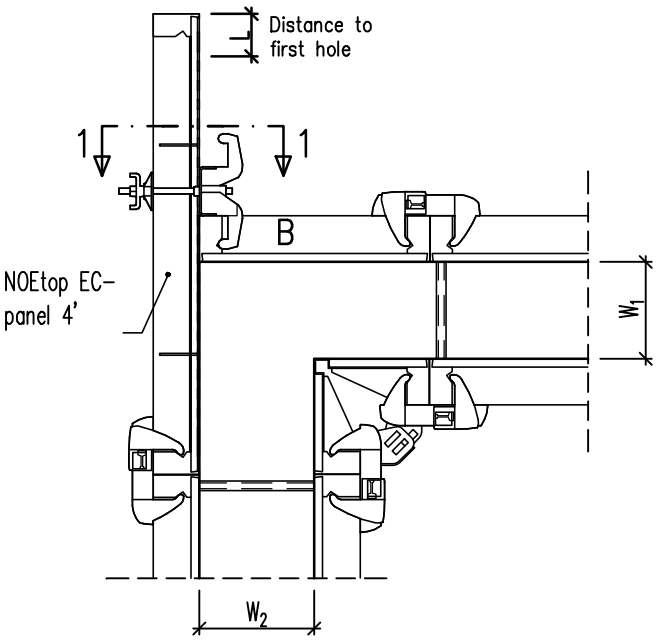
Section



1 NOEtop formwork panel
2 Tie rod
3 Walkway bracket Part No. 552204
4 Handrail tube Part No. 111400
5 Stabilizer

4. Corner solutions / fillers / bulkheads / connections

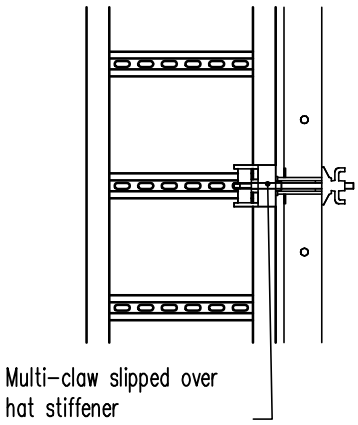
Wall thickness increments for using the External–corner–panel and corner panels



For L = 4.4"
W_1 = 2'–0" to 0'–4"
in increments 2"

For L = 5.4"
(EC–panel turned)
W_1 = 1'–11" to 0'–5"
in increments 2"

Section 1–1

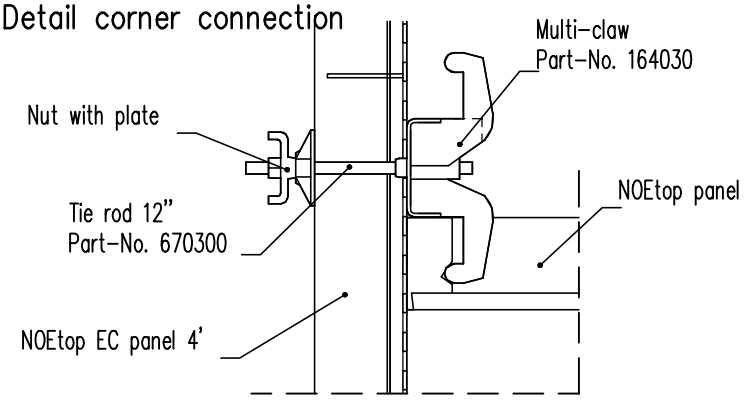


The corner shown can also be formed opposite hand.
The External–corner–panel is provided with holes at even 2" increments.
By reversing the EC–panel the increment changes to odd 2" increment.

Thickness of W_2 for NOEtop panels

Panelsize B	Thickness of wall W_2
2'	1'
2'–6"	1'–6"
3'	2'

Detail corner connection

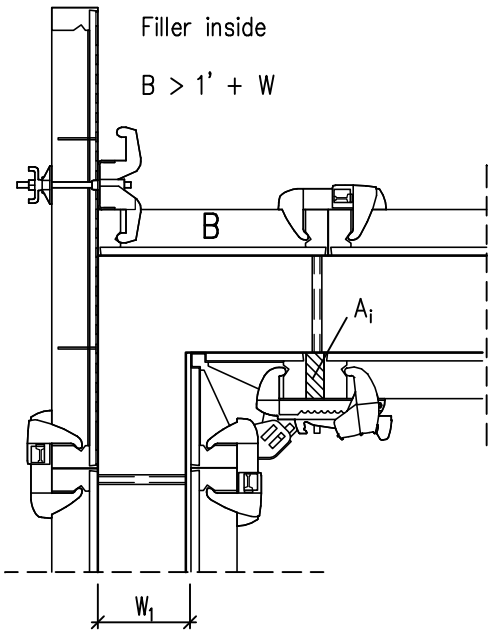


Number of connections

Panel height	Number
10'	3
4'	1

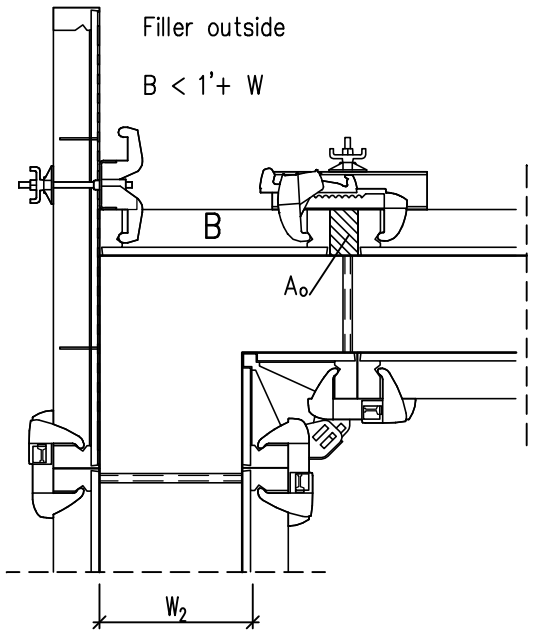
4. Corner solutions / fillers / bulkheads / connections

4.2 Corner solutions using External–corner–panels (with fillers)



Thickness of wall W_1 for filler inside

Wide B (panel)	Thickness of wall W_1	Filler A_i
2'	0'–8"	4"
	0'–10"	2"
2'–6"	1'–2"	4"
	1'–4"	2"
3'	1'–8"	4"
	1'–10"	2"



Thickness of wall W_2 for filler outside

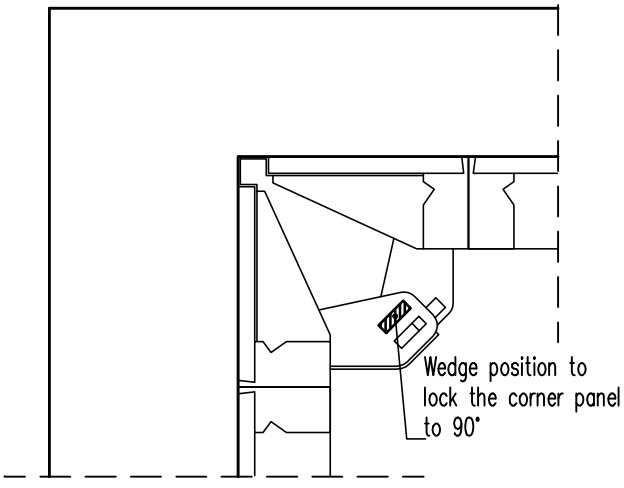
Wide B (panel)	Thickness of wall W_1	Filler Ao
2'	1'–2"	2"
	1'–4"	4"
2'–6"	1'–8"	2"
	1'–10"	4"
3'	2'–2"	2"

4.3 Stripping of inside corners

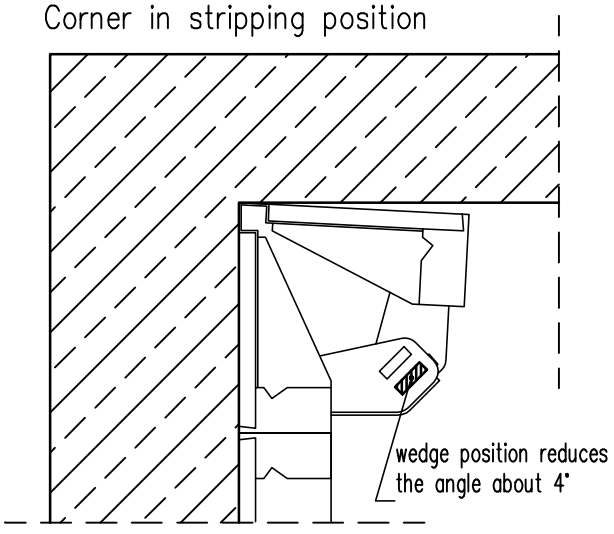
The angle of the Inside–corner–panel reduces by 4° to strip.

Alternatively see page 26 "NOEtop stripping corner"

Corner to shaft

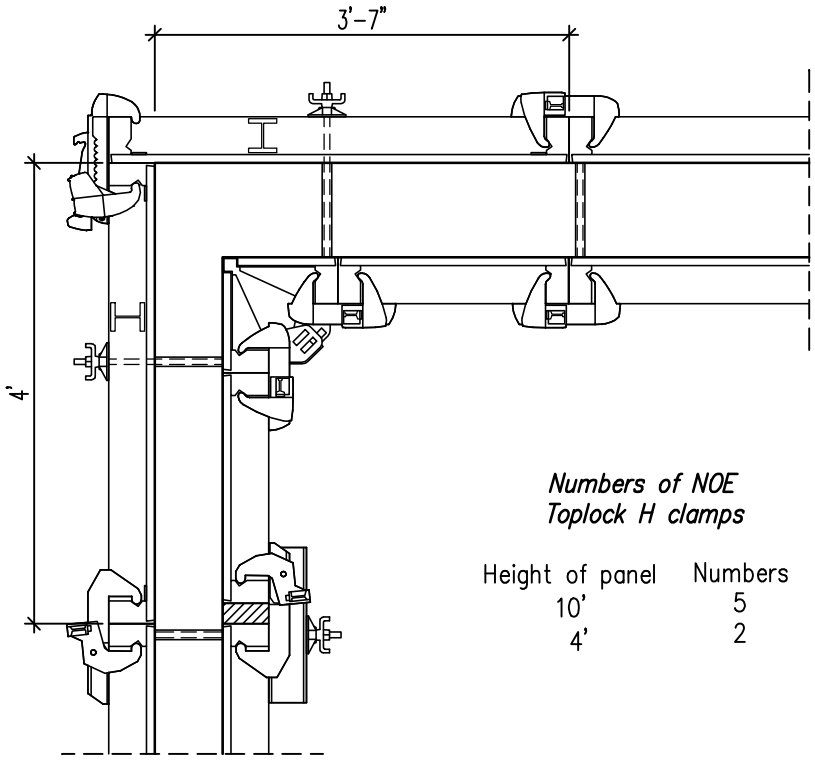


Corner in stripping position

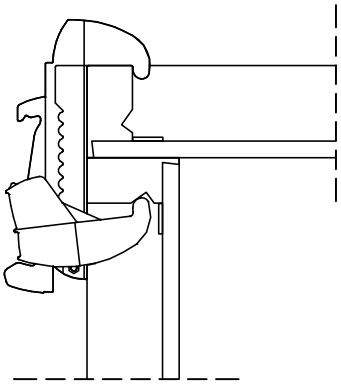


4. Corner solutions / fillers / bulkheads / connections

4.4 Corner solution using NOE Toplock clamps



The corner shown can also be formed opposite hand.



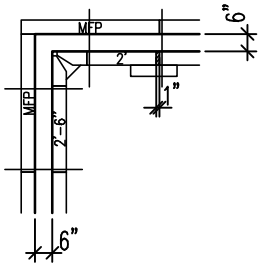
Numbers of NOE Toplock H clamps

Height of panel	Numbers
10'	5
4'	2

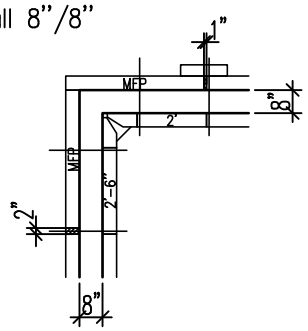
Higher concrete pressures and wall thickness may require more NOE Toplock clamps. The number of clamps you need for your project can be determined by your local dealer.

Example

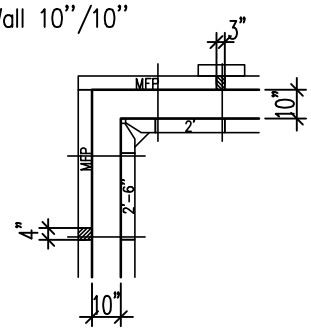
Wall 6"/6"



Wall 8"/8"



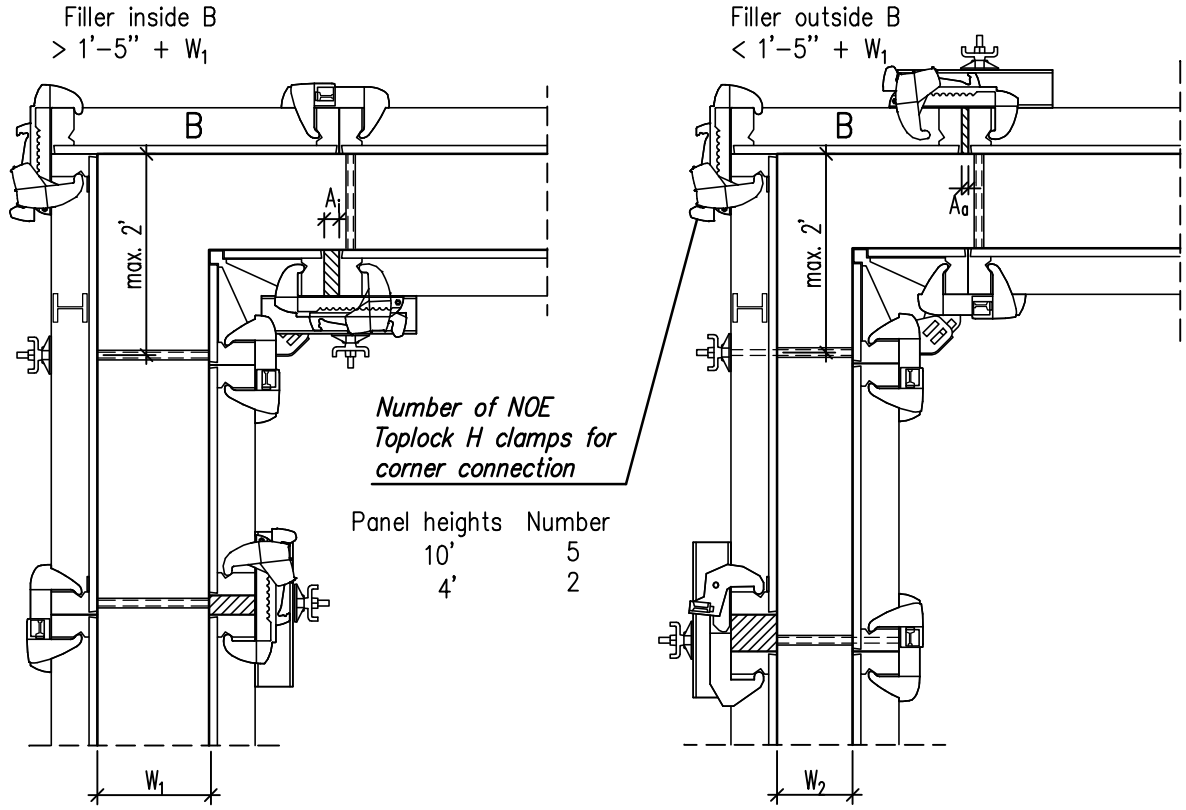
Wall 10"/10"



Walls with different thickness can be formed by a combination of the examples as shown.

4. Corner solutions / fillers / bulkheads / connections

4.5 Corners using MFP panel and standard panel



Attention: The corner connection must allways be built as shown. The MFP must be flush to panel B and must be tied a max. 2' from the edge.

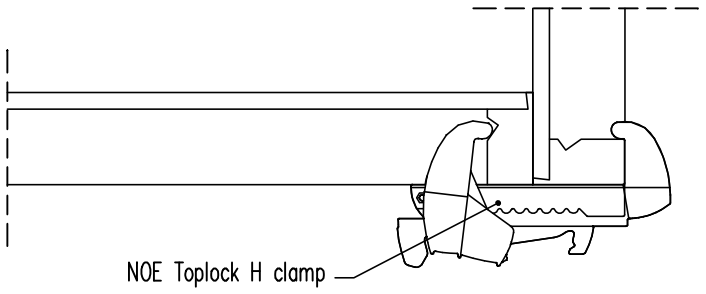
Thickness of wall W_1 for filler inside

Wide B (panel)	Thickness of wall W_1	Filler A_i
2'	0'–6"	1.2"
2'–6"	0'–10"	3.2"
	1'–0"	1.2"

Thickness of wall W_2 for filler outside

Wide B (panel)	Thickness of wall W_2	Filler A_a
2'	0'–8"	0.8"
	0'–10"	2.8"
2'–6"	1'–2"	0.8"
	1'–4"	2.8"

Corner connection using NOE Toplock H clamp without tying the panel



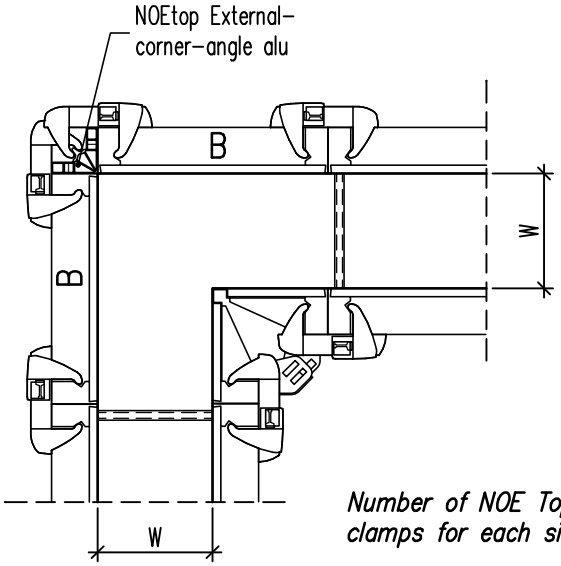
Height of formwork max. 4', width of panel max. 4'.
3 NOE Toplock H clamps for connection, for example to use for foundation formwork.

4. Corner solutions / fillers / bulkheads / connections

4.6 Corner solutions using External–corner–angle

EC–angle connected with NOE Toplock clamps

Maximum thicknes of wall 1'–2"



Number of NOE Toplock clamps for each side

Height of panels	Number
10'	4
8'	2

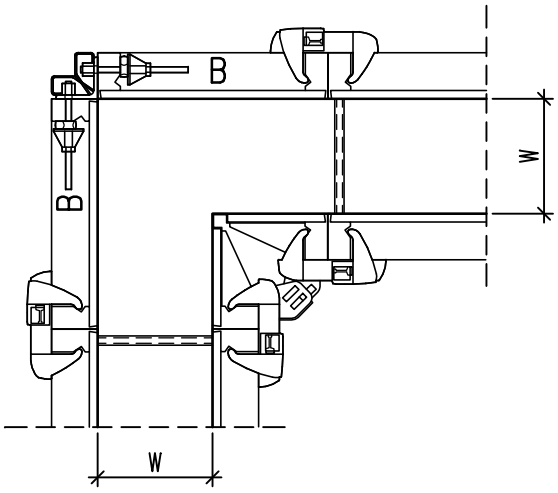
Thickness of wall W for NOEtop panels

Wide B (Panel)	Thickness of wall W
2'	1'
2'–6" *	1'–6"
3' *	2'

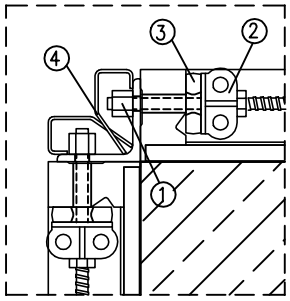
*External–corner–angle must also be bolted

Other thicknesses must use the External–corner–panel and fillers.

External–corner–angle steel, bolted



Detail of corner connection



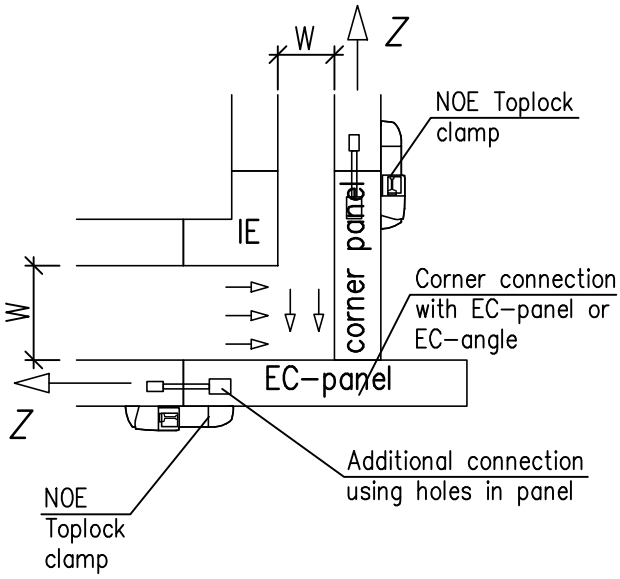
1 Connection bolt Part–No. 135019
2 Sprint nut Part–No. 680580
3 Waling Plate Part–No. 691500
4 External–corner–angle

A Bolted connection is required in each hole provided in the External–corner–angle.

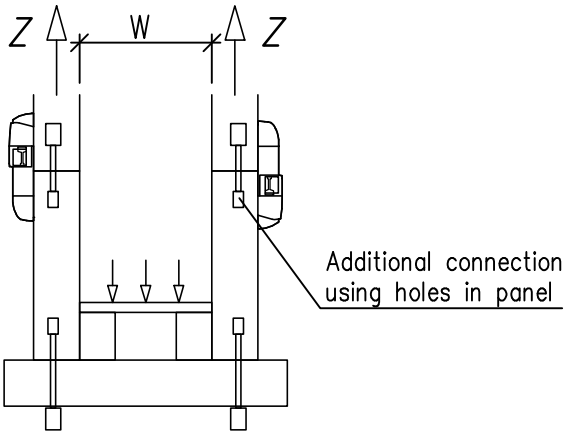
4. Corner solutions / fillers / bulkheads / connections

4.7 Interception of tensile forces at outside corners and bulkheads

Outside corner



Bulkhead



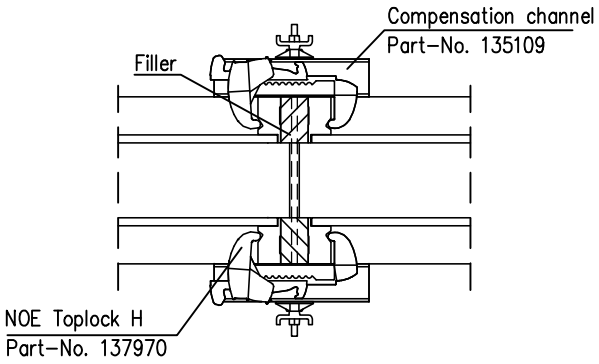
Based on concrete pressure and wall thickness, more NOE Toplock clamps may be required at the corner than would be necessary for the panel joint.
Allowable safe working load of NOE Toplock clamp is 330 lbs.
If too many clamps are required, the panels must be connected together by means of cross holes. Possibly several panels have to be bolted together.

	Thickness of wall W up to 1'–2"		Thickness of wall W up to 1'–8"	
Height	Number of clamps on height	Number of additional connections on height	Number of clamps on height	Number of additional connections on height
4'	2	–	2	–
10'	3	–	4	–
14'	5	–	6	2
20'	6	2	8	3
24'	8	3	10	5

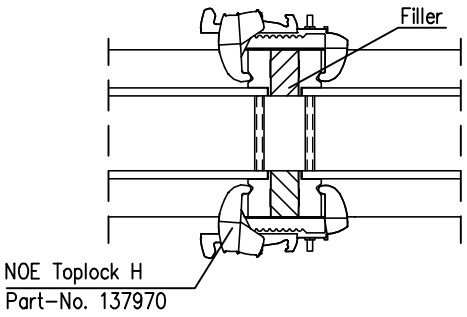
4. Corner solutions / fillers / bulkheads / connections

4.8 Fillers up to 4”

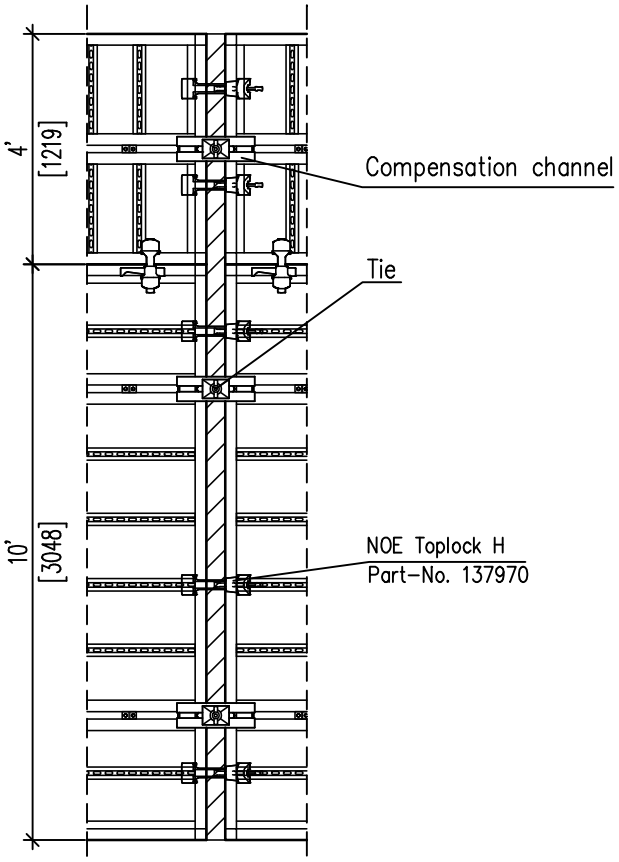
A) Tying through the filler piece

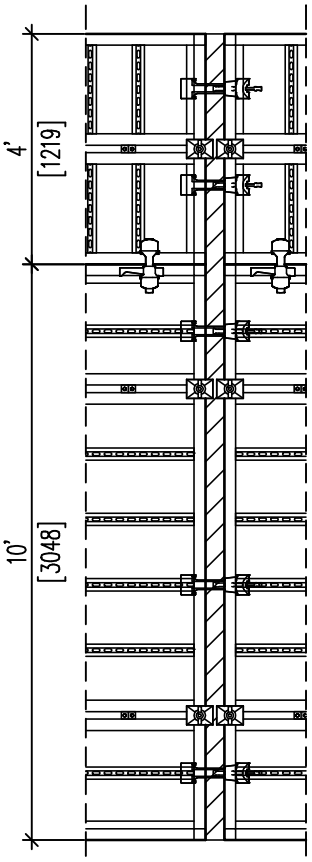


B) Tying trough each panel

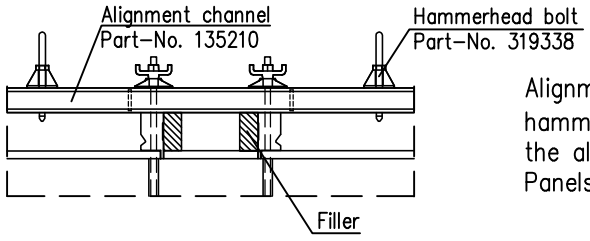


Fillers up to 2” can be tied through the panel. If the size of the filler is larger it has to be tied through the filler.





4.9 Fillers from 6” up to 10”

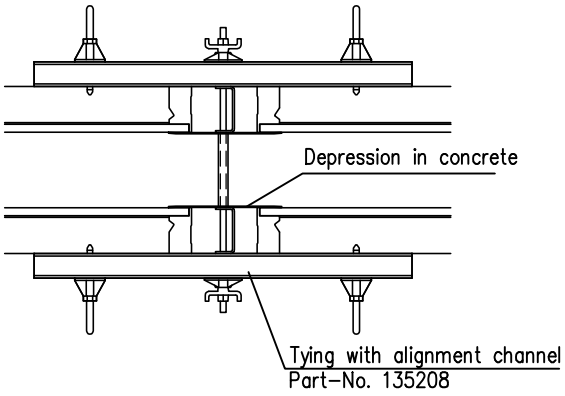


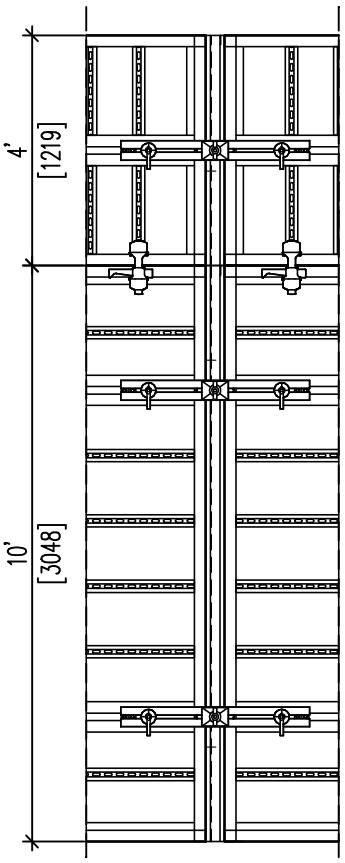
Alignment chanels must be used. They must be fixed with hammerhead bolts (2 for 10’, 1 for 4’ panel height). Tie through the alignment channel.
Panels can also be bolted with tie rods through the cross holes.

4. Corner solutions / fillers / bulkheads / connections

4.10 Fillers using the compensation panel

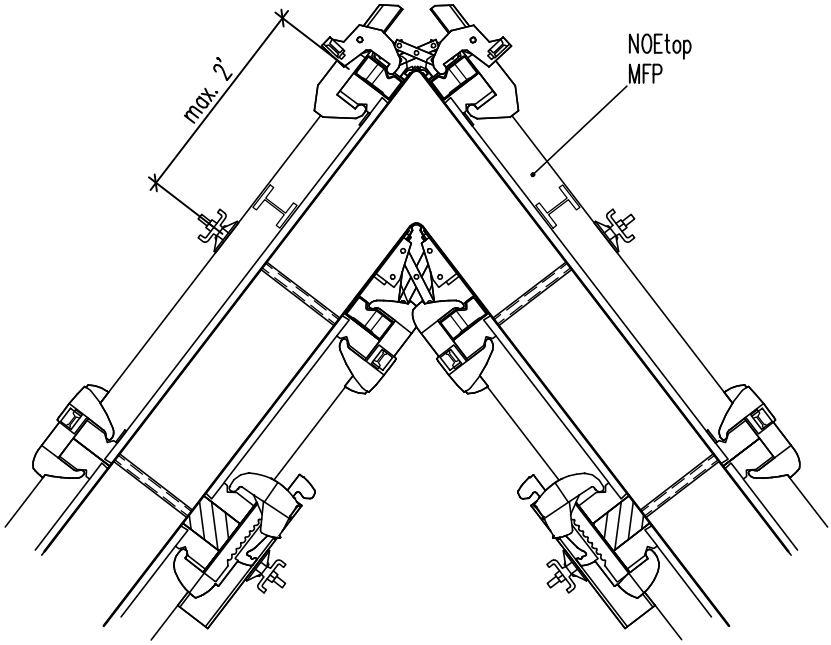
Fillers from 2" up to 10"





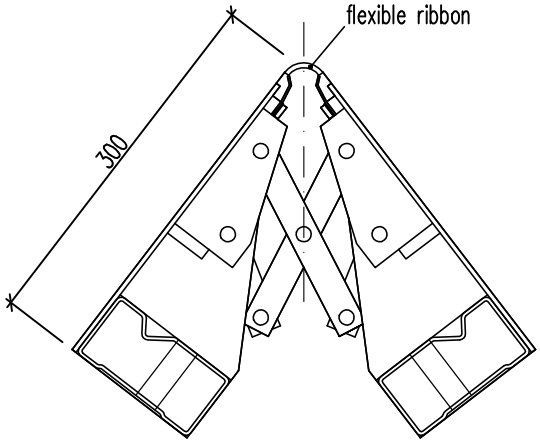
4. Corner solutions / fillers / bulkheads / connections

4.11 Sharp and blunt corners using the NOEtop MFP without additional strongback

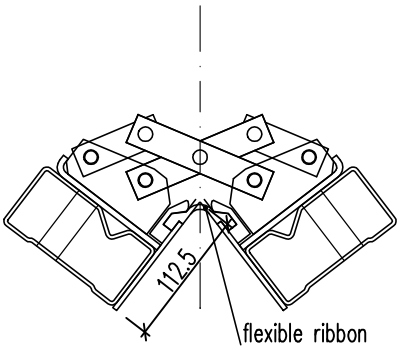


The corner hinges have been replaced by flexible ribbons and fixed by tackle joints. The edge of the concrete will be rounded without any depression of hinge.

Adjustable Inside–corner

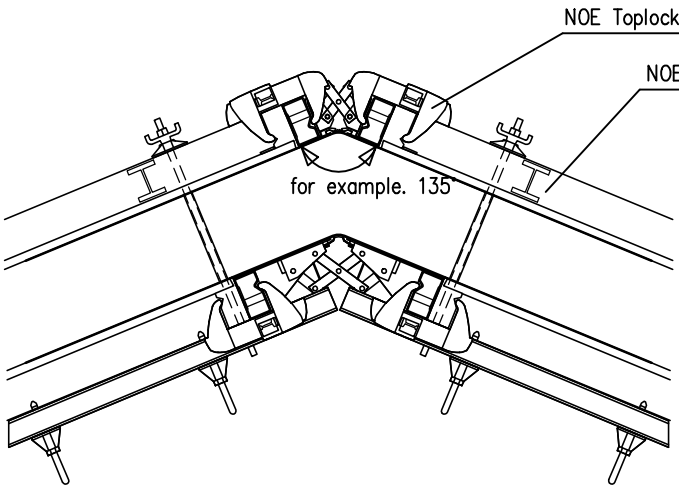


Adjustable Outside–corner

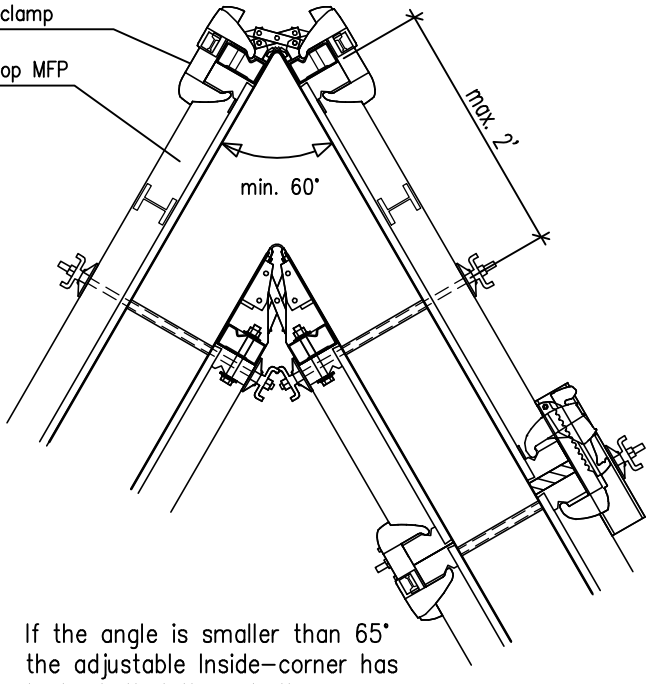


4. Corner solutions / fillers / bulkheads / connections

4.12 Corners from 60°–180°

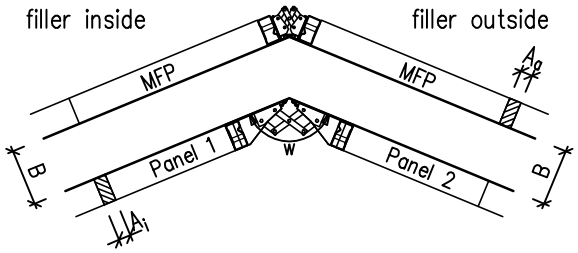


If the angle is larger than 100° the adjustable Inside–corners must be supported. Alignment channels must be fixed with hammerhead bolts. The inside corner panels has to be wedged out to the channel (max. distance 4'–3").
By using standard panels instead of MFP the outside corner panels must also be bolted through the cross holes.



If the angle is smaller than 65° the adjustable Inside–corner has to be bolted through the cross holes.

4.13 Table for sharp and blunt corners



Filler inside

Thickness of wall	Angle w							
	60°	70°	80°	90°	100°	120°	135°	150°
0'–6"	A_a	1.4"	3"	A_a	A_a	1"	2"	3"
0'–8"	1.8"	A_a	0.6"	2.3"	3.6"	A_a	1.2"	2.4"
0'–10"	A_a	1.7"	A_a	0.3"	2"	A_a	0.4"	1.9"
1'–0"	–	–	–	A_a	0.3"	3.5"	A_a	1.4"
1'–2"	–	–	–	2.2"	A_a	2.4"	A_a	0.8"
1'–4"	–	–	–	–	2.9"	1.2"	3.9"	0.3"
1'–6"	–	–	–	–	1.2"	0	3.1"	A_a
Panel 1					2'	2'–6'		3"

Filler outside

Thickness of wall	Angle w							
	60°	70°	80°	90°	100°	120°	135°	150°
0'–6"	0.7"	A_i	3"	1.7"	0.7"	A_i	A_i	A_i
0'–8"	A_i	1.5"	A_i	3.7"	2.3"	0	A_i	A_i
0'–10"	1.7"	A_i	1.8"	A_i	4"	1.3"	A_i	A_i
1'–0"	–	–	–	1.7"	A_i	2.5"	0.4"	A_i
1'–2"	–	–	–	3.7"	1.4"	3.6"	1.3"	A_i
1'–4"	–	–	–	–	3.1"	A_i	2.1"	A_i
1'–6"	–	–	–	–	A_i	A_i	2.9"	0.3"
Panel 2					2'	2'–6"	3"	

In case of sharp angles and large thickness of walls, tying must go through the corners or additional strongbacks have to be used.

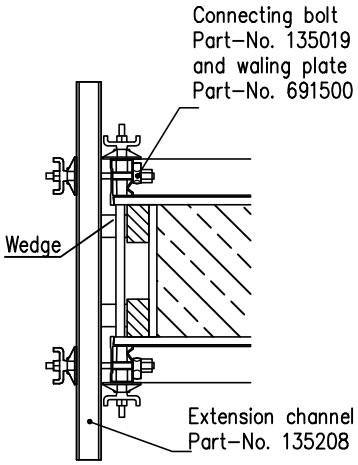
4. Corner solutions / fillers / bulkheads / connections

4.14 Bulkheads

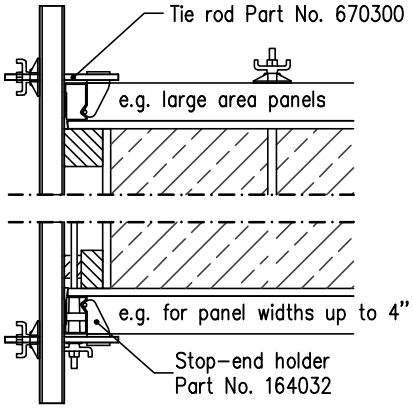
Attention: Panels may, according to the bulkhead pressure, be required to be connected with NOE Toplock clamps and/or bolted together. This is especially true with filler panels.

4.14.1 Bulkhead using Multi-claw and extension channel

On the edge using the cross holes

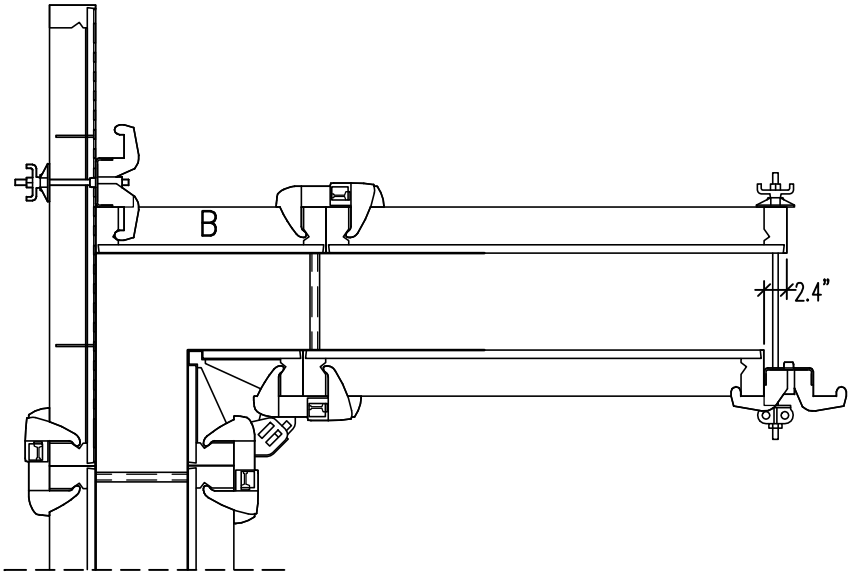


Independent of cross holes



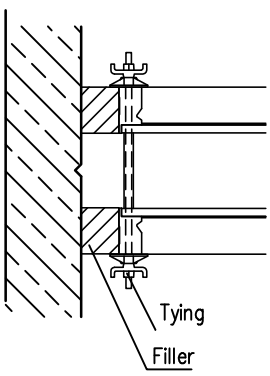
Height of panel	Number of ext. channels on height	Max. thickness of wall
10"	3	1'-4"
	4	2'
4"	2	2'

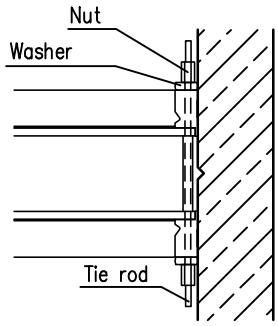
4.14.2 Tying with Multi-claw on offset panels



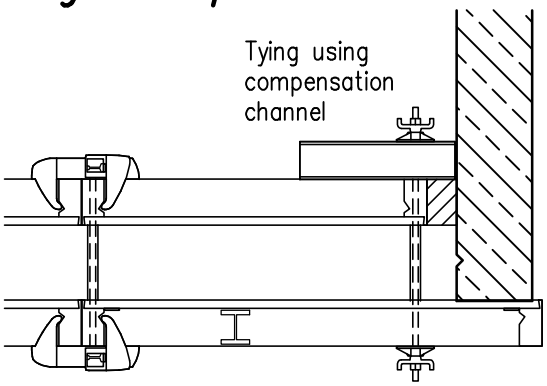
5. Solutions for formwork connections

5.1 Connection to existing wall

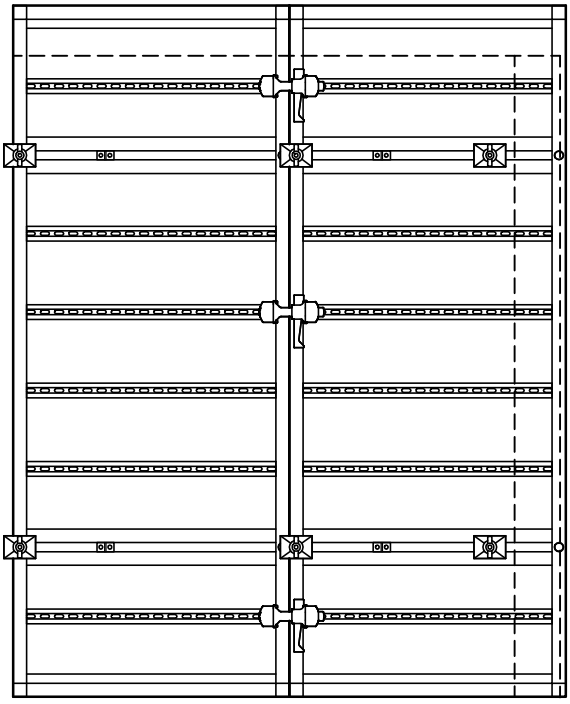




5.2 Using NOEtop MFP

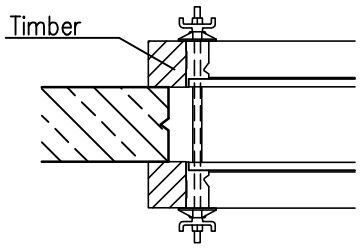


Front view

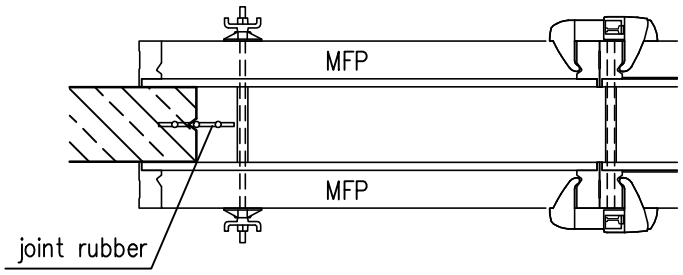


5.3 Longitudinal connection to existing wall

Using Timbers

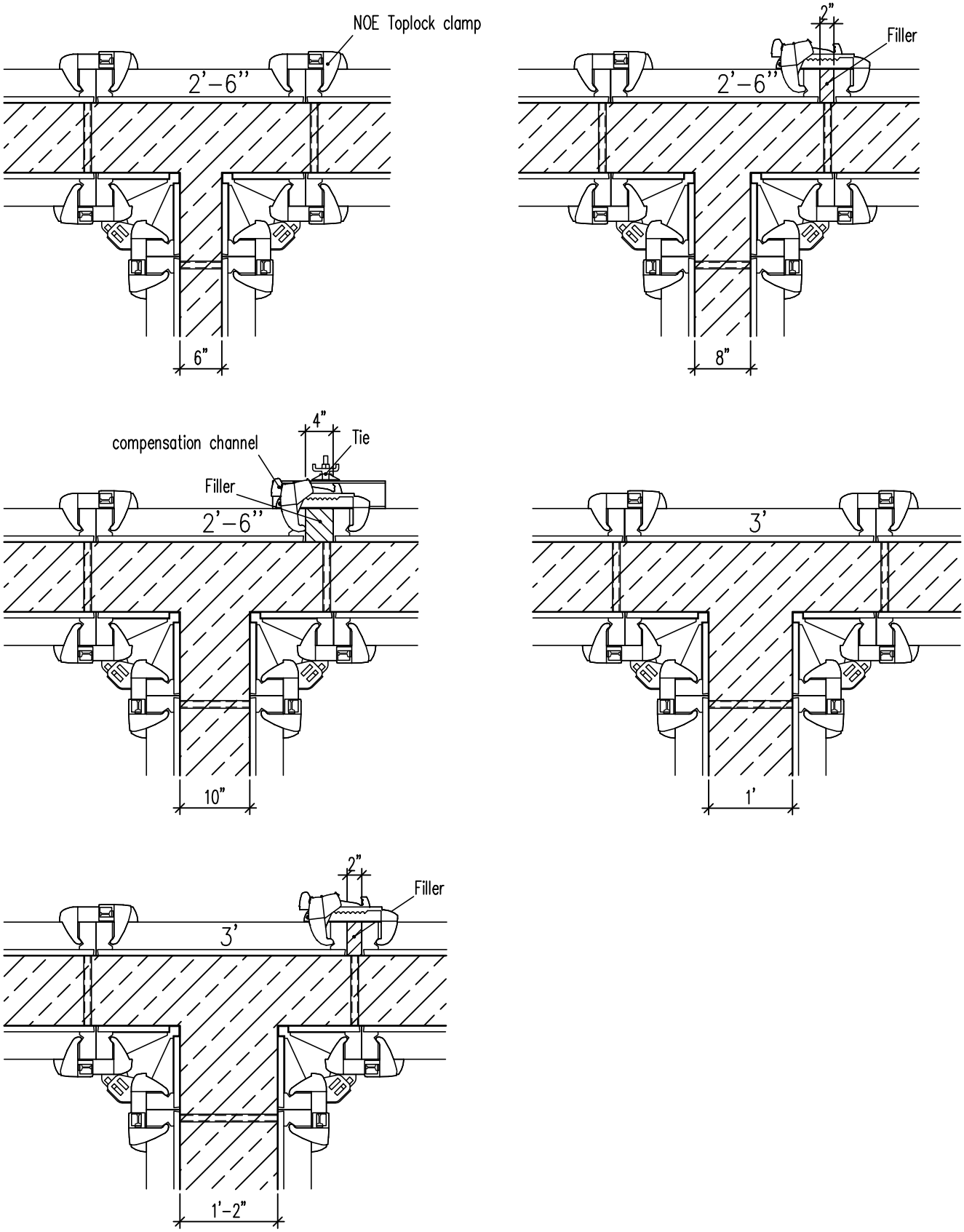


Using NOEtop MFP
for example sealing tape



Instead of the MFP, the ECP can also be used.
Tying through the holes of the ECP.

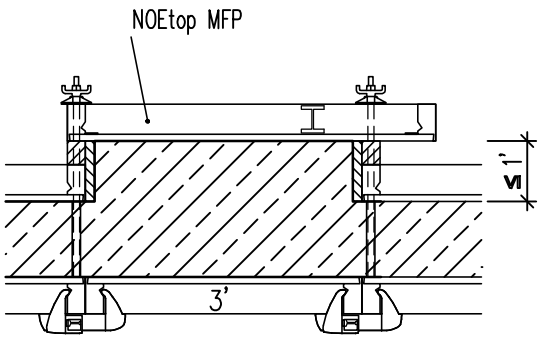
5.4 T–Walls


NOE Toplock clamp
2'–6''
6"
2"
Filler
2'–6''
8"
4"
Tie
compensation channel
Filler
2'–6''
10"
3'
1'
2"
Filler
3'
1'–2"

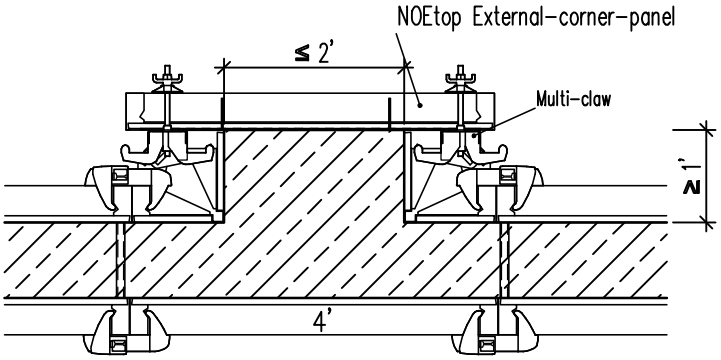
6. Special cases

6.1 Pilaster extensions

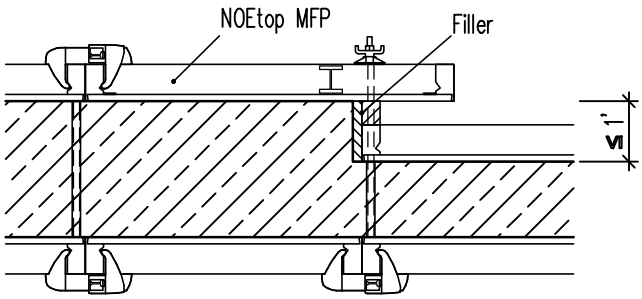
Extension up to 1’



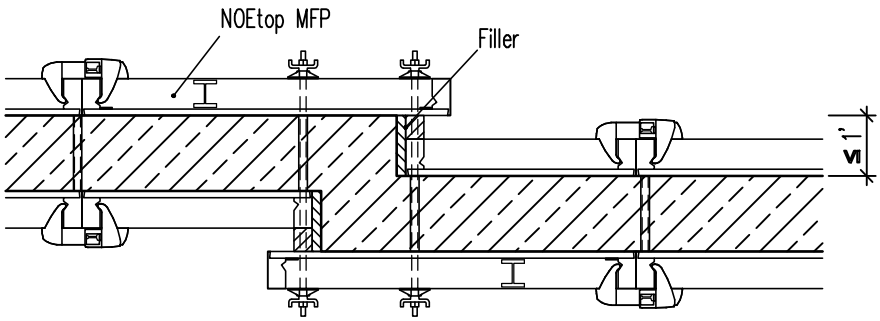
Extension over 1’



6.2 Change of wall thickness

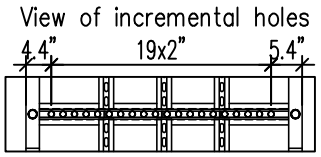


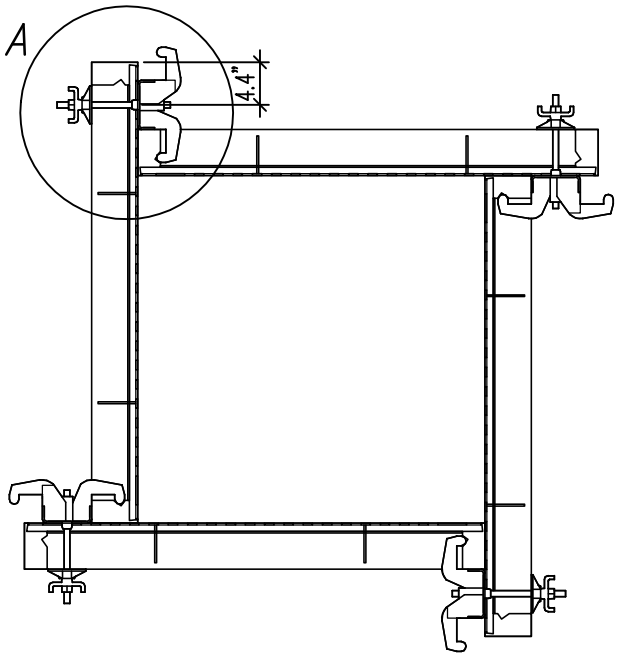
6.3 Offset walls



6. Special cases

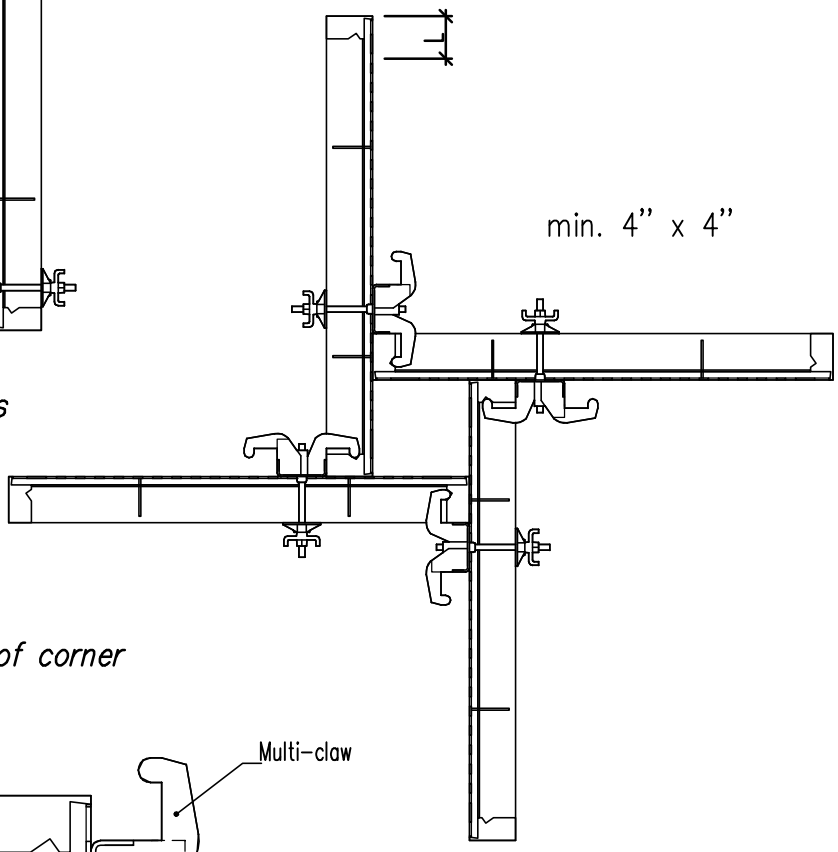
6.4 Forming columns using EC–panels





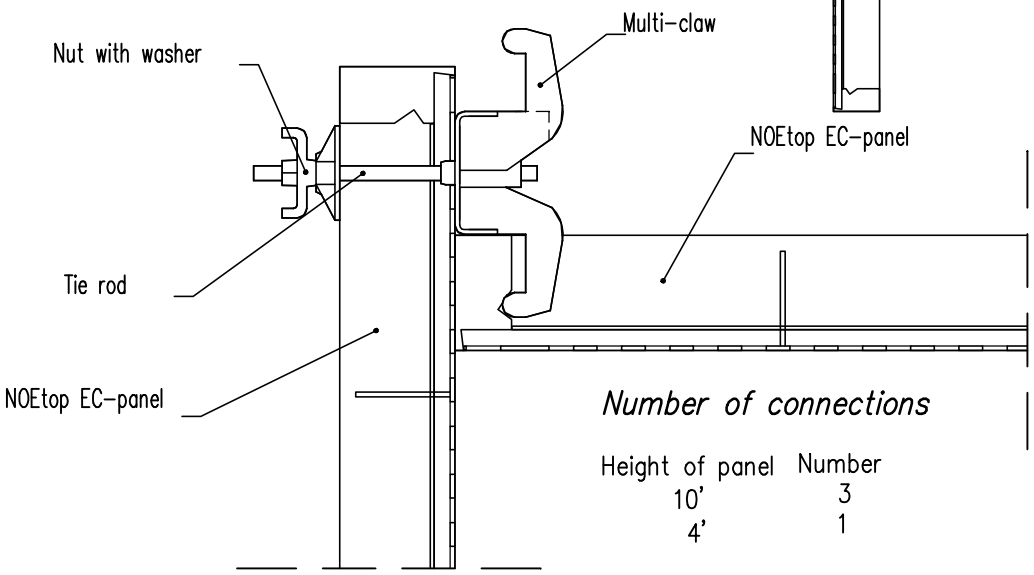
L = 4.4" (= center of the first hole) for dimensions from 0'–2" to 3'–0" in increments of 2".

L = 5.4" (EC–panel turned) for dimensions from 0'–5" to 2'–0" in increments of 2".



Reverse the panel for 1" increments

Detail A : connection of corner

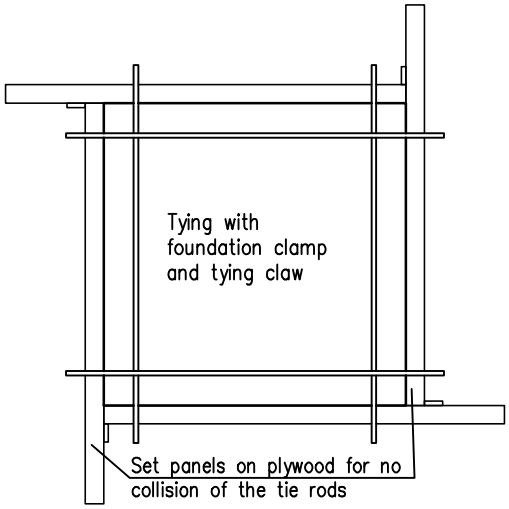


Number of connections

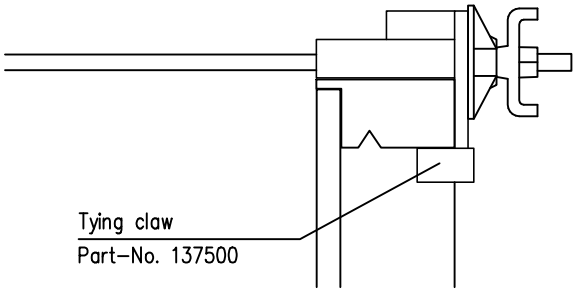
Height of panel	Number
10'	3
4'	1

6.5 Use for foundation

Block foundation with horizontaly arranged panels

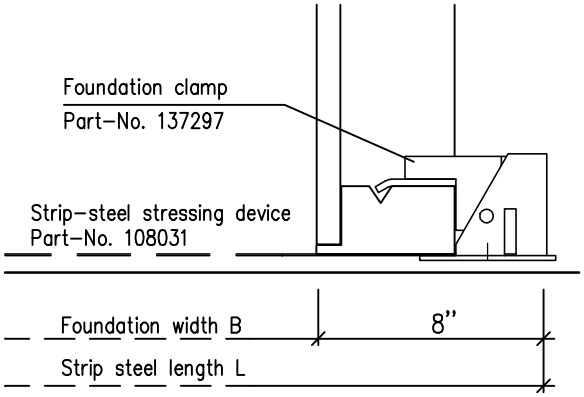


Detail tying with tying claw

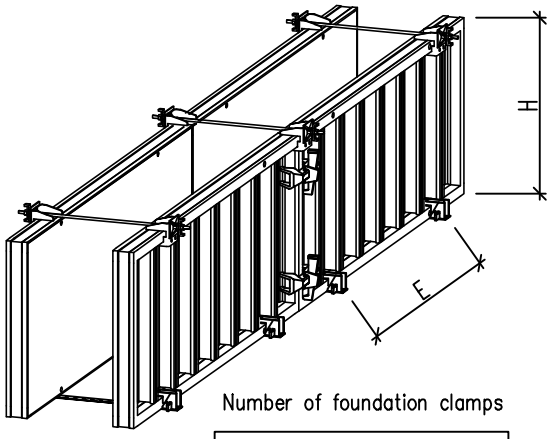


also possible with Multi–claw

Detail Tying with foundation clamp



Foundation using horizontal panels

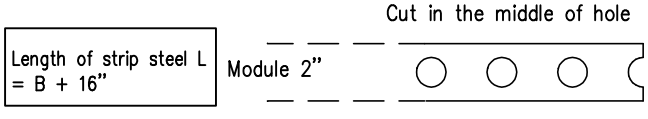


Number of foundation clamps

$E = 67.8 / H^2$ [in]

For H = 3' is E = 7'–6",
for H = 4' is E = 4'–3",
but min. 2 claws for each
panel.

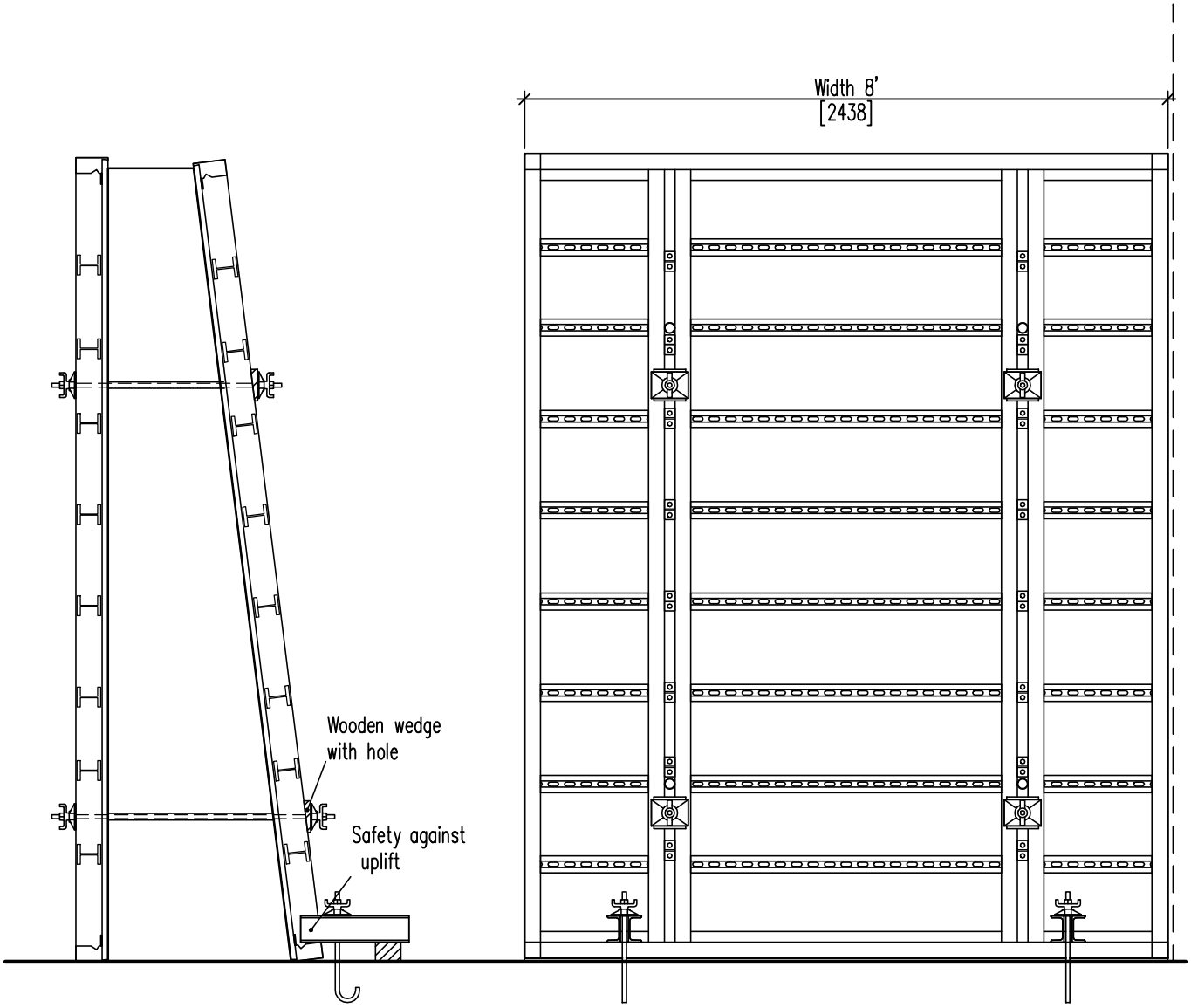
Attention: Basement formwork is subject to supporting on the job site against tensile and compressive forces.



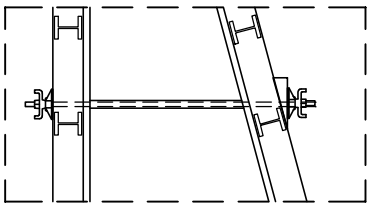
Allowable safe working load 3600 lbf

6.6 Battered Walls

Using large sized panels and NOE MFP, vertical strongbacks

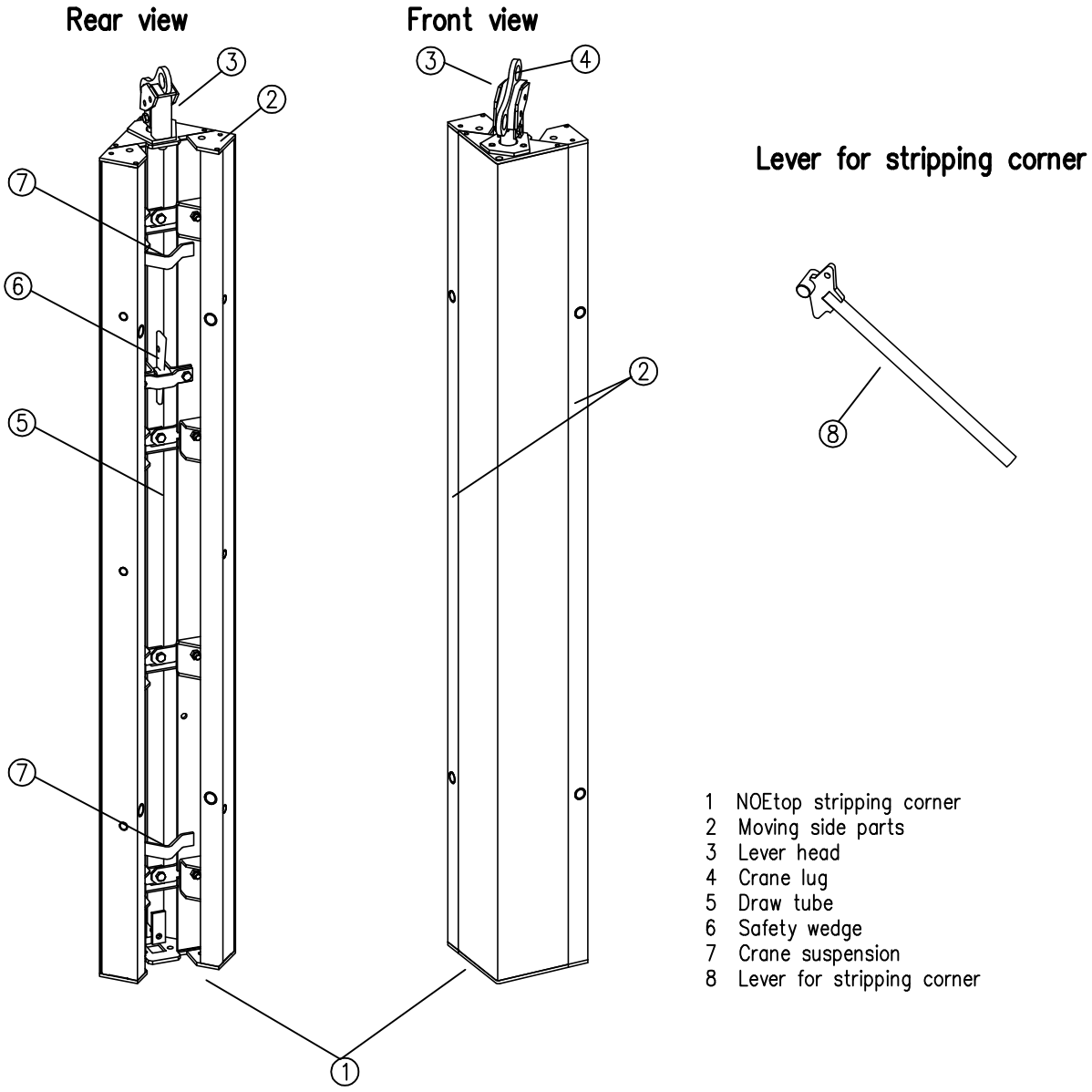


In case of larger slants it's possible to tie through the integrated strongbacks.
This solution is possible using 4'x8' and 10'x8' panel.



7. NOEtop stripping corner

7.1 Overview of the NOEtop stripping corner



Stripping corners provide stripping clearance of approx. 1.6".

The permissible concrete pressure is 1650 lb/sqft.

The corner is attached to the formwork with the NOE Toplock or by bolting with M18x160 bolts.

7.2 Erecting formwork with stripping corners

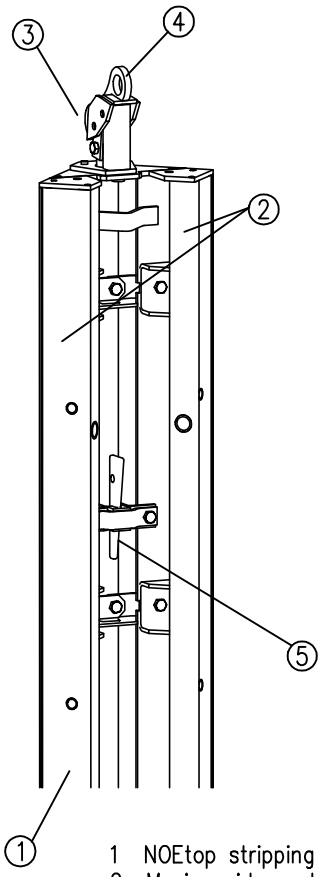
- When erecting formwork for a shaft or similar features, it is recommended that erection starts with the stripping corner at the corner.

  When doing this, it is important to ensure that the stripping corner is in the "erection–ready state", i.e. the moving side parts have been fully folded out. This is done by pressing or pulling the crane lug with the side facing the rear face of the formwork upwards. The simplest way of doing this is by suspending the stripping corner from the crane, e.g. when moving it into the installation position.

  Set the safety wedge to ensure the sides cannot be unintentionally folded together.

- Attach the NOEtop panels to one another to suit the plan arrangement then fasten and align them with Toplock V or M18 x 160 bolts. Extend the formwork if necessary.
  Apply release agent to the front and back formwork faces in accordance with the formwork preparation instructions.

- Fix reinforcement. Attach the outside face formwork coated with release agent and brace (seal any surplus tie rod holes with plugs).



1 NOEtop stripping corner
2 Moving side parts
3 Lever head
4 Crane lug
5 Safety wedge

Taping the joints between the fixed core and the moving side parts of the stripping corner with self–adhesive tape is recommended to reduce the build up of dirt and the need for cleaning. It also results in a clean, flat concrete surface.

7.3 Concreting

- Before concreting, check that the shoes are fully moved out and the safety wedge has been struck home.
- Check the construction of the NOEtop formwork in accordance with the NOEtop assembly and use instructions.
- Do not exceed the permissible pressure during concreting (DIN 18218 'Pressure of fresh concrete on vertical formwork'), i.e. pay attention to the rate of rise of the concrete.

> The permissible concrete pressure is 1650 lb/sqft.

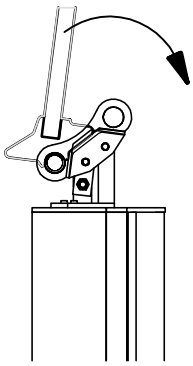
- If using internal vibrators refer to DIN 4235 Part 2 "Compaction of concrete by internal vibrators".

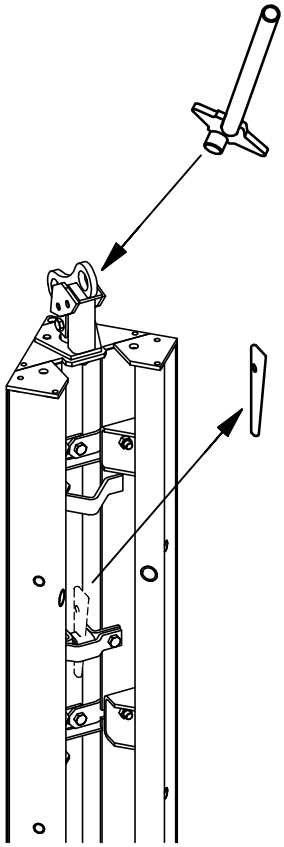
7.4 Stripping the formwork

- First remove the anchors and strip the external formwork.

> Before stripping check:
> – Minimum stripping time!
> – Concrete compressive strength!

- Remove the safety wedges from the stripping corners.
- Insert the lever into each of the crane lugs of the lever head in turn, press or pull in the direction of the back of the formwork and bring the stripping corners evenly and in incremental stages into the stripping setting.

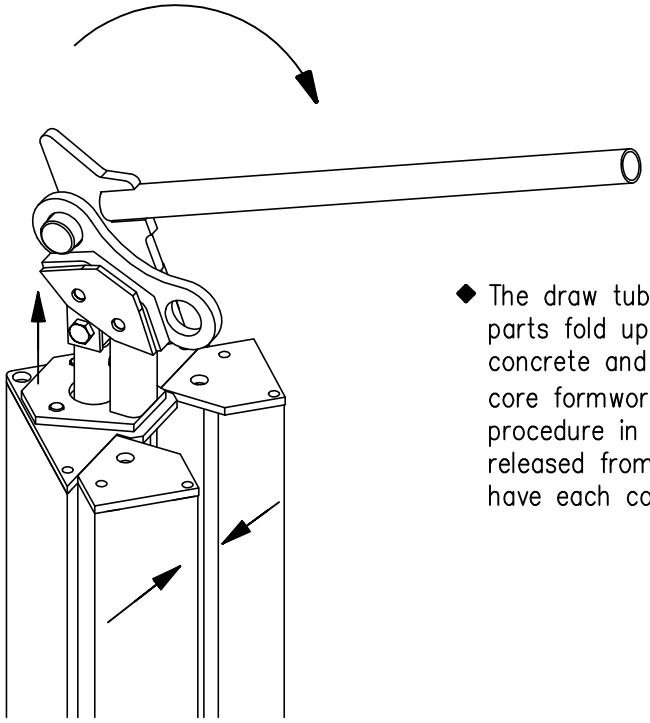




Shown without attached NOEtop panels.

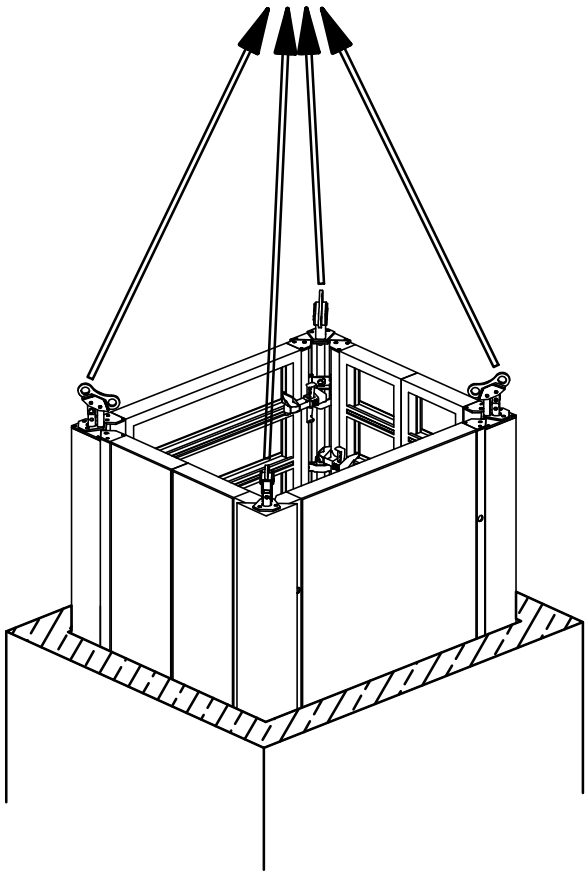
> Do not attach the formwork to the crane, do not lift it until the formwork has been completely released from the concrete and the stripping corners have been completely folded together.
>
> DO NOT USE THE CRANE TO RELEASE THE FORMWORK FROM THE CONCRETE !
> Check again that all the tie rods and anchors have been removed before lifting with the crane.

7. NOEtop stripping corner



Shown without attached NOEtop panels.

- The draw tube is moved upwards and the moving side parts fold up together. The formwork releases from the concrete and the external dimensions of the internal core formwork shorten (approx. 1.6”). Repeat this procedure in steps until the formwork is completely released from the concrete and the stripping corners have each completely folded up together.



- After the formwork is completely released from the concrete, the 4 stripping corners can be attached to the crane’s lifting tackle and the complete inner formwork unit moved in a single lift to the next point of use or for cleaning.

  Attach the lifting tackle to the upper eye of the crane lug (the one that points towards the front face of the formwork), note that pulling the wrong eye will fold the stripping corners out again.

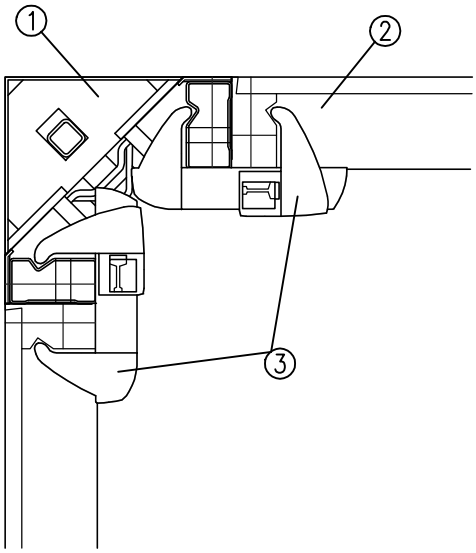
  Ensure that there no loose objects, e.g. the lever, are on or in the formwork.

Permissible tensile force applied at the crane lug per stripping corner: 2200 lb
(Only 3 of the crane lugs can be assumed to be loadbearing at any time!)

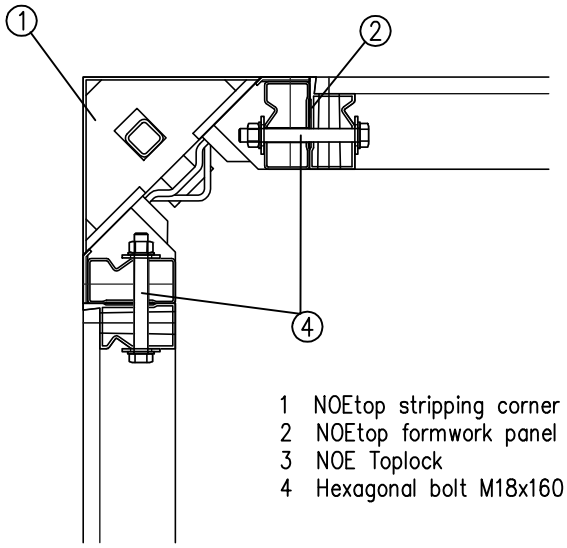
Do not exceed the load capacity of the crane.

7. NOEtop stripping corner

7.5 Attaching to NOEtop formwork elements



The stripping corner is clamped to the NOEtop frame panel with the NOE Toplock.



1 NOEtop stripping corner
2 NOEtop formwork panel
3 NOE Toplock
4 Hexagonal bolt M18x160

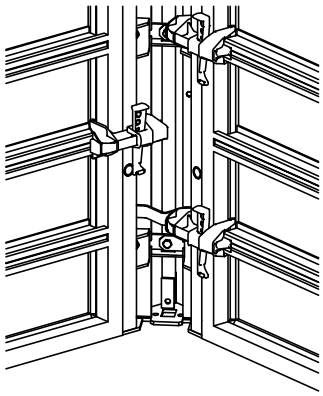
Alternatively the stripping corner can be bolted to the NOEtop frame panel. M18 x 160 bolts are used for this.

Number of Toplock required

Panel height	No. Req.
10’	4
4’	2

Number of threaded connections

Panel height	No. Req.
10’	3

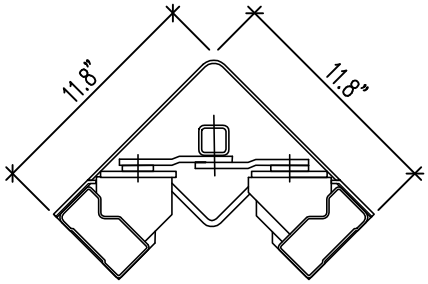


ATTENTION:
NOE Toplock must be attached at staggered heights!

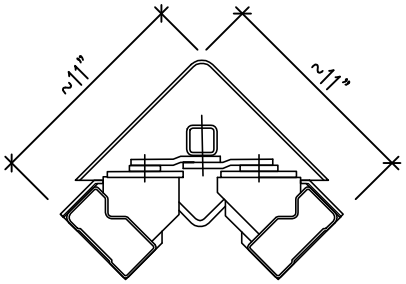
7.6 Stripping and erection settings of the stripping corner

The stripping clearance of the stripping corner is approx. 20 mm.

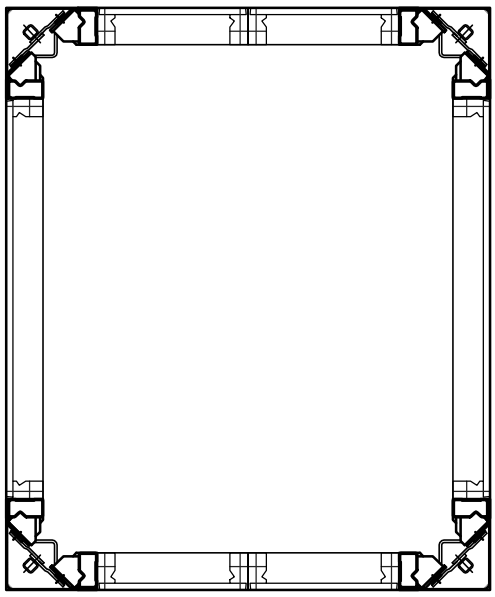
◆ Cross-section
Stripping corner in erection setting



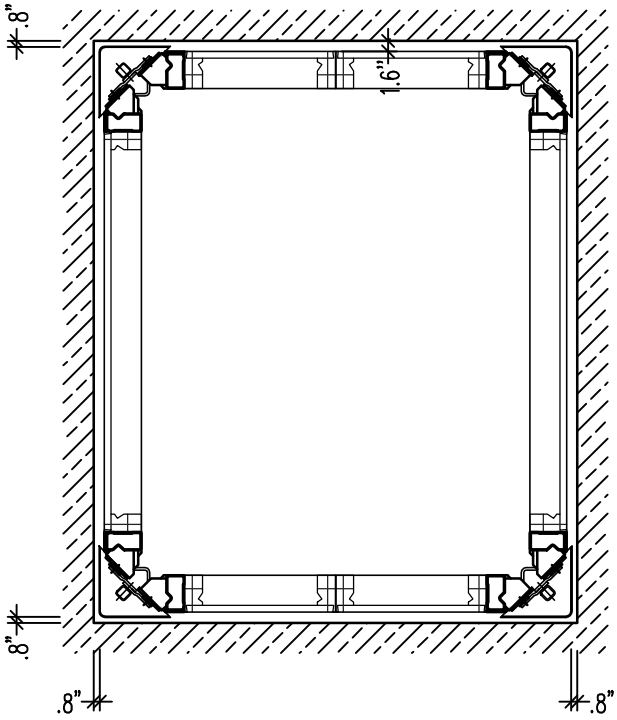
◆ Cross-section
Stripping corner in stripping setting



Example of formwork in erection setting



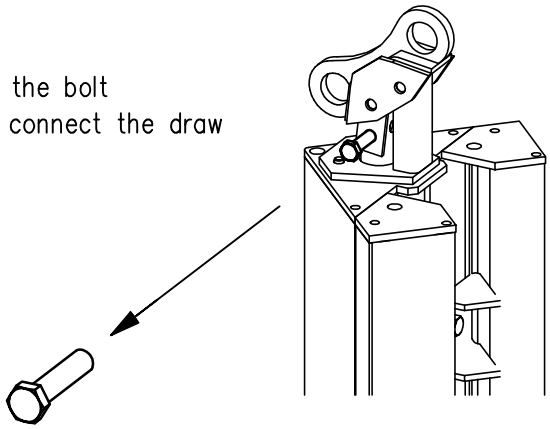
Example of formwork in stripping setting



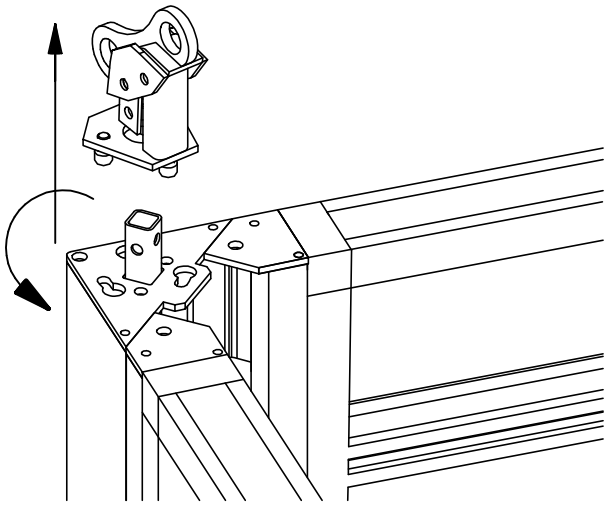
7.7 Stacking of stripping corners

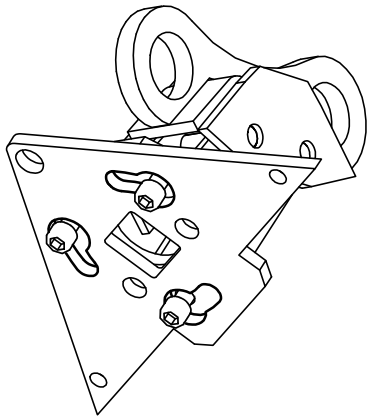
First erect the lower formwork elements in the specified plan shape as described above.
Then the lever head must be removed to allow the stripping corners to be extended. The lever head is fitted with a bayonet connector and is secured with a bolt.

- First release and take out the bolt (it will be needed later to connect the draw tubes)



- Turn the head approximately 30° anticlockwise to release it. Then the locking pin heads can be guided out of the large holes in the plate and the head removed.

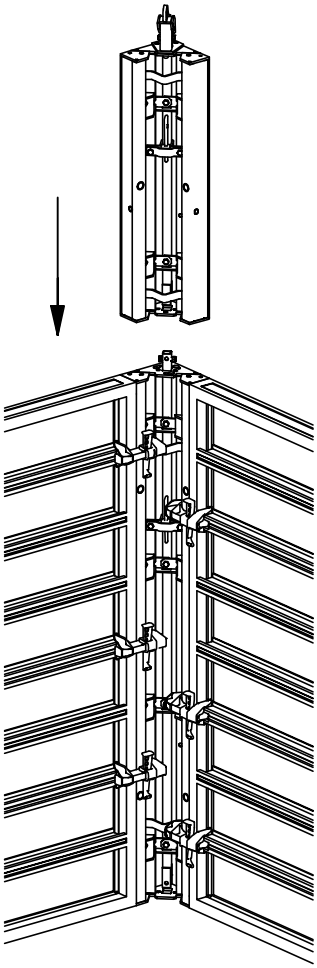


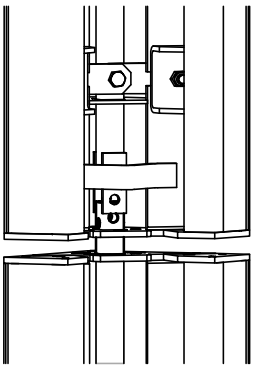


View from below:
Cover plate and lever head with bayonet lock ("bayonet lock")

7. NOEtop stripping corner

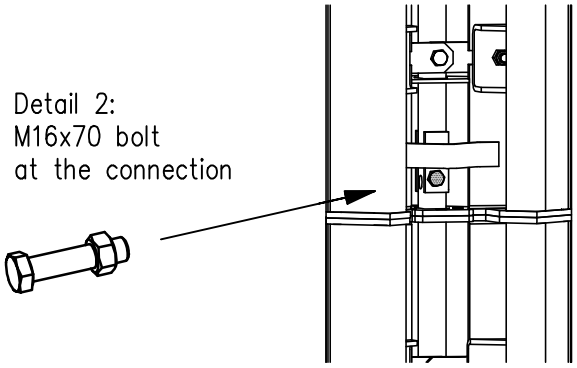
- Installing the extension element. The draw tube on the lower stripping corner is threaded through rectangular opening in the base plate and then connected and secured with a bolt.





Detail 1:
Threading the draw tube

Detail 2:
M16x70 bolt
at the connection

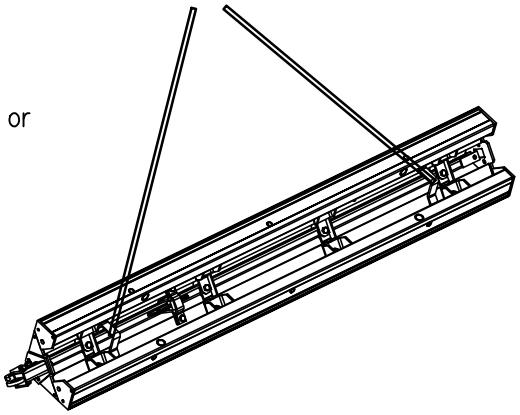


- Connect the extension element of the NOEtop frame panel to the stripping corner and secure them together with NOE Toplock.

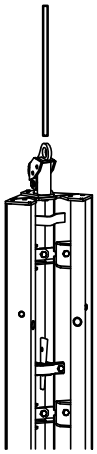
If the stripping corners are to be extended in advance of installation, e.g. formwork preassembled on its side, then the roughly butted base and cover plates of the corners must be bolted together with 2 M16x40 bolts !
The corners must be in the erection setting in order to be able to remove the lever head.

7.8 Crane transport

- The corner can be suspended from the 2 integrated crane bows for transporting the stripping corner horizontally, e.g. for loading or unloading.

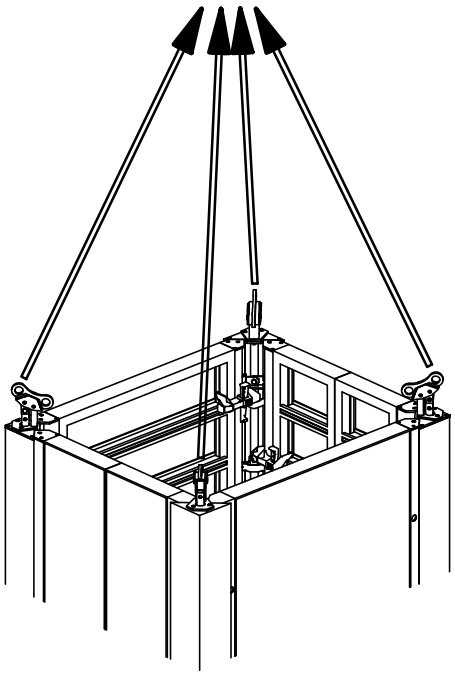


- The crane hooks can be engaged into the crane lugs of the lever head for transporting vertically. This also results in the stripping corners being brought into the erection setting simultaneously. They each still have to be secured with the wedge.



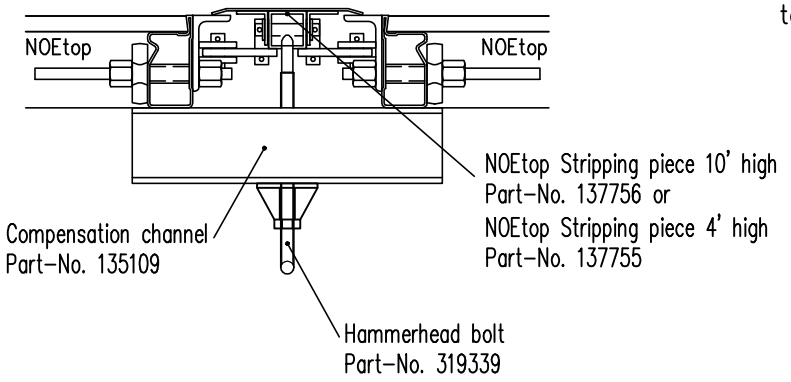
- After the formwork has been released from the concrete, the NOEtop stripping corners are suspended from the crane lugs and the complete formwork moved in a single lift.

  Attention:
  Suspend the formwork from the crane lugs pointing to the formwork lining side. Otherwise the formwork will be separated again.

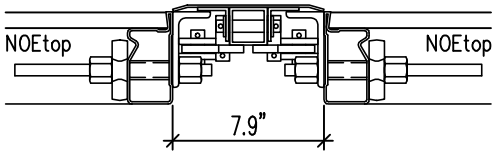


8. NOEtop stripping piece

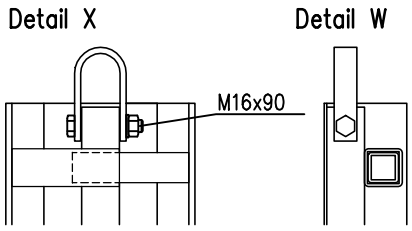
Top view in pouring position

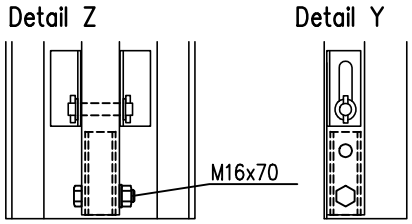


Top view in stripping position

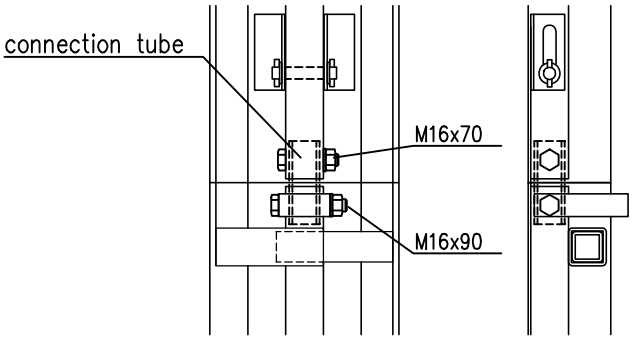


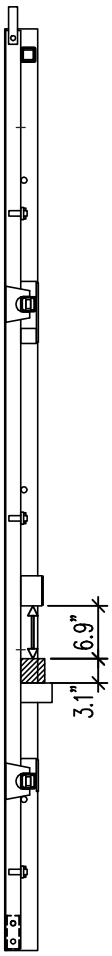
Stacking
Stripping pieces can be stacked and bolted together for additional height.





To extend take out the M16x70, Slip out the connection tube and bolt it with the M16x70 and M16x90 together.
Delivered with inserted connection tube.

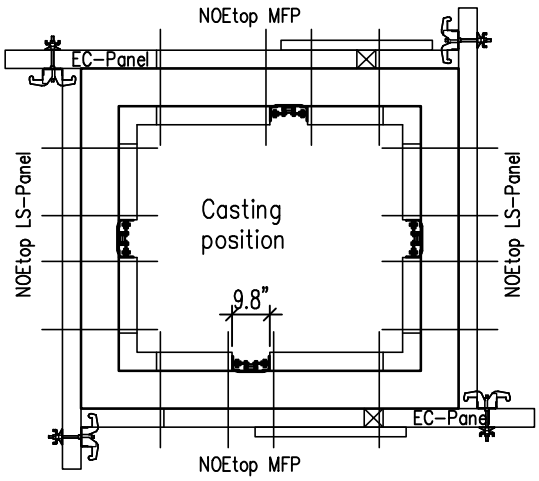


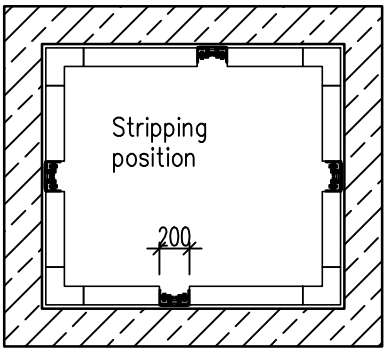


Stripping

For stripping take out all the wedges on the stripping piece and bolts one side only. Use a jack to break the stripping piece free. After that the formwork can be lifted with a crane.

Example

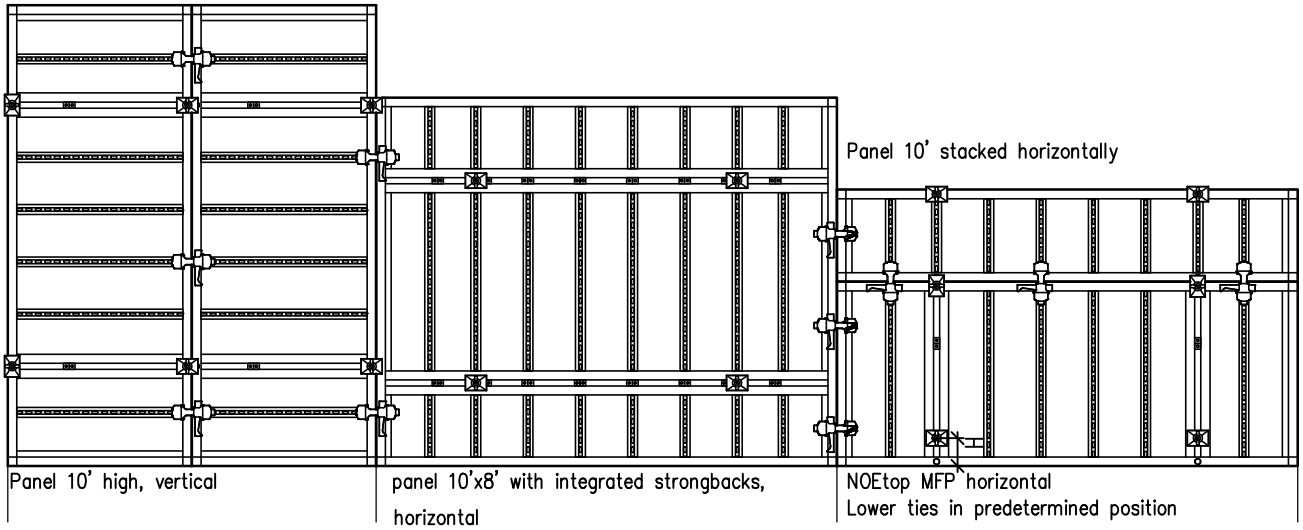


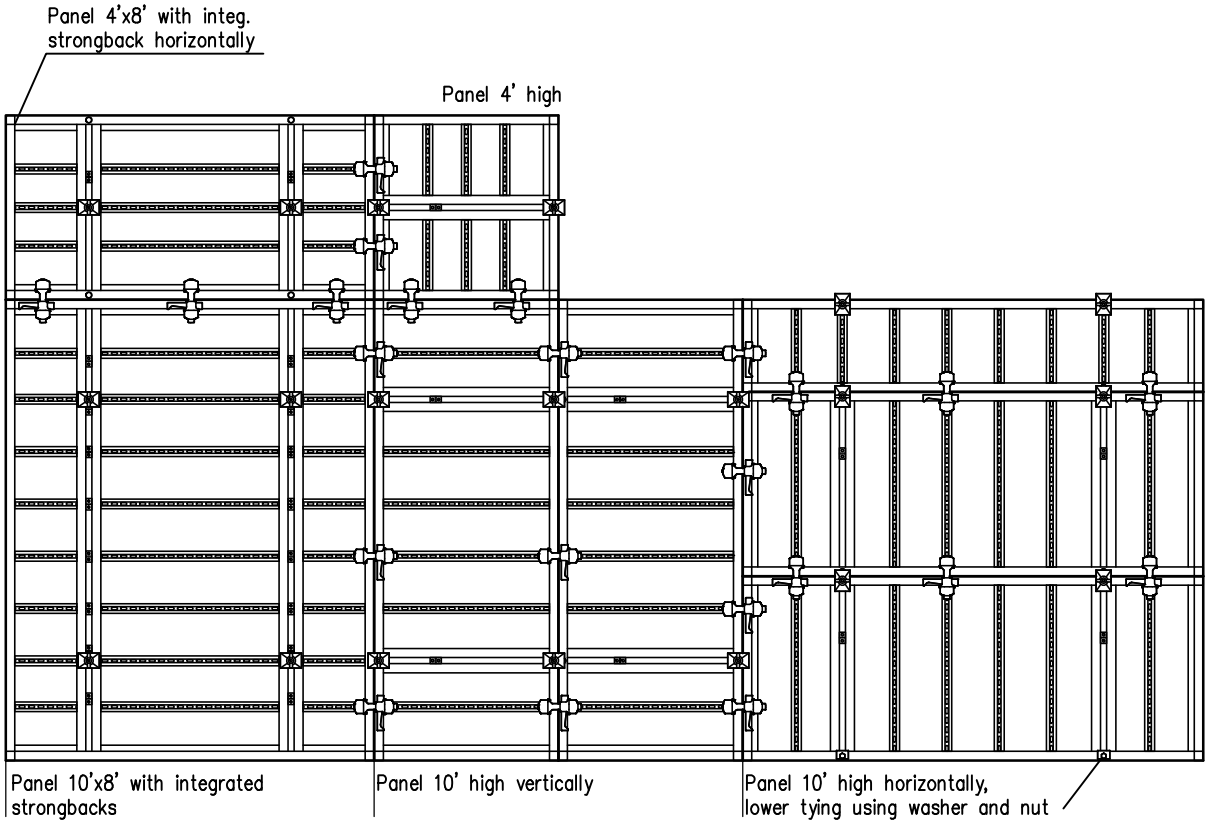


9. Stacking of NOEtop formwork panels

9.1 Combination of panels

Panels can be combined vertically or horizontally. The NOE Toplock clamp can be placed anywhere on the panels (edge–profile goes around the panel).





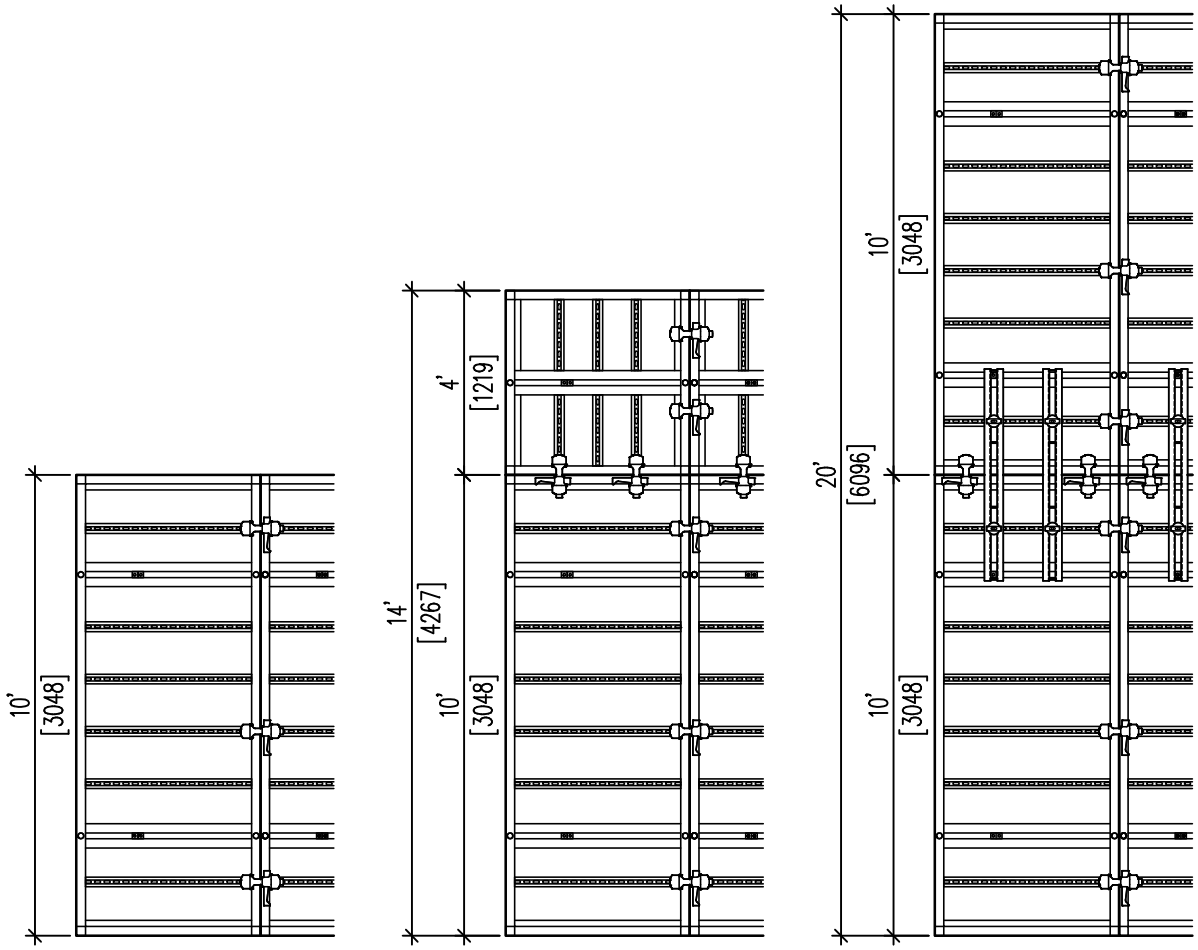
9. Stacking of NOEtop formwork panels

9.2 Stacking MFP and standard panels vertically

For stacking panels with higher extensions use additional bracing at the joint.
Stacking of standard panels similar to MFP.

9.2.1 Stacking panels max. 4' wide

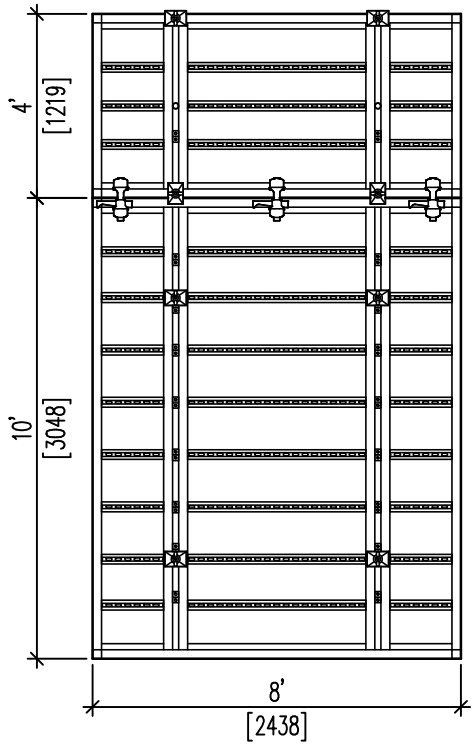
Stacking of standard panels similar to MFP.

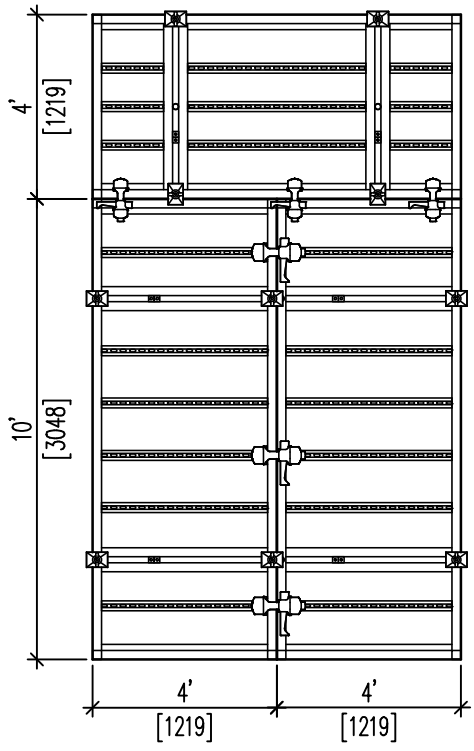


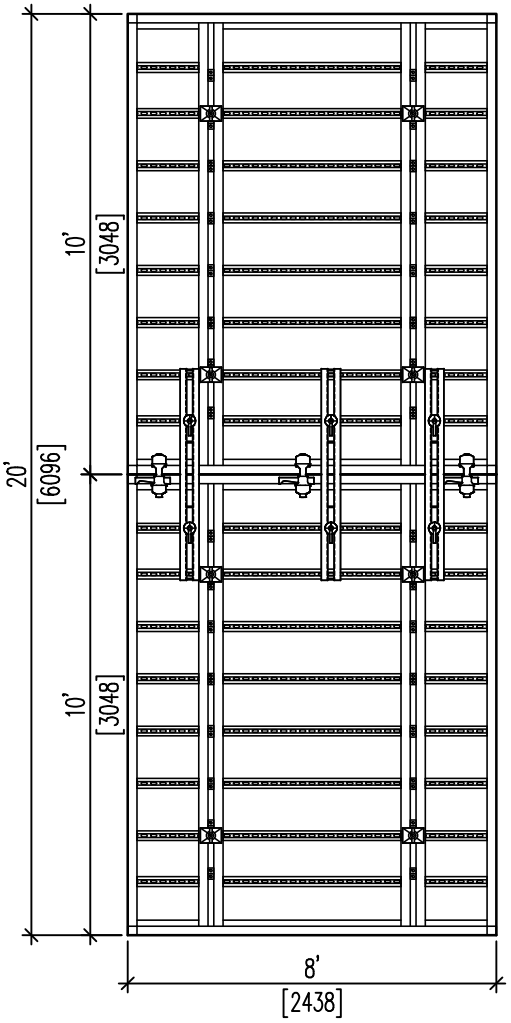
9. Stacking of NOEtop formwork panels

9.2.2 Stacking panels 8' wide

View

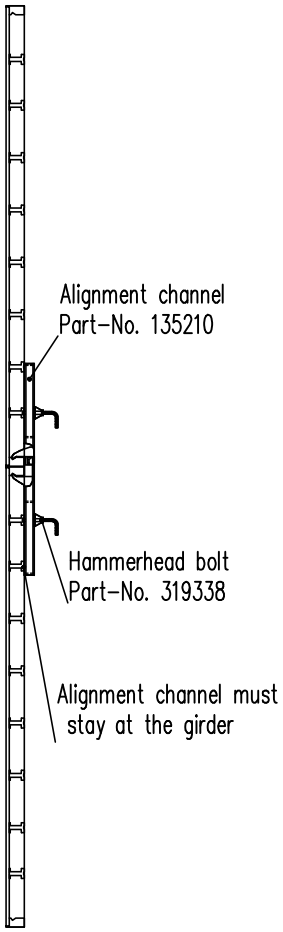






By bracing, higher extensions are possible.

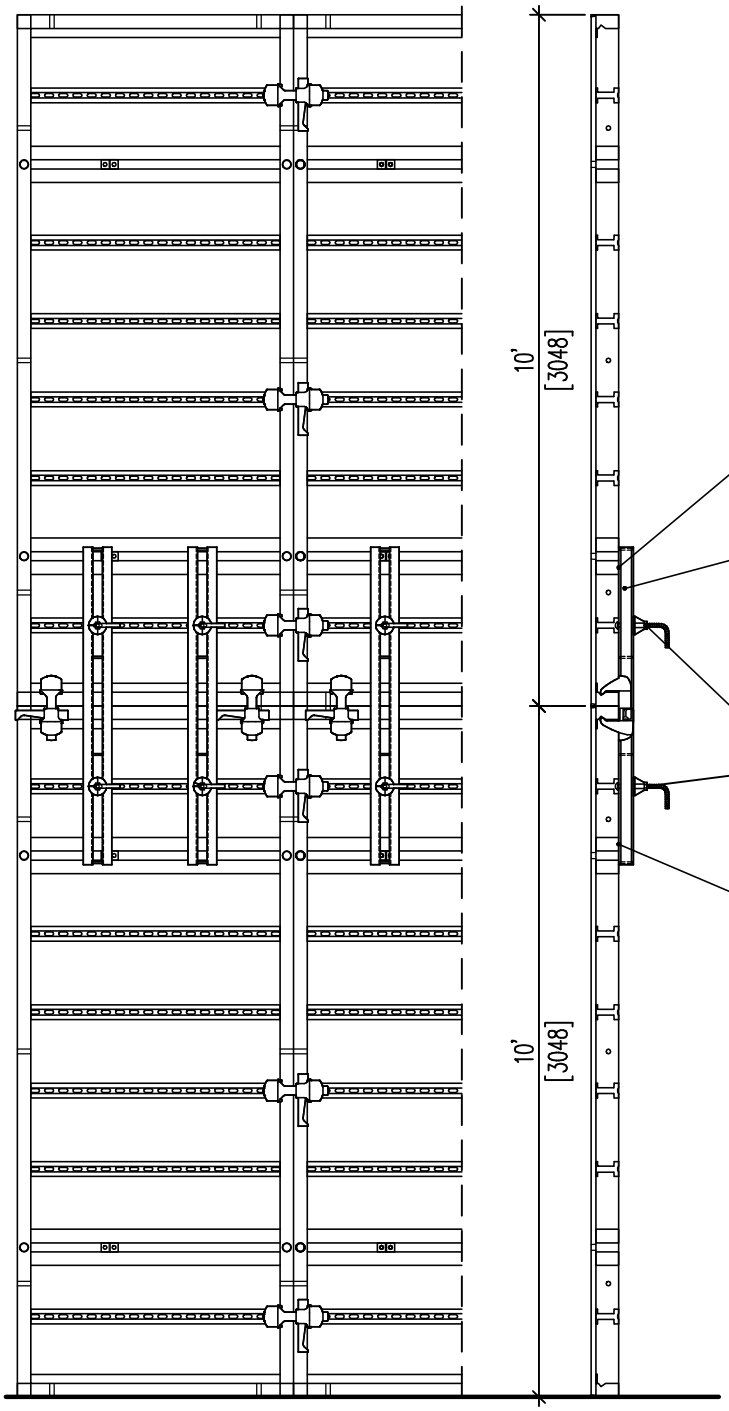
Section
without tying



9. Stacking of NOEtop formwork panels

9.2.3 Stacking vertical panels 10' high

Stacking of standard panels similar to MFP.



Maximum height 20'. Higher panels need additional bracing.

Alignment channel has to stay on the girder

Alignment channel Part-No. 135210

Hammerhead bolt Part-No. 319338

Alignment channel has to stay on the girder

Horizontal joint each panel:

Panel size 1': 1 NOE Toplock clamp

Panel size 2': 1 Alignment channel and 1 NOE Toplock clamp

Panel size 2'-6": 1 Alignment channel and 2 NOE Toplock clamps

Panel size 3': 2 Alignment channel and 1 NOE Toplock clamp

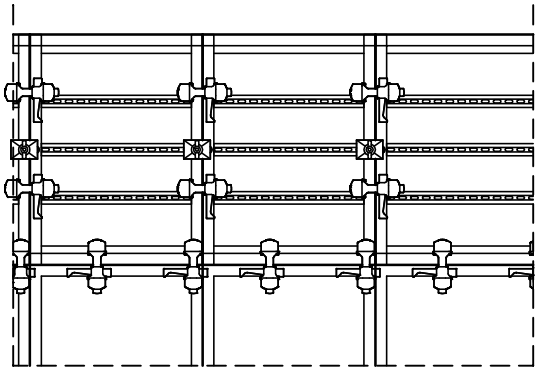
Panel size 4': 2 Alignment channels and 2 NOE Toplock clamps

9. Stacking of NOEtop formwork panels

9.2.4 Vertical stacking of formwork with panels 4' high

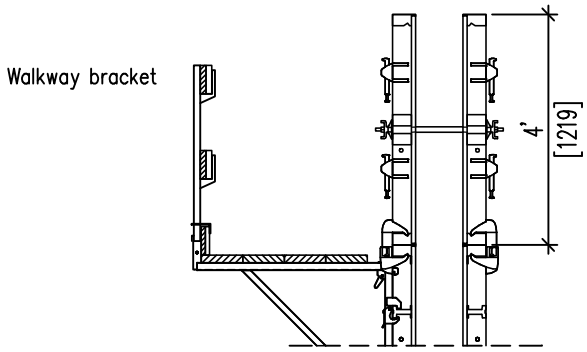
Stacking of MFP similar to standard panels.

View *(without walkway bracket)*



Horizontal connection of panels
- Panel size 1' and 2" 1 NOE Toplock clamp each panel
- Panel size 2'–6" to 4' 2 NOE Toplock clamps each panel

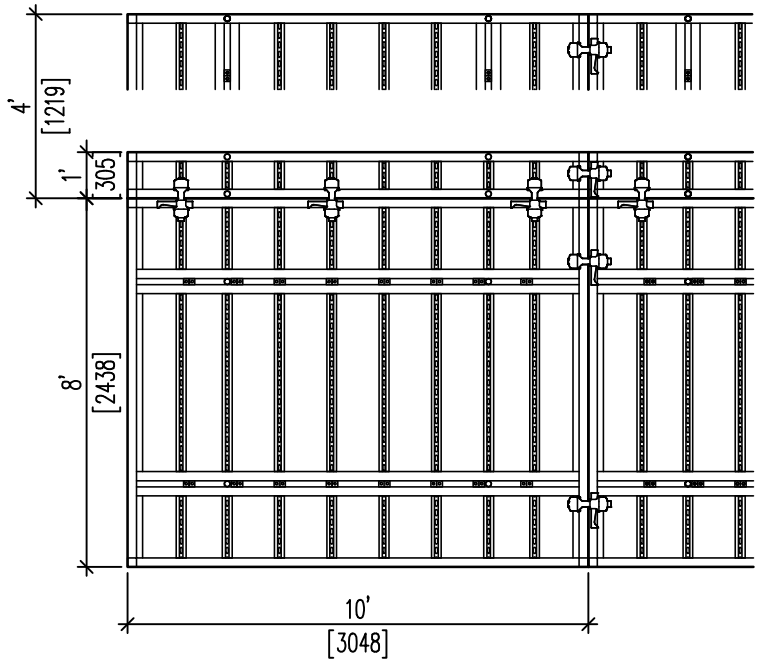
Section



For large area crane handling and lifting gang forms from the assembly area, additional alignment channels must be used on the horizontal joints

9.3 Horizontal extensions with MFP and standard panels

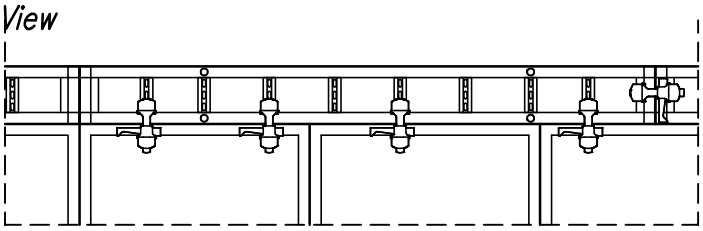
Stacking of standard panels similar to MFP.



9. Stacking of NOEtop formwork panels

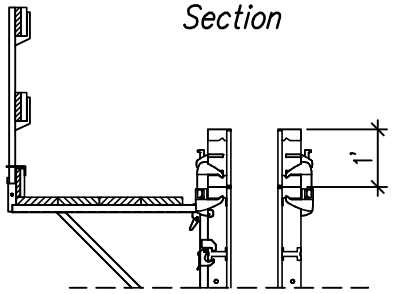
9.3.1 Stacking 1'

View



Stacking with NOE Toplock clamps. Stacking without tying if 4 clamps used for a 10' wide panel.

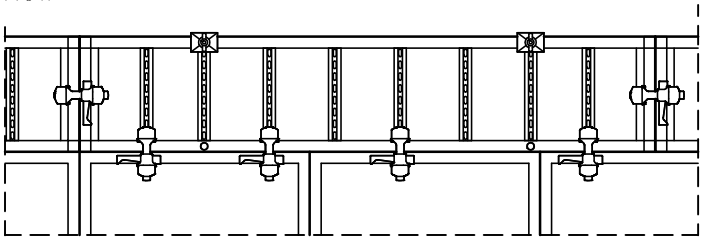
Section



Suspension of walkway bracket on horizontel panel

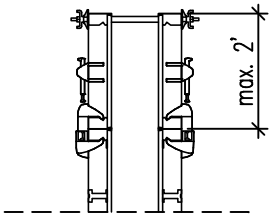
9.3.2 Stacking 2'

View

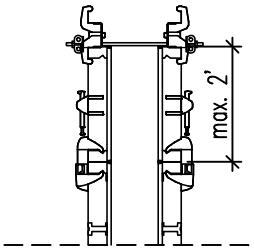


4 NOE Toplock clamps on a 10' wide panel. Only tied on the top of the panel.

Section



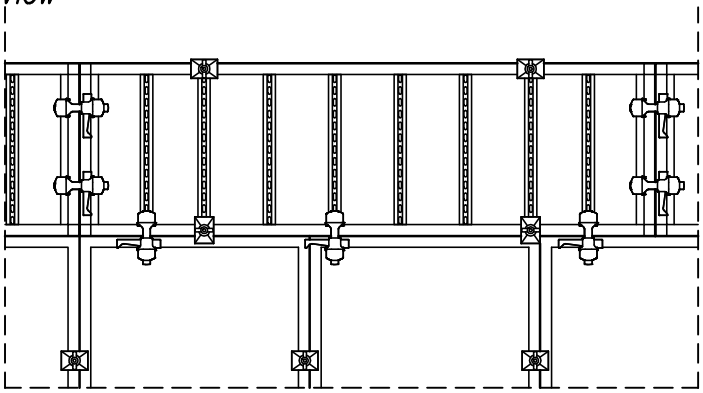
Atternative tying of the horizontal panel with Multi-claw and sprint



9.3.3 Stacking 2'-6" to 4'

Stacking of MFP similar to standard panels.

View

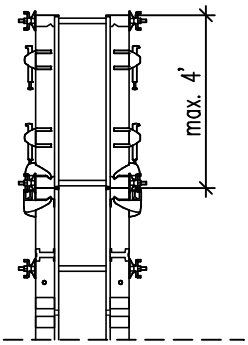


Extented panel tied on top and bottom

For large area crane handling and lifting gang forms from the assembly area, additional alignment channels must be used on the horizontal joints.

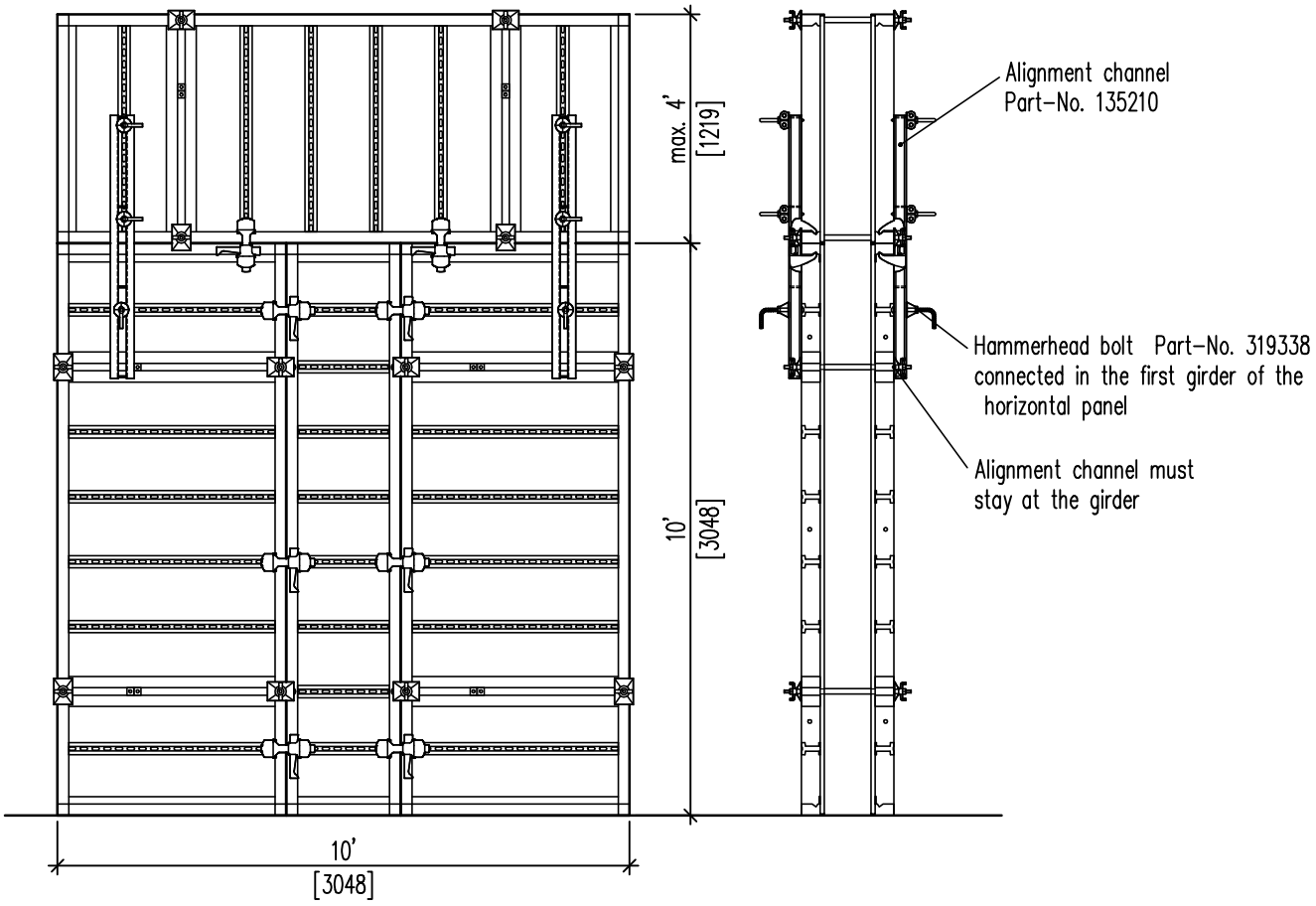
Section

Possible to tie over the top (see 2')



9. Stacking of NOEtop formwork panels

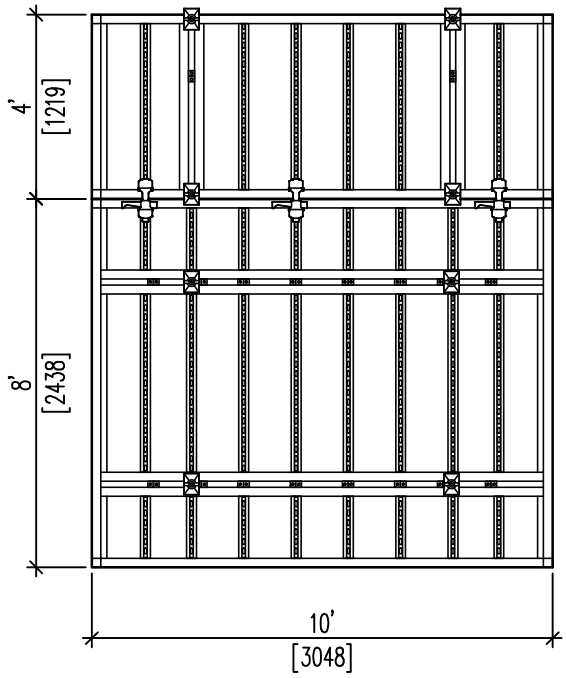
9.3.4 Horizontal extension with alignment channel

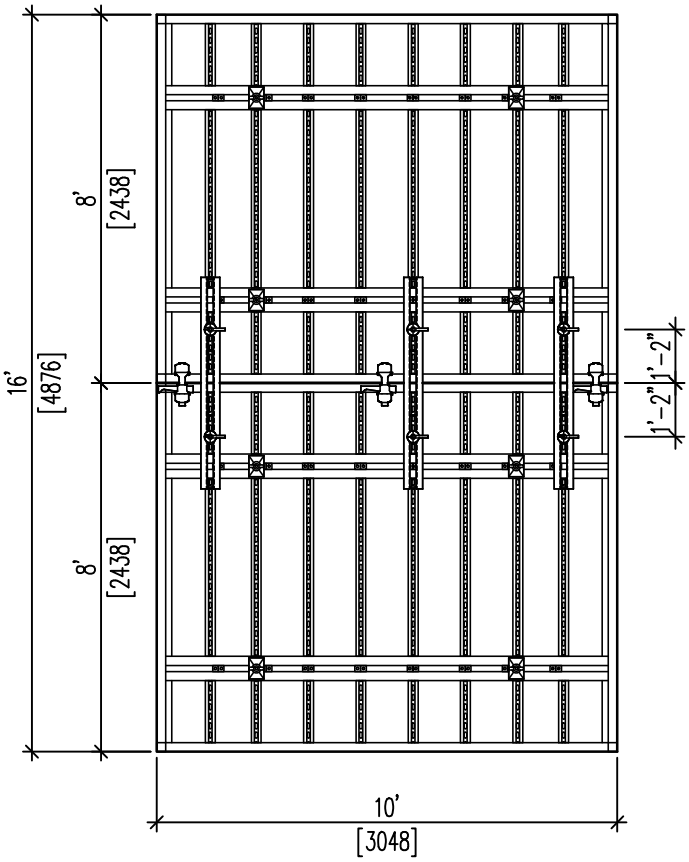


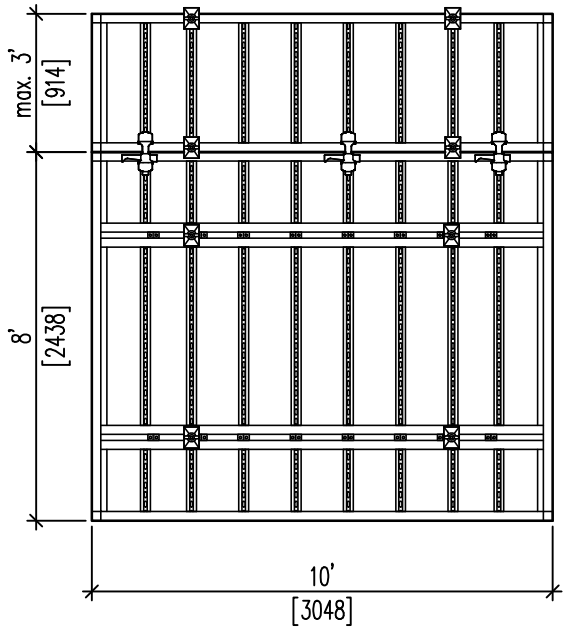
9. Stacking of NOEtop formwork panels

9.3.5 Stacking 8'x10'

View

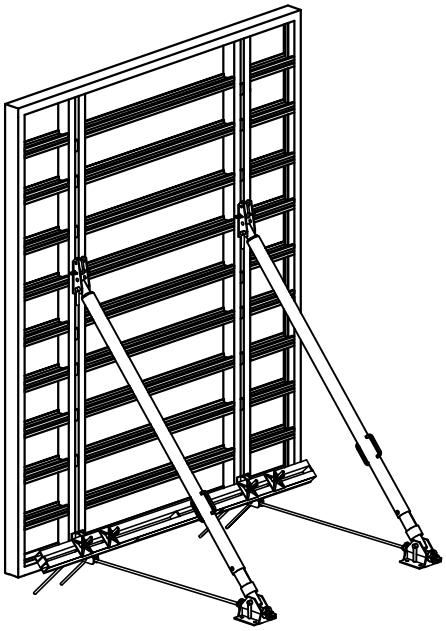






10. NOEtop for single-sided applications

Height of pour max. 10'–6"



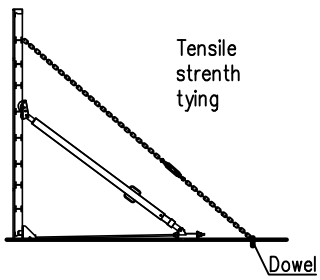
10.1 General notes

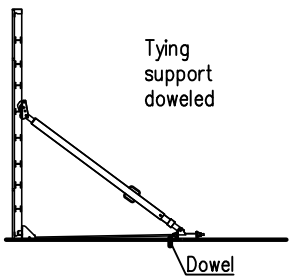
When pouring single sided walls the concrete pressure has to go through the formwork with suitable anchorage to the ground.

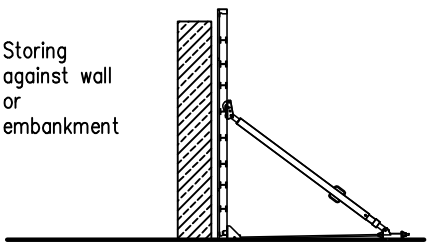
The following conditions must be met:

- The location of the anchors must be planned and fixed before casting the foundation or bottom slab.
- The concrete compressive strength of the anchored concrete parts must be strong enough to absorb the loads.
- The opposite wall (existing wall or others) has to withstand the concrete pressure also.
- For safely storing panels must be tied or be secured by other preventative steps (storing against wall or embankment).

10.2 Safe Storing





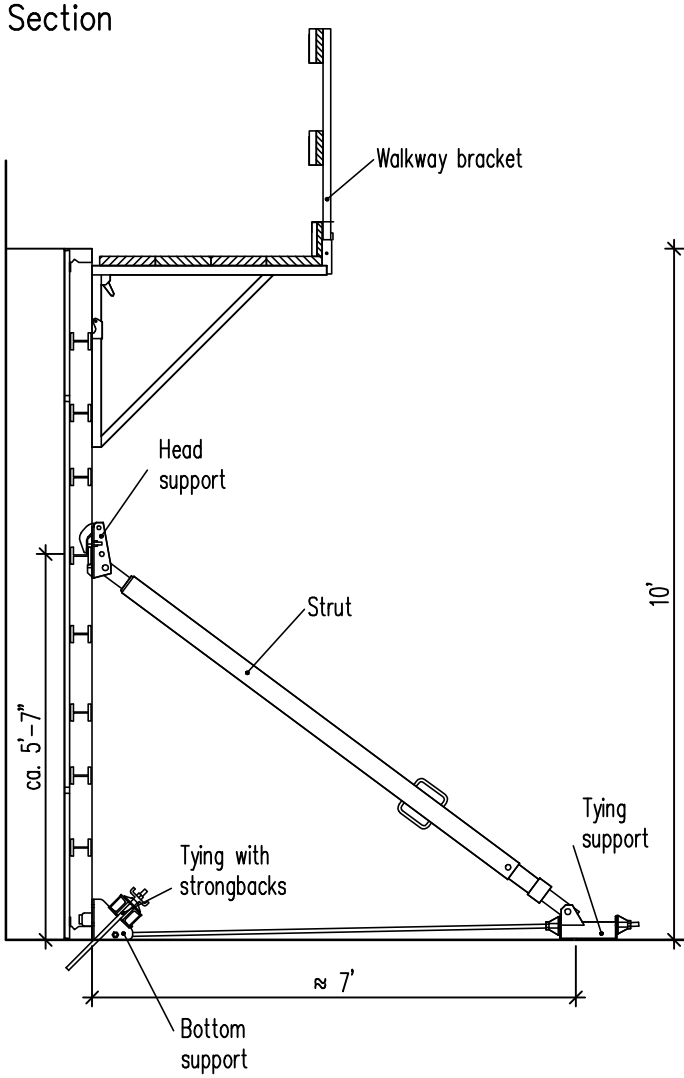


10.3 Using NOEtop large sized panels with integrated strong backs

10.3.1 Common instructions

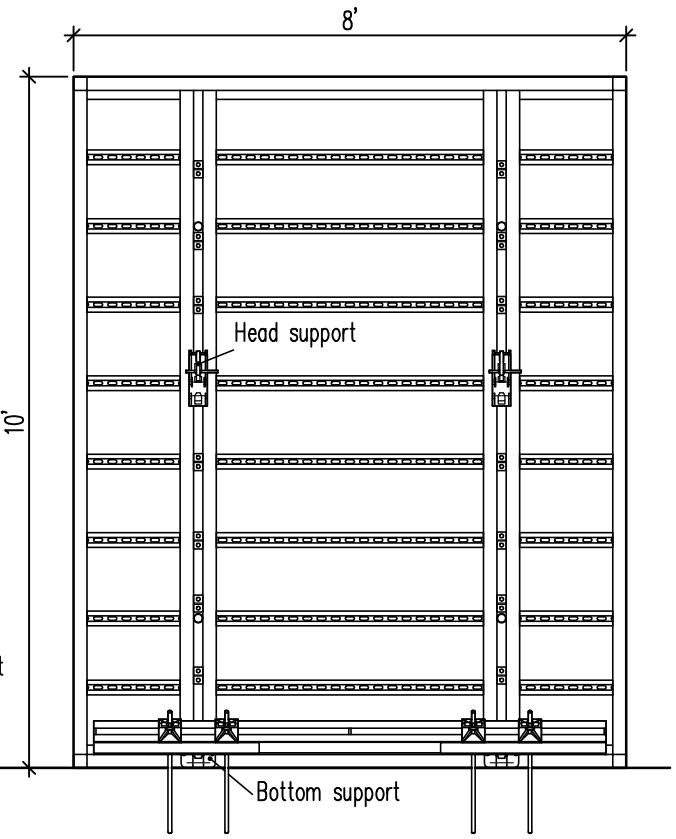
- *No additional strong backs requested.*
- *The necessary safety and supporting equipment can be attached directly to the panel.*
- *For each integrated strongback two anchors are necessary (that means 4 each panel).*

Section



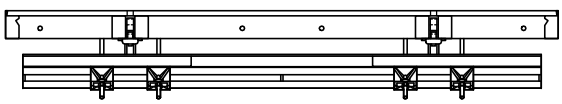
View

Without struts and walkway brackets



Top view

Without struts and walkway brackets



10.3.2 Range of use

Static calculation

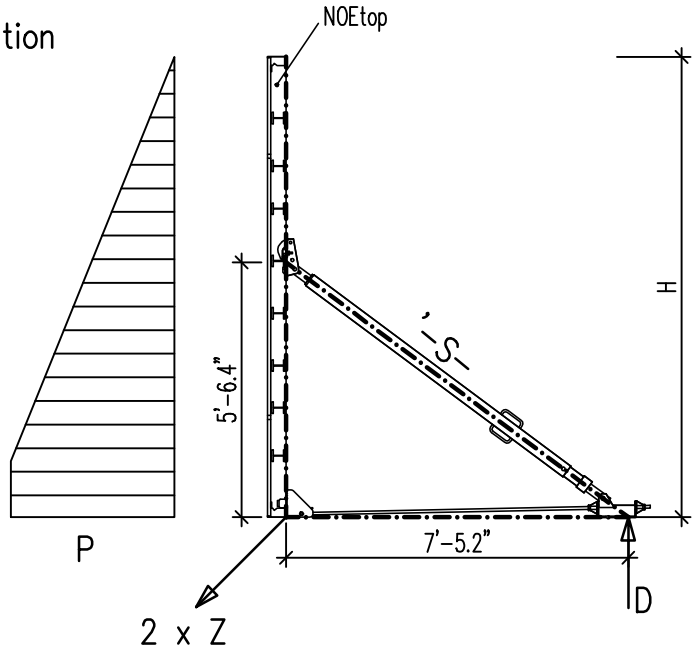
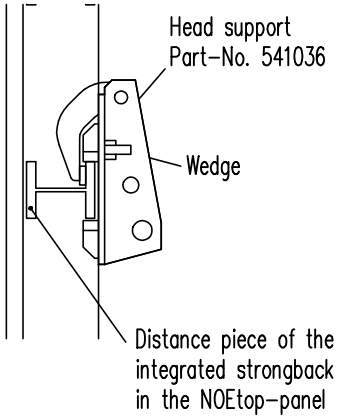


Table of NOEtop, panel size 8', 2 supportings, 4 anchors

Height of concrete	Max. pressure of concrete (lb/sqft)	power of anchor Z, each anchor (lb)	Pressure D (lb)	Strut S (lb)
7'-6"	hydrost.	12600	6010	10060
8'	hydrost.	14380	7300	12220
8'-6"	hydrost.	16250	8760	14670
9'	1250	17940	10390	17390
9'-6"	1040	18350	11870	19880
10'	940	18730	13310	22290

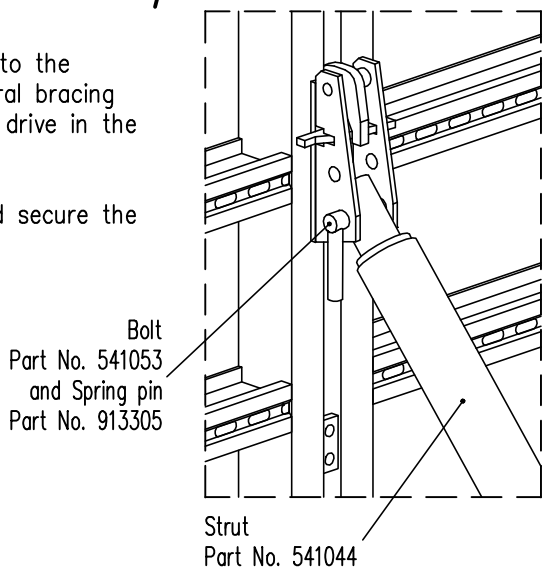
10. NOEtop for single-sided applications

10.3.3 Detail connecting the head support to NOEtop

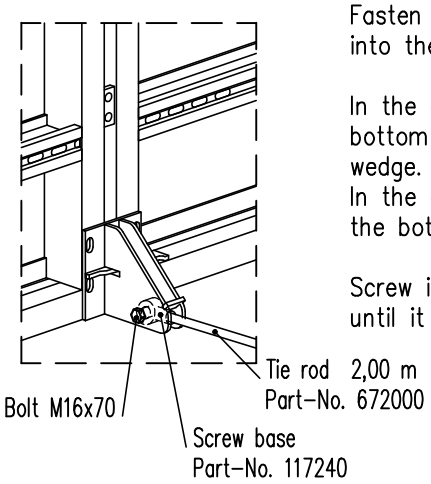


Attach the head support into the distance piece of the integral bracing or the NOEtop bracing and drive in the wedge.

Fix the strut with bolts and secure the bolts with spring pins.



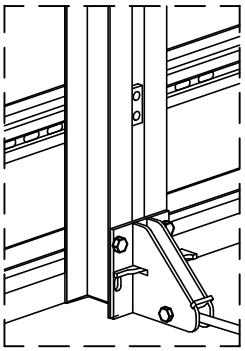
10.3.4 Detail connecting the bottom support to NOEtop



Fasten the screw base with bolt M16x70 into the bottom support.

In the case of integral bracing, fix the bottom support in place by driving in the wedge.
In the case of NOEtop Bracing, attach the bottom support with 2xM16x50.

Screw in the tie rod in the screw base until it meets the stop.

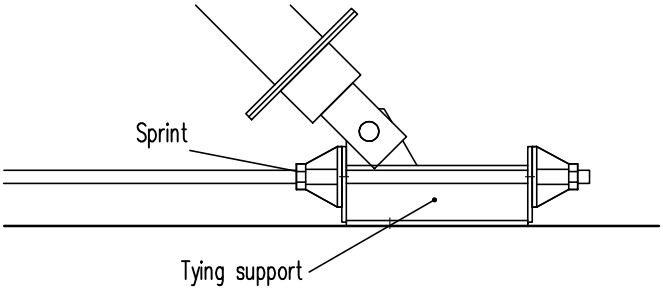


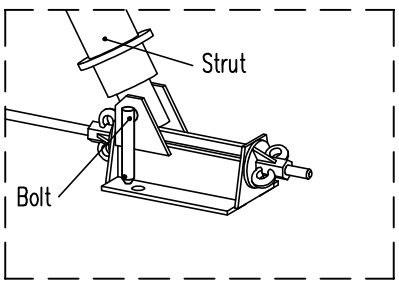
If the bottom support is not sitting on the ground, powerfull fillers have to be used.

10.3.5 Detail Tying support

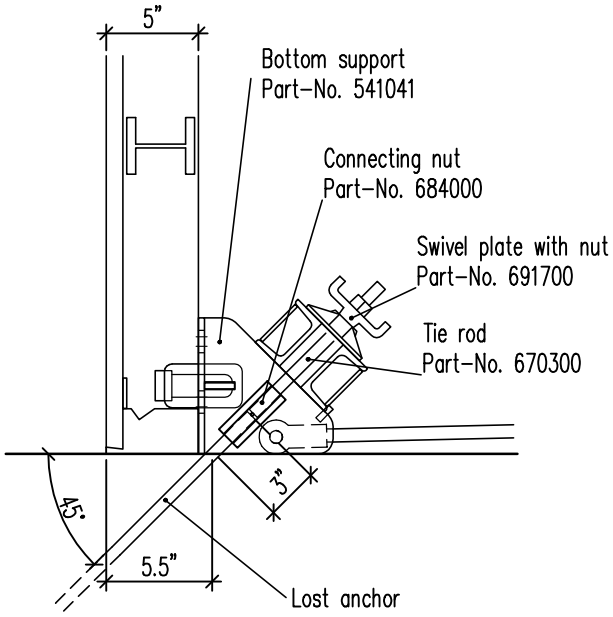
The tying support must not be anchored to the existing concrete!

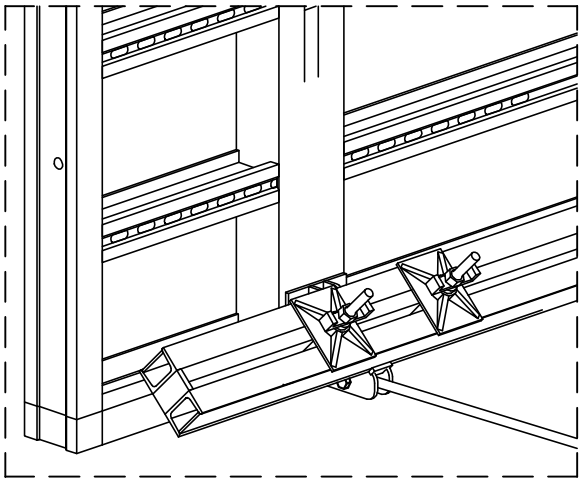
Bolt the sprint to the tie rod.
Counter the sprint. Connect the strut with a bolt to the tying support. Secure the bolt with a spring pin.
Bolt and spring pin are not included.





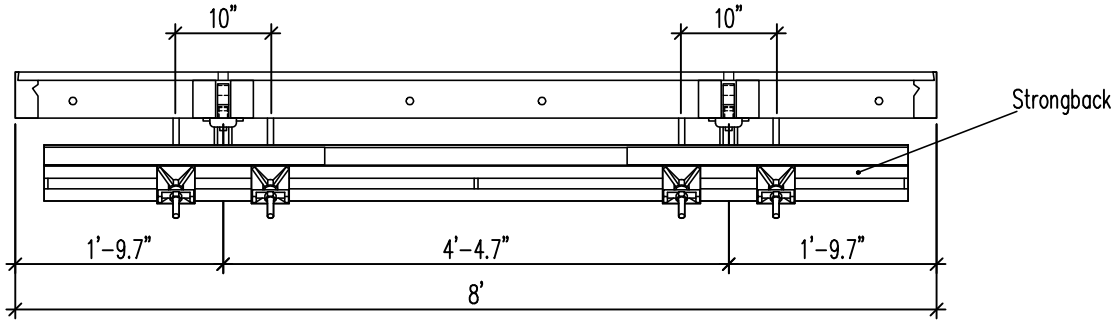
10.3.6 Incorporate the anchors



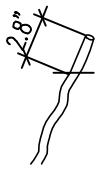


At a distance of 5.5" from the edge of the wall, place the anchor with an angle under 45°. Leave the anchor 3" out of the concrete to allow connection.

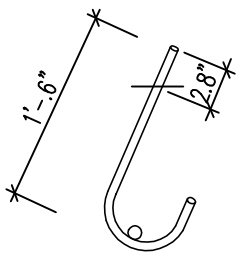
Top view



10.3.7 Lost anchor D15

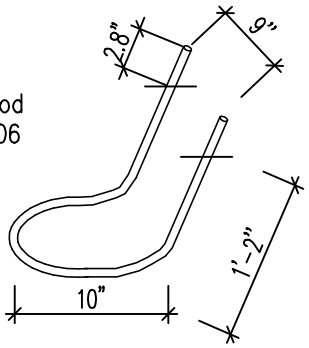


Waved anchor D15 1'-10"
Z = 1890 lb/PRod Part-No. 542007



Loop anchor D15
Z = 1890 lb/Rod
Part-No. 542005

Anchor D15
Z = 1890 lb/Rod
Part-No. 542006



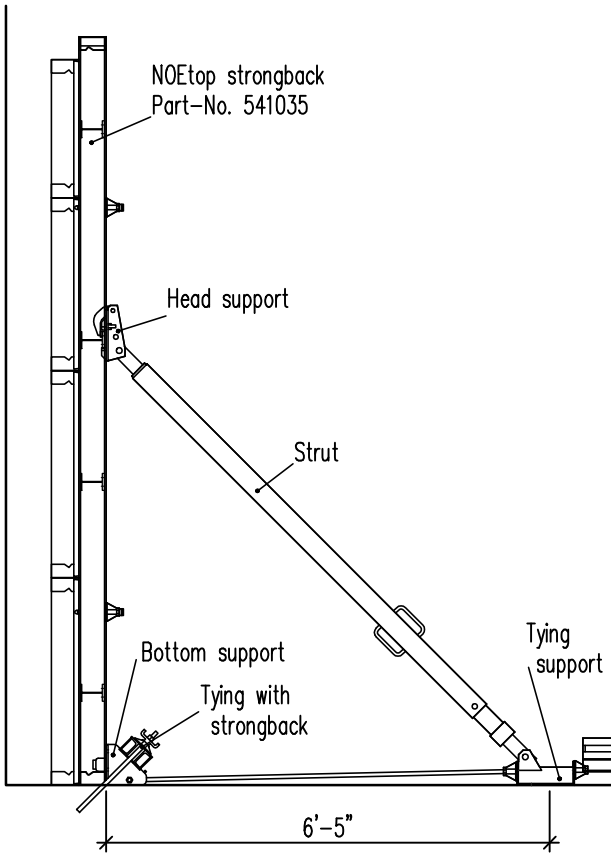
For the max. tensile strength the concrete loading capacity must be min. of 3626 psi

10.4 Using NOEtop strongbacks 10'–10"

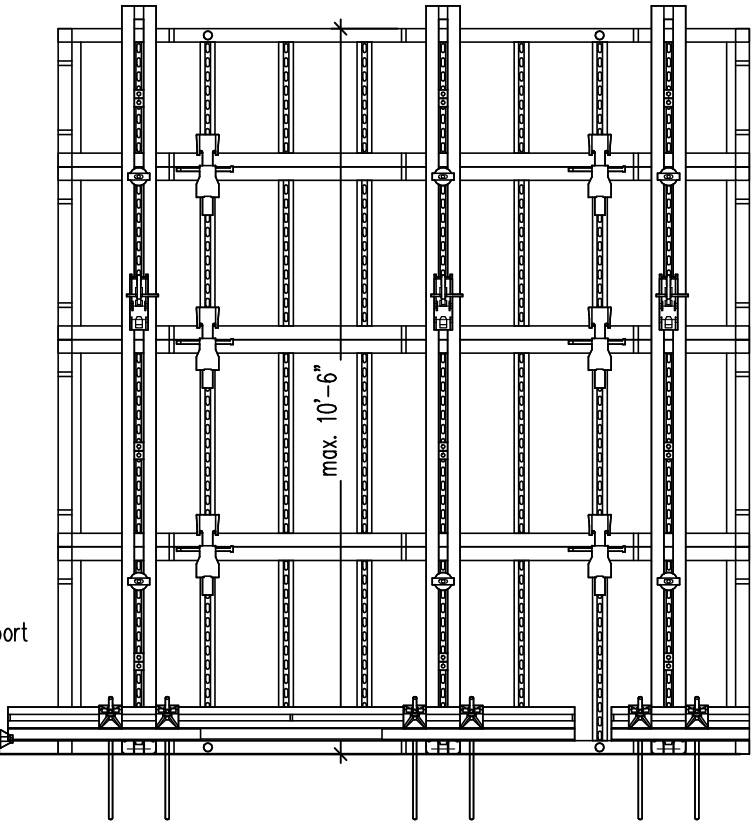
10.4.1 Common instructions

- Any standard panel that allows the attachment of the strongbacks can be used (vertical or horizontal).
- The necessary safety and supporting equipment can be hanged in to the strongback.
- For each strongback, two anchors are necessary

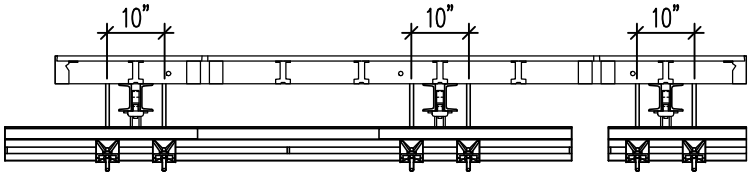
Section
Without walkway brackets



View
Without strut



Top view
Without strut



10. NOEtop for single-sided applications

10.4.2 Range of use

Static calculation

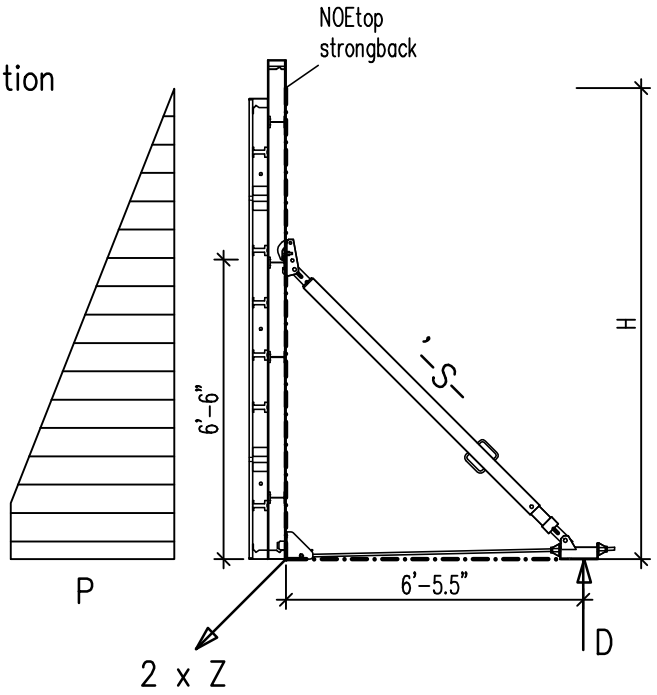
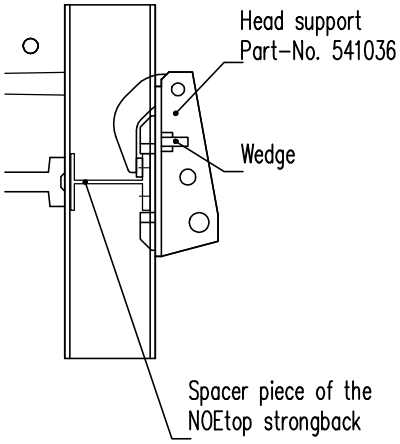


Table of NOEtop strongback, effect of width 3'–6", 1 brace, 2 anchors

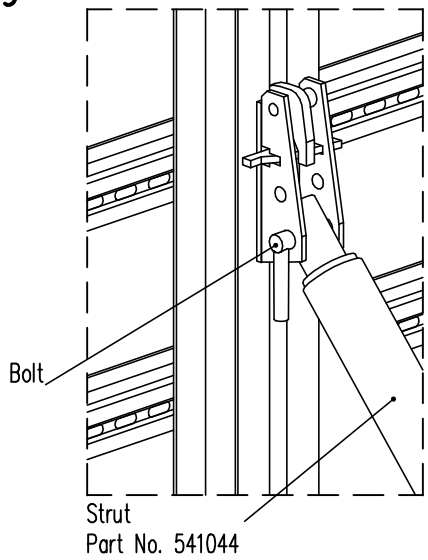
Height of concrete	Max. pressure of concrete (lb/sqft)	Power of anchor Z each anchor (lb)	Pressure D (lb)	Stabilizer S (lb)
7'–6"	hydrost.	11070	6020	8520
8'	hydrost.	12600	7310	10340
8'–6"	hydrost.	14230	8780	12400
9'	hydrost.	15960	10430	14750
9'–6"	1250	17260	12200	17250
10'	1040	17370	13710	19390
10'–6"	940	17940	15790	22330

10. NOEtop for single-sided applications

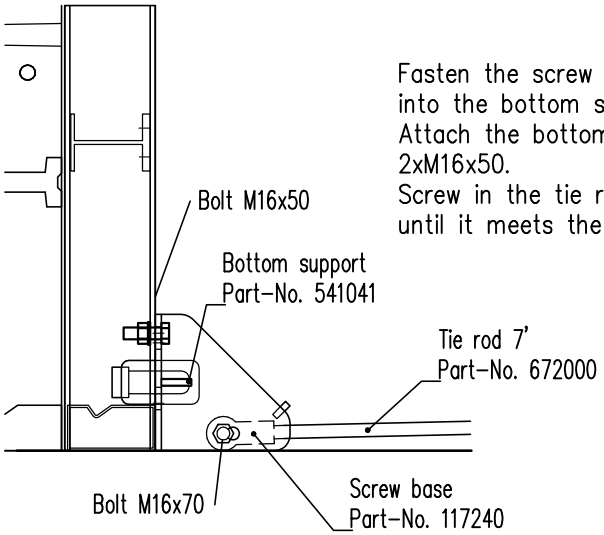
10.4.3 Detail connection of head support to strongback



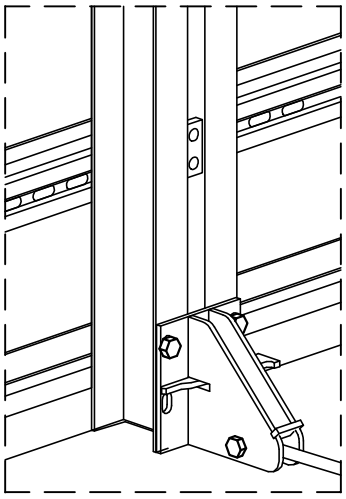
Drop in the head support in the spacer piece of the strongback and hit the wedge to lock.
Fix the stabilizer with the bolt and secure it with the spring pin.
Bolt and spring pin are not included.



10.4.4 Detail connecting the bottom support to strong-back

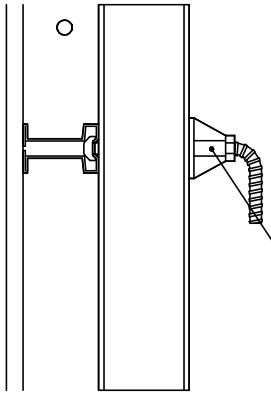


Fasten the screw base with bolt M16x70 into the bottom support.
Attach the bottom support with 2xM16x50.
Screw in the tie rod in the screw base until it meets the stop.

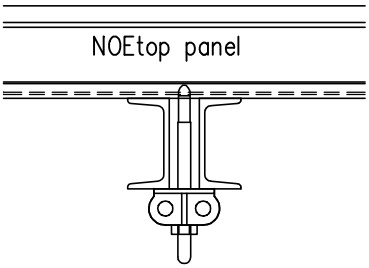


If the bottom support is not sitting on the ground, powerful fillers have to be used.

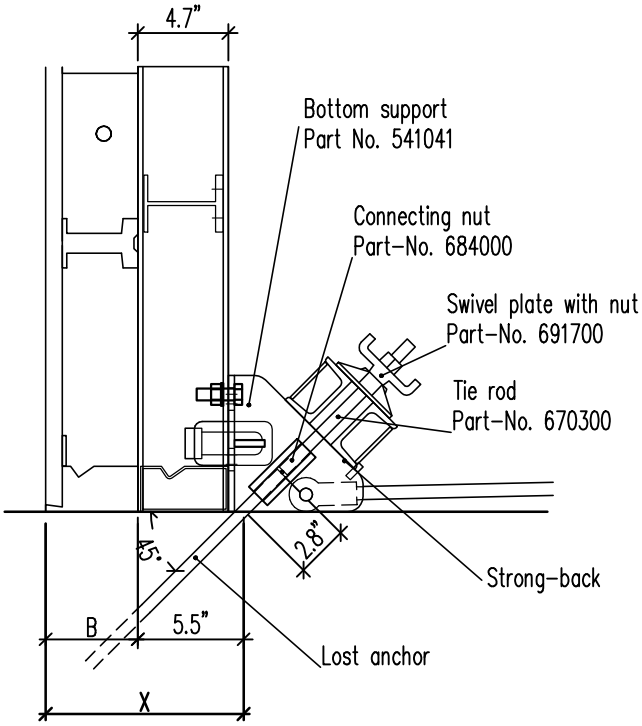
10.4.5 Connection of strongback to NOEtop



Minimum two connections from the strongback to NOEtop

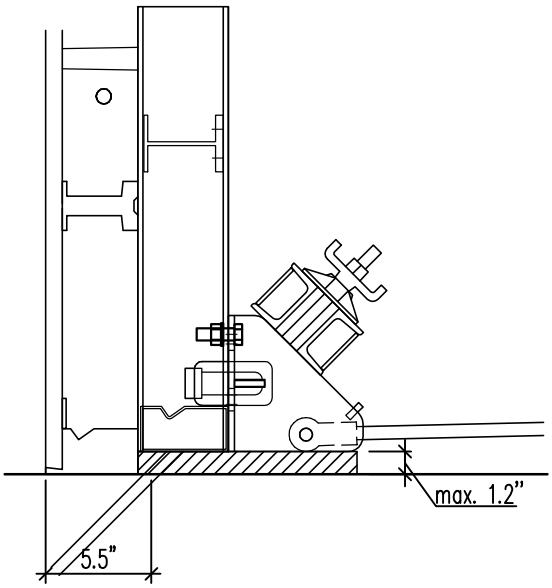


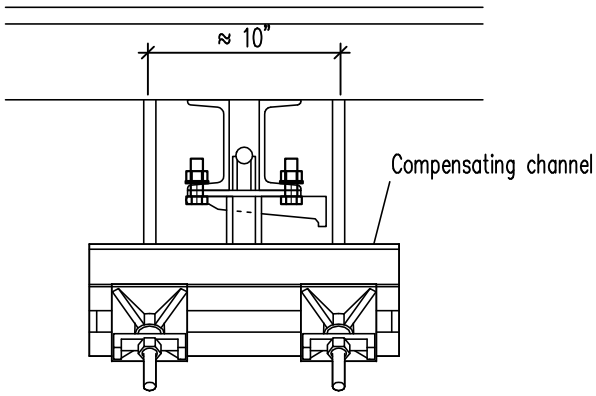
10.4.6 Detail of anchors



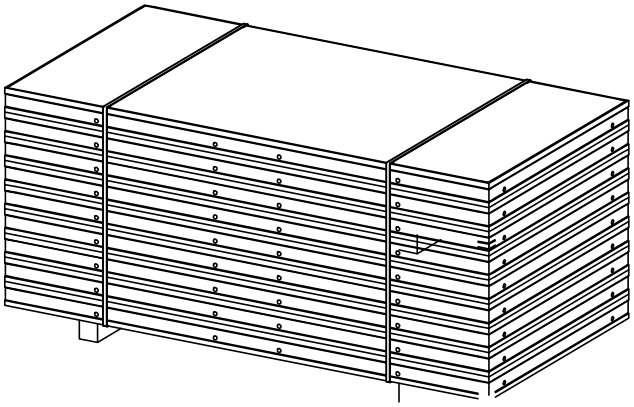
If anchors for NOEtop with integrated strongbacks are used, the difference between bottom support and strongback can be reconciled by powerfull fillers.

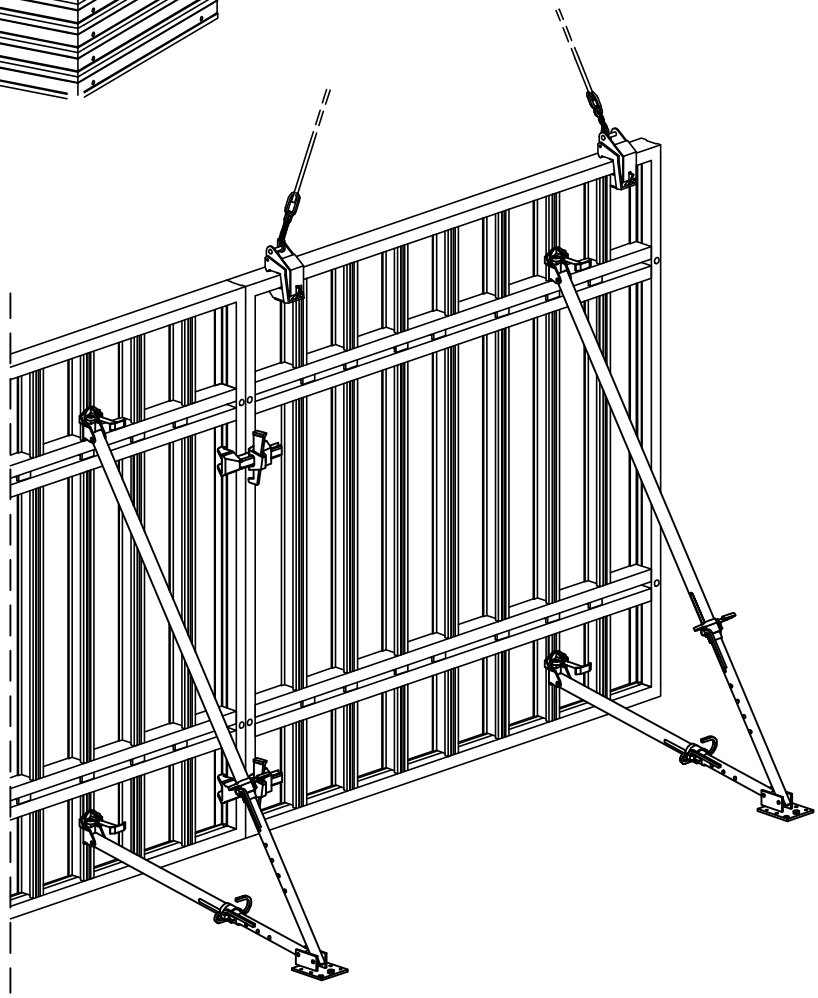
It is not possible to tie a strongback without a compensating channel (Part-No. 135109).





11. Crane lift, working platforms, supporting





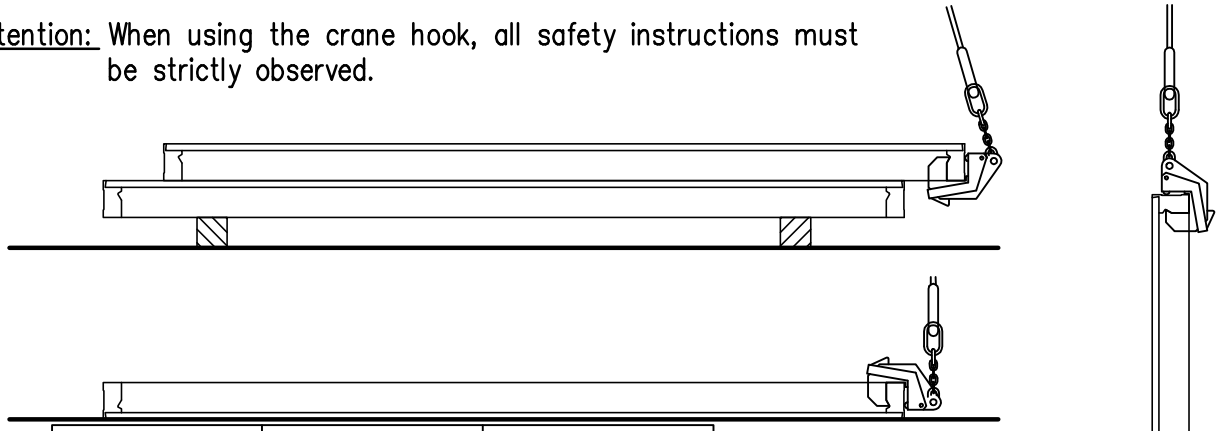
Using cranehooks and lifting pins

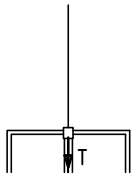
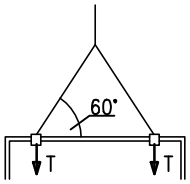
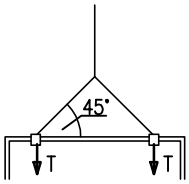
- The suitable Assembly and Operating Manual must be observed.
- Technical condition of lifting equipment must be checked before each usage.
- Before each lifting, the right position and securing of lifting equipment must be checked.

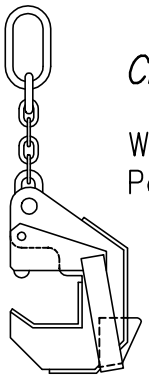
11. Crane lift, working platforms, supporting

11.1 Crane lift

Attention: When using the crane hook, all safety instructions must be strictly observed.



vertical lift 90°	angle lift 60°	angle lift 90°
		
max. T [lb]	max. T [lb]	max. T [lb]
4400	3300	2640



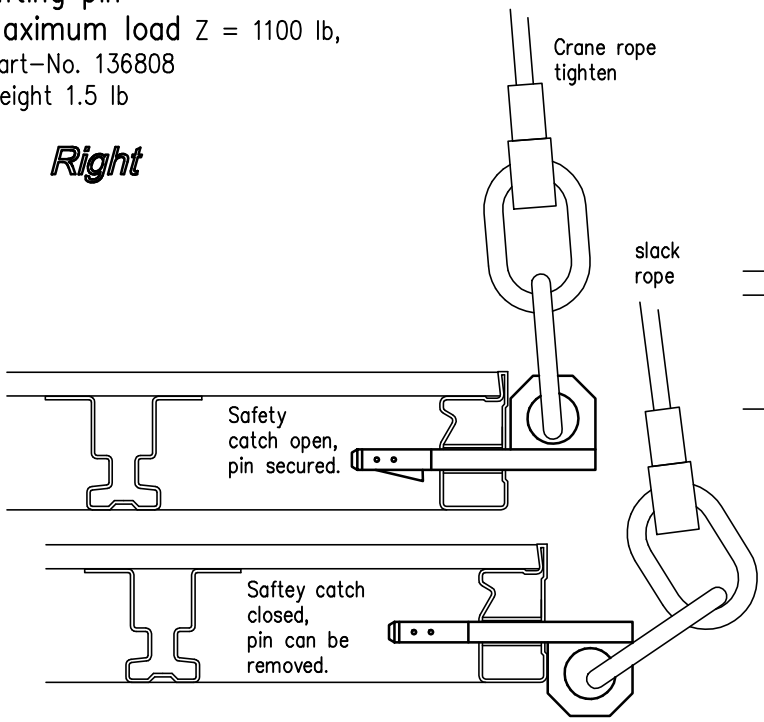
Crane hook

Weight 14 lb
Part–No. 135905

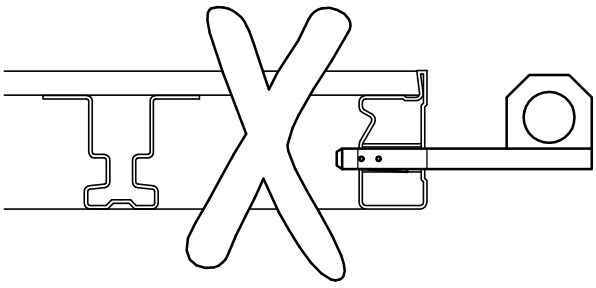
Use only according to safety instructions !

Lifting pin
Maximum load Z = 1100 lb,
Part–No. 136808
Weight 1.5 lb

Right



Wrong



Before lifting the panels all pins have to be in the correct position.

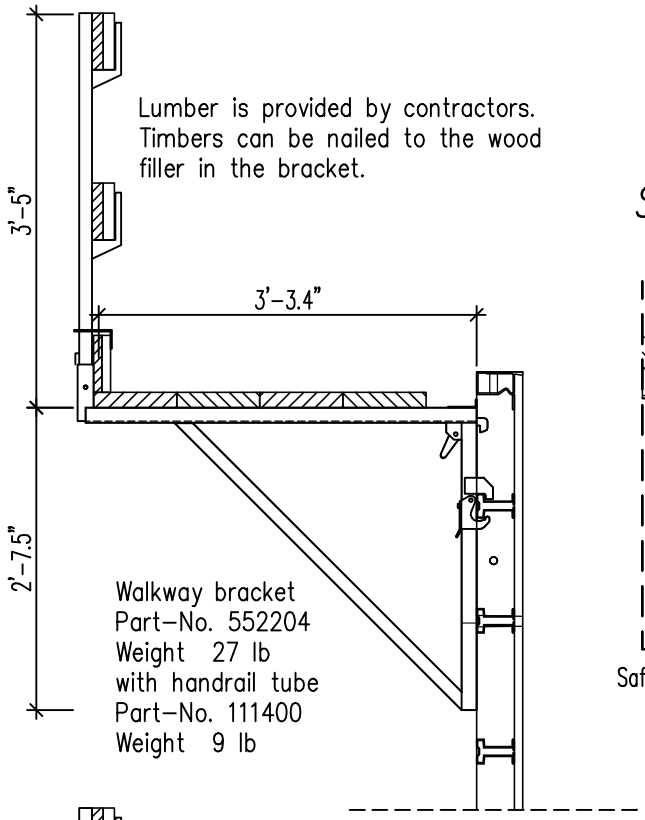
Attention: Use of the lifting pin requires safety instructions to be strictly observed !

11.2 NOEtop walkway bracket

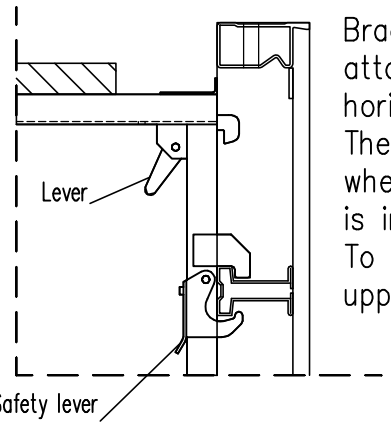
Bracket connected on the horizontal hat stiffener

Attention:
Use walkway brackets with appropriete number and spacing.

Max. distance 7' with a load of 330 lb/sqft



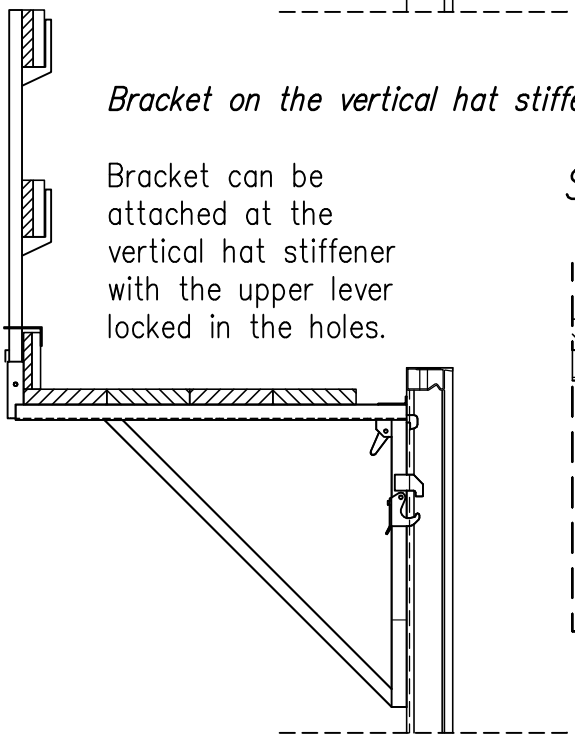
Securing the bracket



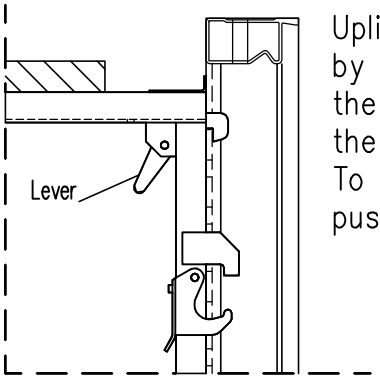
Bracket can be attached at the horizontal hat stiffener. The bracket is locked when the safety lever is in the down position. To open just push the upper lever.

Bracket on the vertical hat stiffener

Bracket can be attached at the vertical hat stiffener with the upper lever locked in the holes.



Securing the bracket



Uplift securing is done by itself by wedging the upper lever into the hole.
To move the bracket push the lever

11.3 Stabilizers up to 5000 mm / 16'–5"

Prop push–pull 2770–5000 mm / 9'–1" up to 16'–5"

Part No. 697028 Weight 57 lb
perm. load capacity 6440 – 1100 lb

Prop push–pull 2100 – 3650 mm / 6'–11' up to 12'

Part No. 697027 Weight 42,1 lb
perm load capacity 4340 – 1230 lb

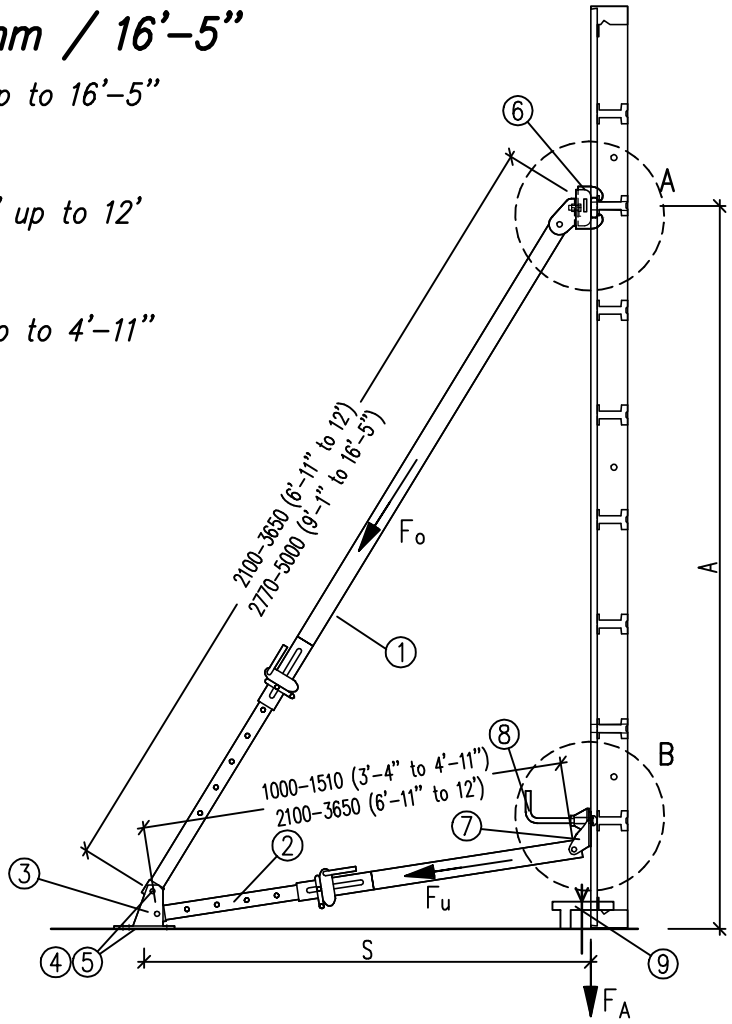
Prop push–pull 1000–1500 mm / 3'–4" up to 4'–11"

Part No. 697026 Weight 20,7 lb
perm. load capacity 4340 lb

The props can be attached with the stabilizer adapter or with the hinge end joint and hammer–head bolt.

1 Prop push–pull top
2 Prop push–pull bottom
3 Supporting plate Part No. 697014
4 L–pin D16 Part No. 697010
5 Spring pin Part No. 913304
6 Stabilizer connector Part No. 697032
7 Hinge end joint Part No. 697012
8 Hammer–head bolt with handle Part No. 319338
9 Uplift safety device

The supporting plates, connections, pins and spring pins are not included in the scope of supply of the props.

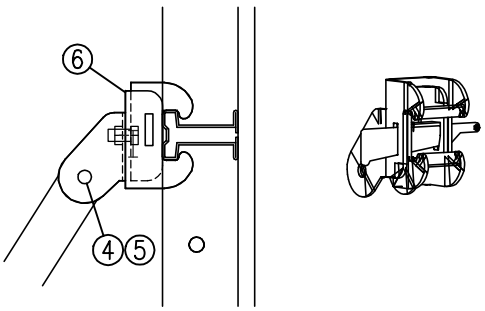


11.3.1 Attaching with stabilizer adapter

Attaching to cross–profile on end–on and side–on panels. The stabilizer connector can be simply suspended on the horizontal hat profile and fixed with the wedge.

NEW !

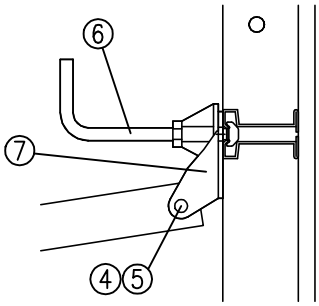
Detail A



11.3.2 Attaching with hammer–head bolt

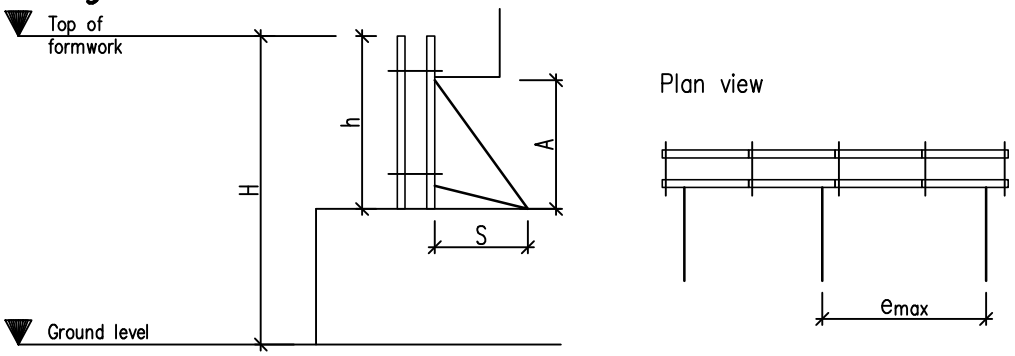
Attached to the elongated hole of the hat profile by hammer–head bolt with handle and integral sprint for end–on and side–on panels.
When the fastening with the hammerhead bolt is below approx. 60° no more than a max. 8 kN may be transferred into the hat profile.

Detail B



11. Crane lift, working platforms, supporting

11.3.3 Schematic diagram



11.3.4 Table for effective widths e_{max} for attachment by stabilizer adapter

Panel height h	Part number	Propping height A	Distance S	Height H above ground up to 23'	Height H above ground up to 82'
				e_{max} load values on request	e_{max} load values on request
8'	697027	7'	4'–6"	11'–6"	11'–6"
10'	697027	7'–10"	4'–6"	11'–6"	11'–6"
12'	697027	8'–10"	4'–6"	9'–10"	6'–3"
12'	697028	8'–10"	7'–6"	11'–6"	10'–3"
14'	697028	11'–2"	7'–6"	10'–6"	6'–6"
20'	697028	14'–6"	7'–6"	5'	3'

11.3.5 Table for effective widths e_{max} for attachment by hinge end joint and hammer–head bolt

Panel height h	Part number	Propping height A	Distance S	Height H above ground up to 23'	Height H above ground up to 82'
				e_{max} load values on request	e_{max} load values on request
8'	697027	7'	4'–6"	11'–6"	9'
10'	697027	7'–10"	4'–6"	9'–3"	6'
12'	697027	8'–10"	4'–6"	8'–6"	5'–3"
12'	697028	8'–10"	7'–6"	11'–3"	7'
14'	697028	11'–2"	7'–6"	8'–9"	5'–6"
20'	697028	14'–6"	7'–6"	5'	3'

The values in the table apply for wind loads in acc. with DIN 1055–4: 2005–3,
Inland, wind zone 2, intermediate zone (Zone B), l/h=5
Pressure coefficient 1.8
Solidity 1.0
Reduction factor 0.6 (service life up to 12 months)

Propping height bottom strut: 1'–2"
Angle of stabilizer: Approx. 60°
Value for influence width per stabilizer: e_{max}

In the edge area of the fomwork (Zone A, free formwork end or beginning) the maximum influence width of the stabilizers must be halved.

For the calculation of the anchored load F_A the formwork weight of the NOEtop formwork was taken as 16 lb/sqft. In addition the listed values contain the partial safety factor 1.5 for the overall stability (DIN 1055–100).

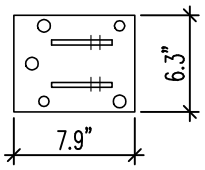
All the given values are characteristic values.

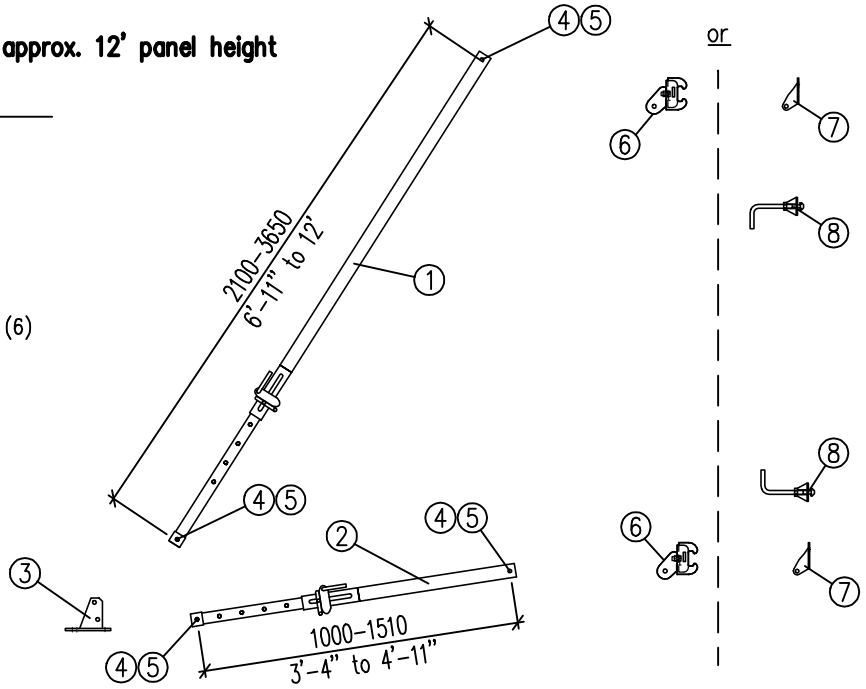
11.3.6 Assembly

a) Individual parts for stabilizers up to approx. 12' panel height

No.	Description
1	Prop push-pull 6'11" up to 12' Part No. 697027 (1)
1	Prop push-pull 3'-4" up to 4'-11" Part No. 697026 (2)
1	Supporting plate Part No. 697014 (3)
4	L-pin D16 Part No. 697010 (4)
4	Spring pin Part No. 913304 (5)
2	Stabilizer connector Part No. 697032 (6) or
2	Hinge end joint Part No. 697012 (7)
2	Hammer-head bolt with handle Part No. 319338 (8)

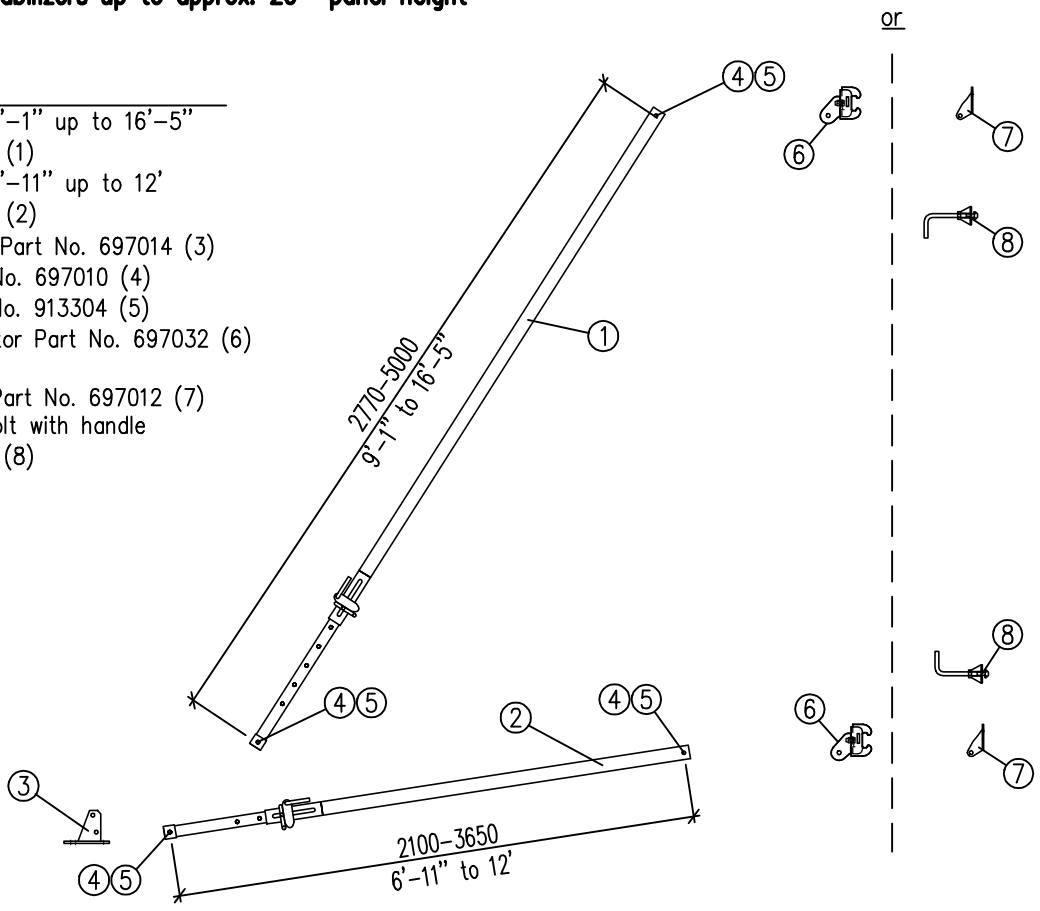
Plan bottom support





b) Individual parts for stabilizers up to approx. 20 ' panel height

No.	Description
1	Prop push-pull 9'-1" up to 16'-5" Part No. 697028 (1)
1	Prop push-pull 6'-11" up to 12' Part No. 697027 (2)
1	Supporting plate Part No. 697014 (3)
4	L-pin D16 Part No. 697010 (4)
4	Spring pin Part No. 913304 (5)
2	Stabilizer connector Part No. 697032 (6) or
2	Hinge end joint Part No. 697012 (7)
2	Hammer-head bolt with handle Part No. 319338 (8)



11.4 Stabilizers for high panels

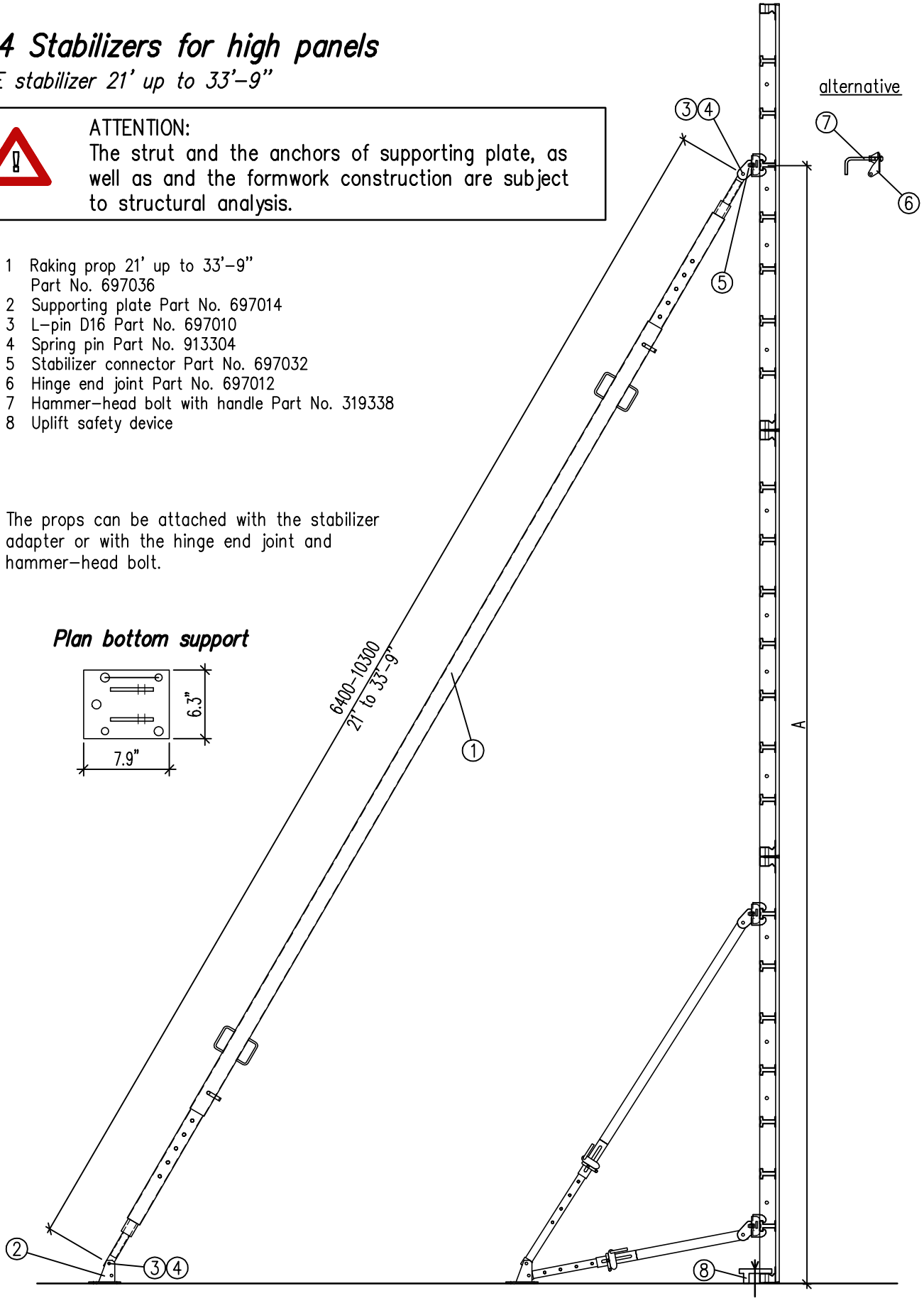
NOE stabilizer 21' up to 33'–9"

ATTENTION:
The strut and the anchors of supporting plate, as well as and the formwork construction are subject to structural analysis.

1 Raking prop 21' up to 33'–9"
Part No. 697036
2 Supporting plate Part No. 697014
3 L–pin D16 Part No. 697010
4 Spring pin Part No. 913304
5 Stabilizer connector Part No. 697032
6 Hinge end joint Part No. 697012
7 Hammer–head bolt with handle Part No. 319338
8 Uplift safety device

The props can be attached with the stabilizer adapter or with the hinge end joint and hammer–head bolt.

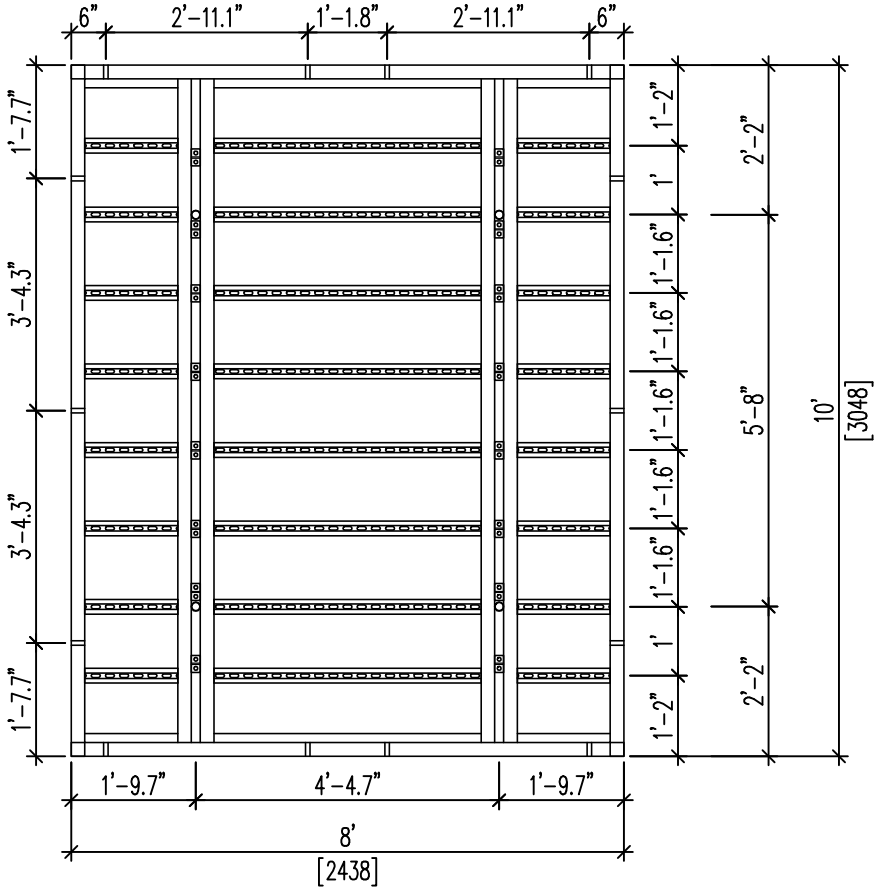
Plan bottom support



12. Item overview of NOEtop System

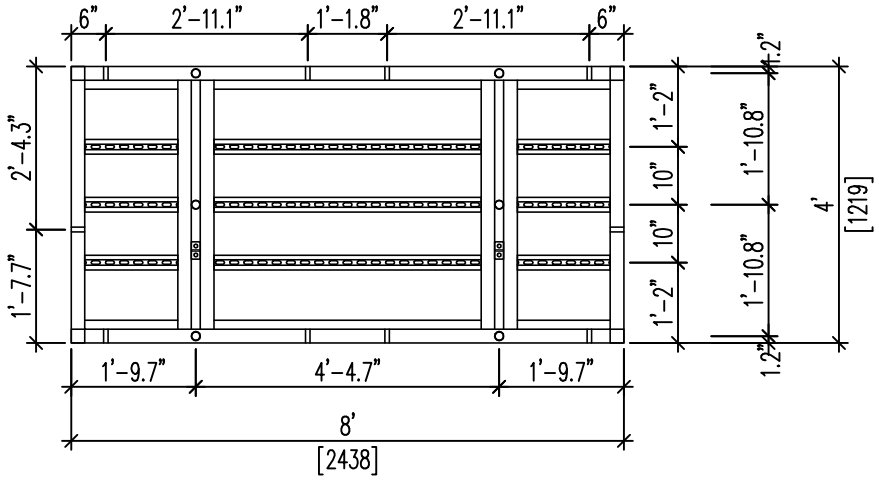
12.1 NOEtop large sized panels

NOEtop large sized panel 10'x8'



NOEtop panel 10'x8' (2438 X 3048 mm) with integrated strongback
Part-No. 169972 Weight 1150 lb

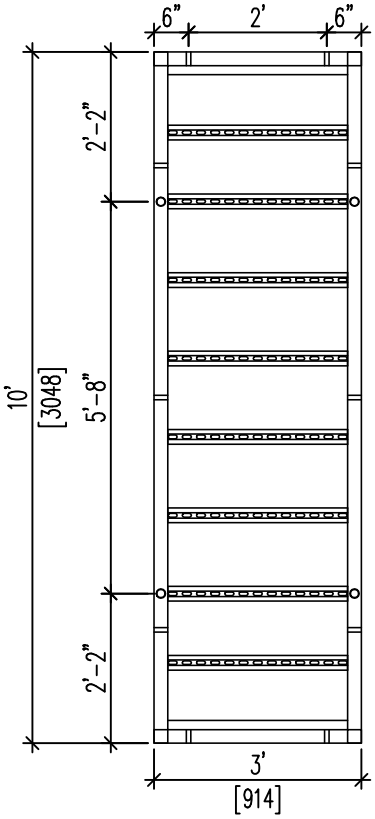
NOEtop large sized panel 4'x8'



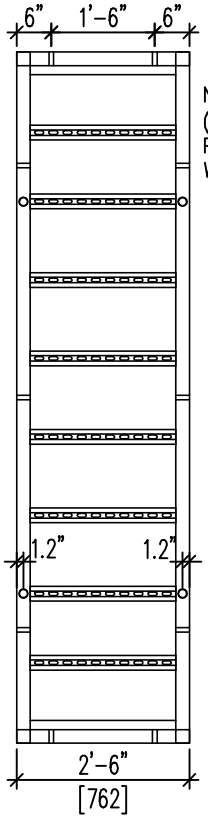
NOEtop panel 4'x8' (1219 X 3048 mm) with integrated strongback
Part-No. 169974 Weight 469 lb

12.2 NOEtop standard panels

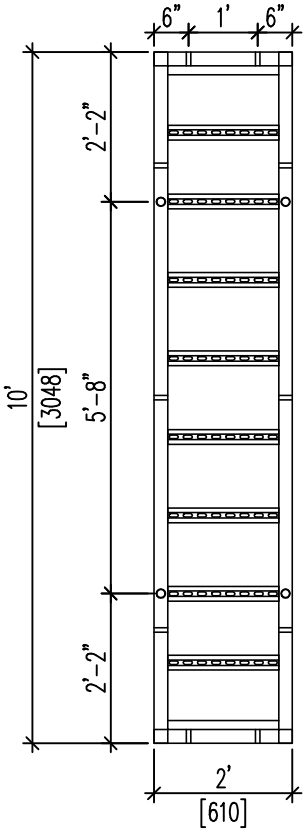
12.2.1 NOEtop standard panels 10’ high



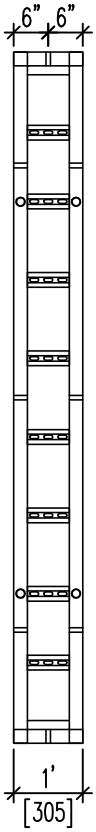
NOEtop panel 3’x10’
(914 X 3048 mm)
Part-No. 169981
Weight 392 lb



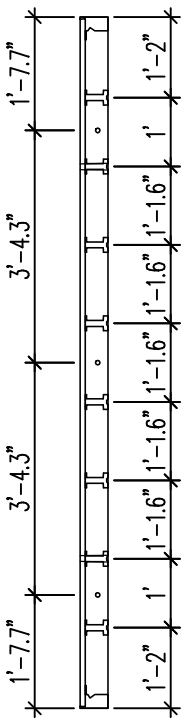
NOEtop panel 2’-6”x10’
(762 X 3048 mm)
Part-No. 169982
Weight 346 lb



NOEtop panel 2’x10’
(610 X 3048 mm)
Part-No. 169983
Weight 298 lb



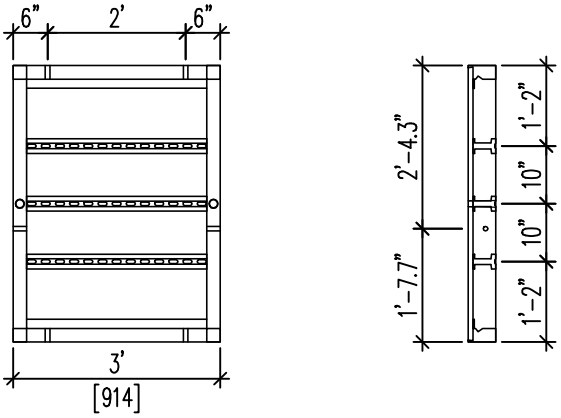
NOEtop panel 1’x10’
(305 X 3048 mm)
Part-No. 169984
Weight 207 lb



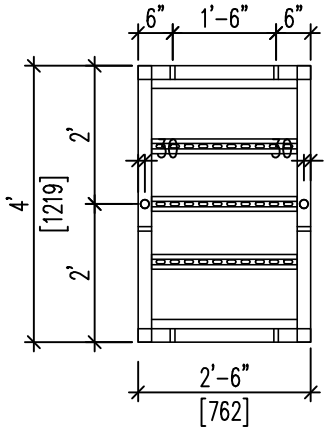
12. Item overview of NOEtop System

12.2.2 NOEtop standard panels 4' high

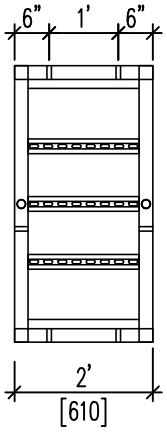
NOEtop panel 3'x4' (914 X 1219 mm)
Part-No. 169991 Weight 179 lb



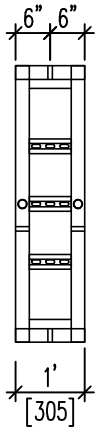
NOEtop panel 2'-6"x4' (762 X 1219 mm)
Part-No. 169992 Weight 154 lb



NOEtop panel 2'x4' (610 X 1219 mm)
Part-No. 169993 Weight 136 lb

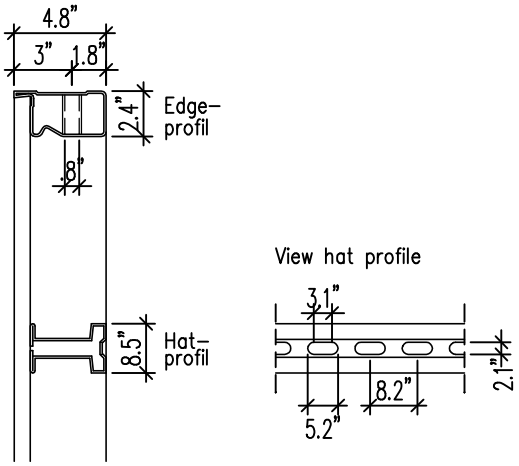


NOEtop panel 1'x10' (305 X 1219 mm)
Part-No. 169994 Weight 90 lb



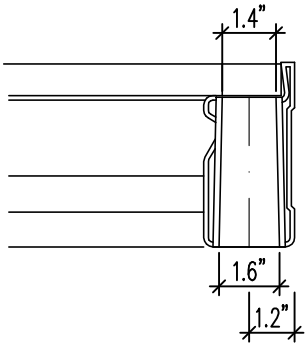
12.2.3 Details

Profile



View hat profile

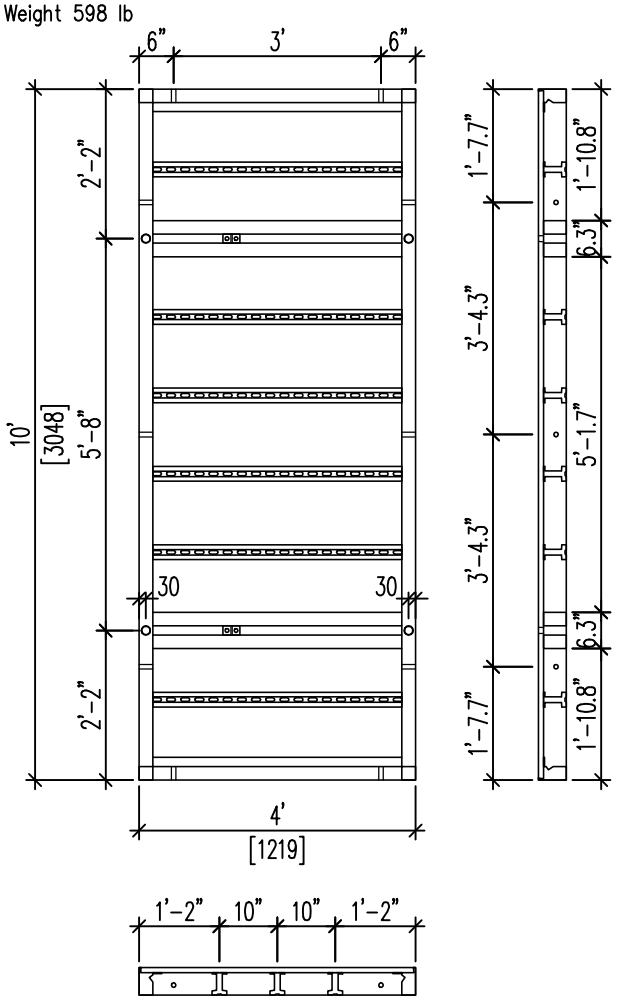
Detail of tie hole



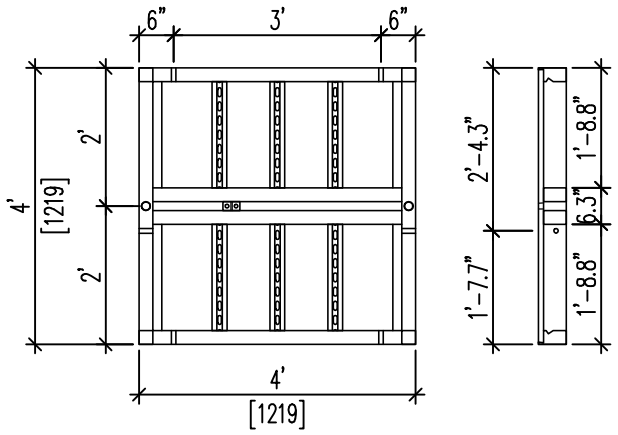
12. Item overview of NOEtop System

12.3 NOEtop Multi-function panels (MFP)

NOEtop Multi-function-panel MFP 4'x10'
Part-No. 169976
Weight 598 lb

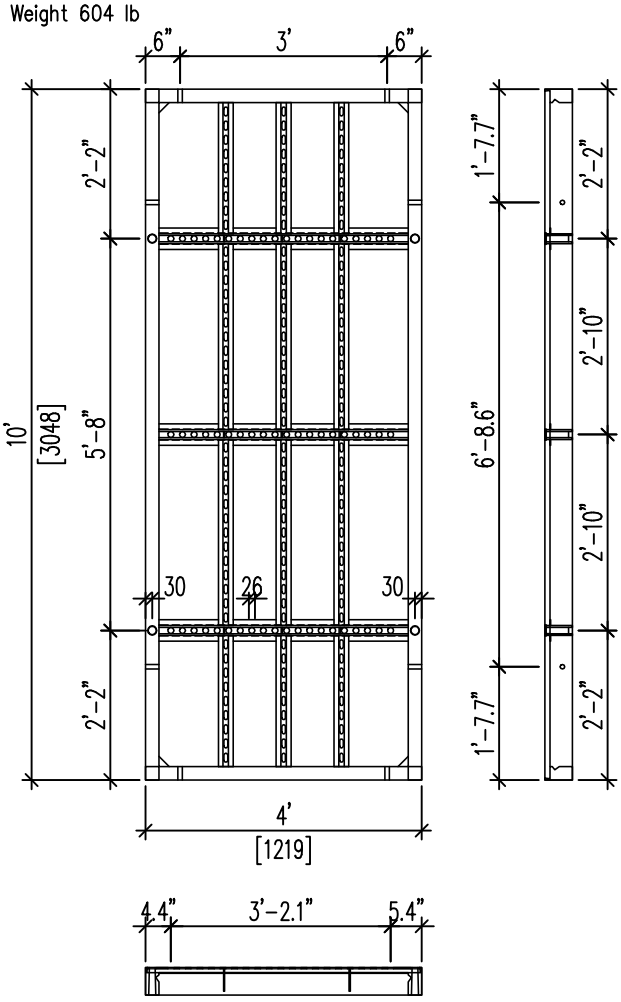


NOEtop Multi-function-panel MFP 4'x4'
Part-No. 169978
Weight 281 lb

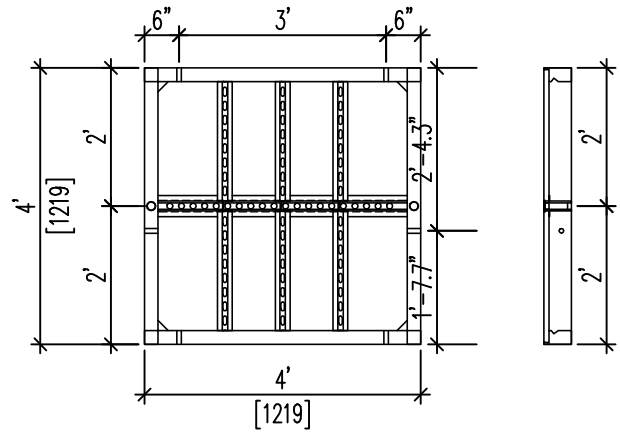


12.4 NOEtop External-corner panels (ECP)

NOEtop External-corner-panel 4'x10'
Part-No. 169996
Weight 604 lb



NOEtop External-corner-panel 4'x4'
Part-No. 169997
Weight 261 lb

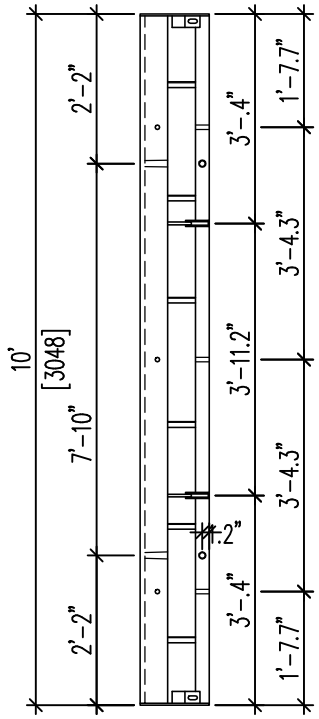


12. Item overview of NOEtop System

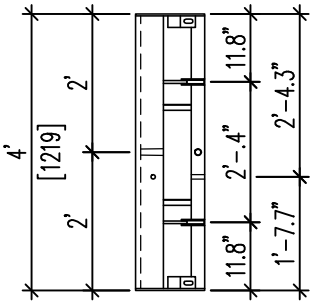
12.5 NOEtop corners

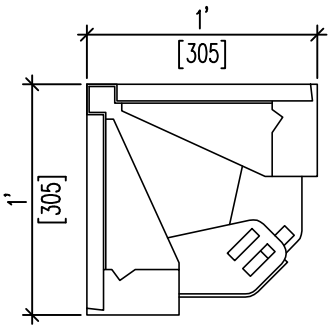
12.5.1 Inside corners 90°

NOEtop Inside-corner-panel 1'x1', 10' high
Part-No. 169998 Weight 303 lb



NOEtop Inside-corner-panel 1'x1', 4' high
Part-No. 169999 Weight 155 lb



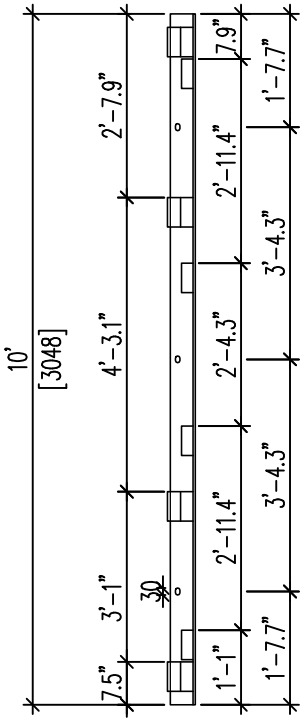


For stripping the angle of the Inside-corner-panel can be reduced about 4 degree.

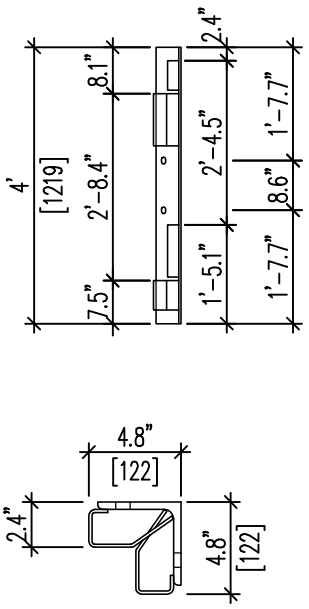
12.5.2 External corners 90°

NOEtop External-corner-angle, steel

Part-No. 137113
Weight 125 lb

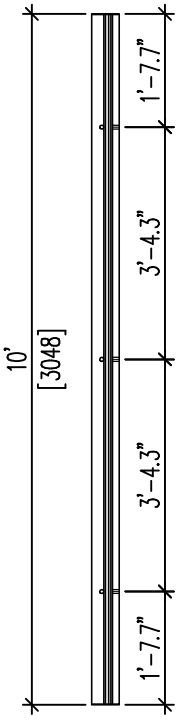


Part-No. 137112
Weight 54 lb

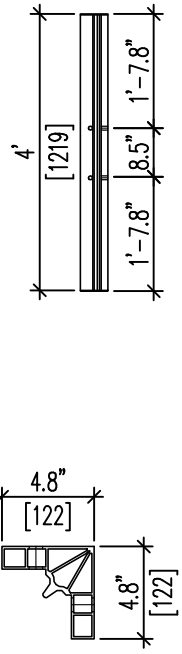


NOEtop External-corner-angle, alu

Part-No. 164068
Weight 56 lb



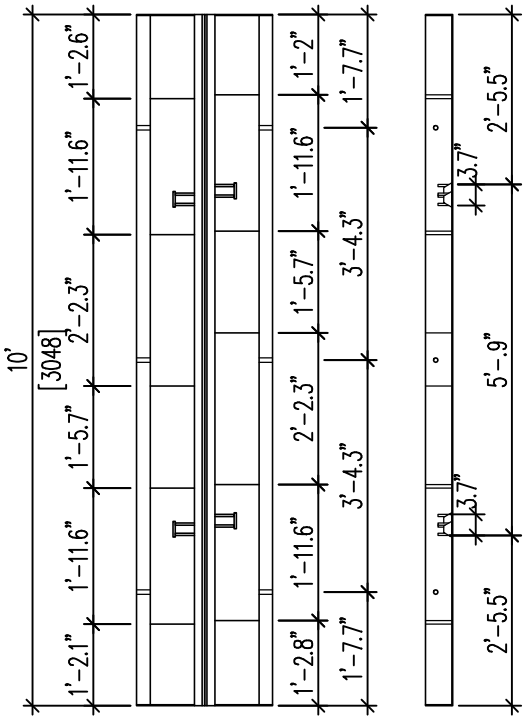
Part-No. 164067
Weight 19 lb



12.5.3 Adjustable corners

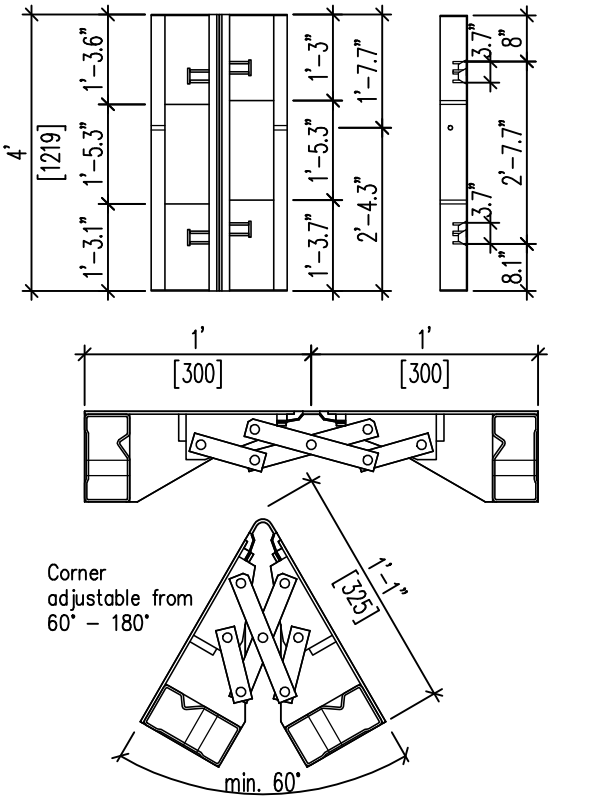
NOEtop Adjustable Inside–corner, 10' high

Part–No. 137816 Weight 322 lb



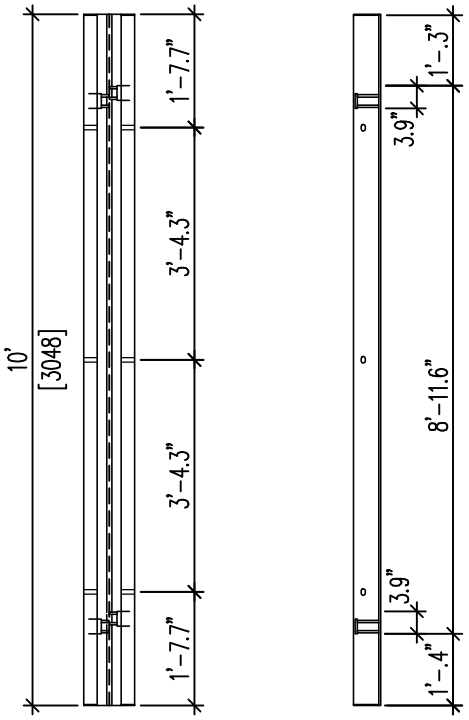
NOEtop Adjustable Inside–corner, 4' high

Part–No. 137815 Weight 155 lb



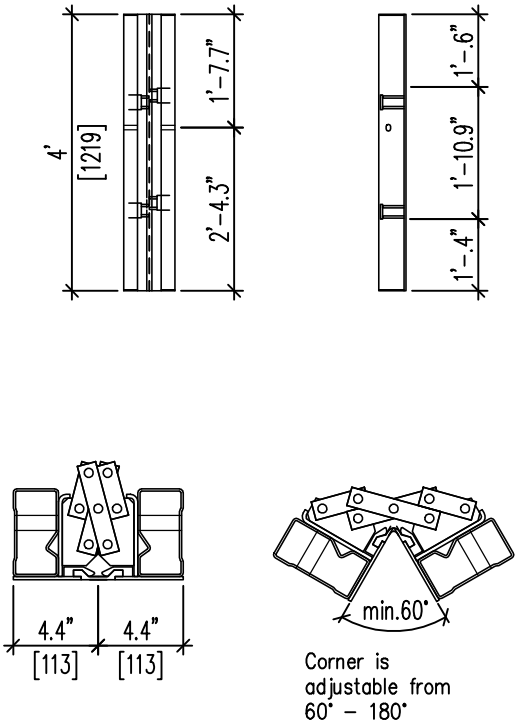
NOEtop Adjustable Outside–corner, 10' high

Part–No. 137811
Weight 212 lb



NOEtop Adjustable Outside–corner, 4' high

Part–No. 137810
Weight 90 lb

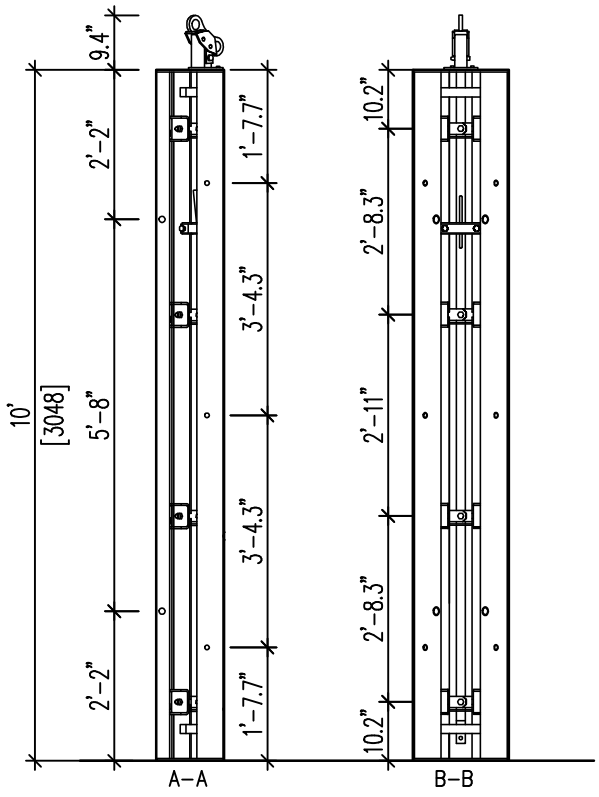


12.6 NOEtop Stripping corners

Stripping clearance approx. .8" each side

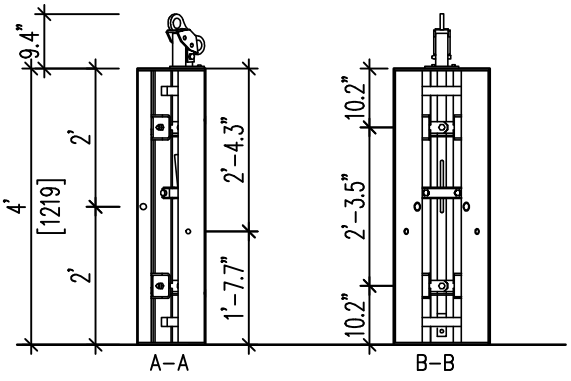
NOEtop stripping corner 10'

Part–No. 137770 Weight 405 lb

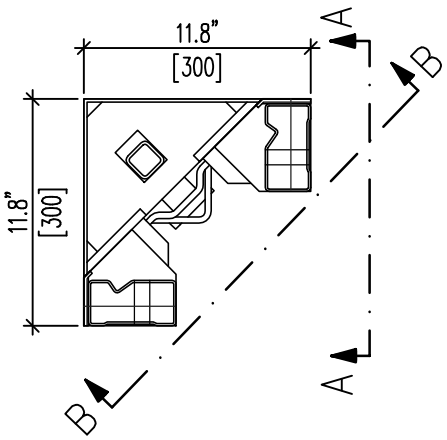


NOEtop stripping corner 4'

Part–No. 137771 Weight 190 lb

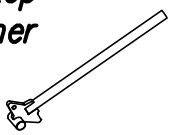


Section



Lever f. NOEtop stripping corner

Part No. 398202
Weight 8.5 lb



M18x160 bolt

Part No. 318900

M16x40 bolt

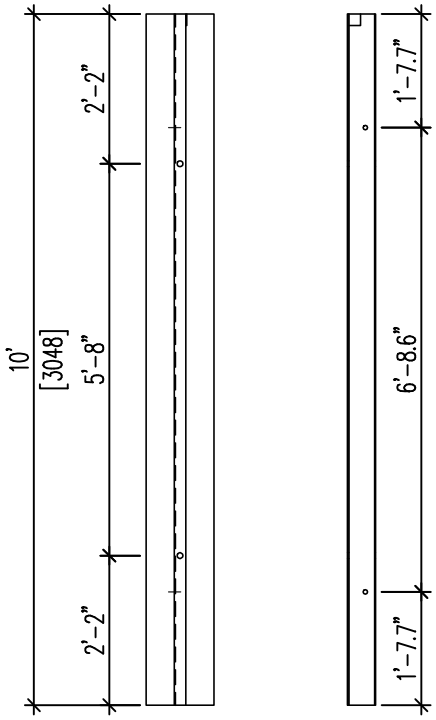
Part No. 313400

Overvall view of panels

12.7 NOEtop Compensation panels

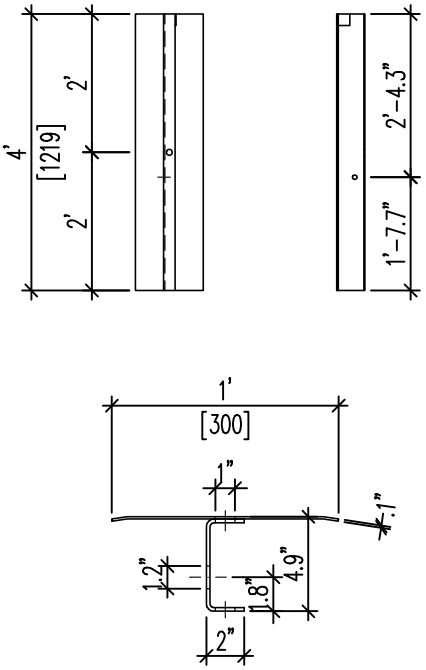
NOEtop Compensation panel 10' high

Part–No. 137546 Weight 107 lb



NOEtop Compensation panel 4' high

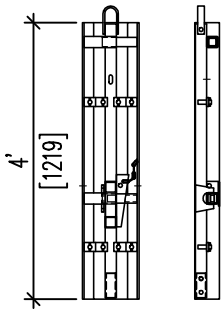
Part–No. 137545 Weight 43 lb



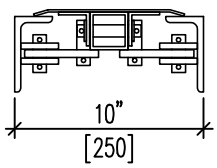
12.8 NOEtop Stripping piece

NOEtop Stripping piece 4' high

Part–No. 137755
Weight 97 lb

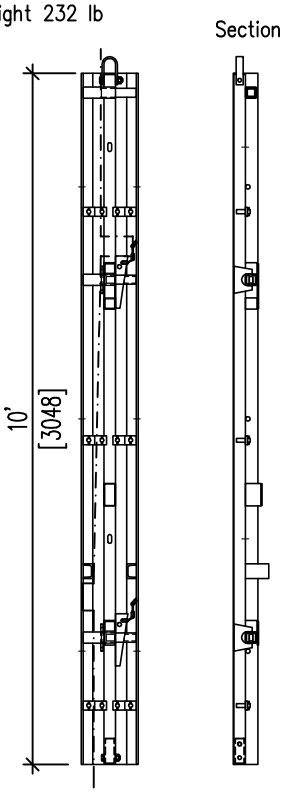


Top view



NOEtop Stripping piece 10' high

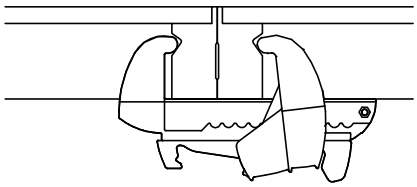
Part–No. 137756
Weight 232 lb

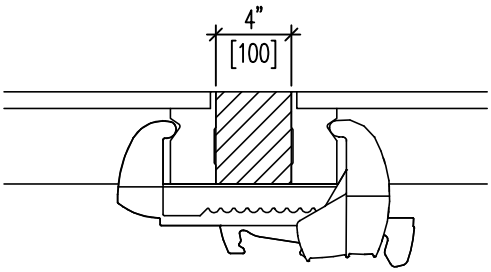


Overvall view of panels

12.9 NOE Toplock H

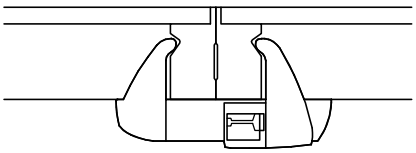
Part No. 137970 *For panel connections and for connections with fillers up to 4”*
Weight 9.6 lb
Perm. Tension force 4500 lbf





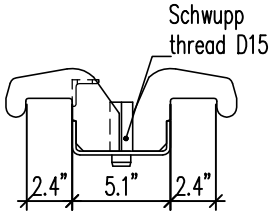
12.10 NOE Toplock

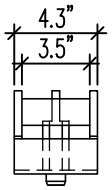
Part No. 137976 *For panel connections and for connections with fillers up to 1.6”*
Weight 8.1 lb
Perm. Tension force 3370 lbf

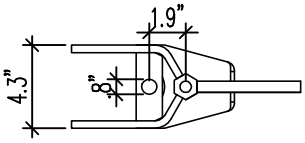


12.11 Multi-claw

Part-No. 164030 *For corner connections, bulkheads and tying*
Weight 7.7 lb

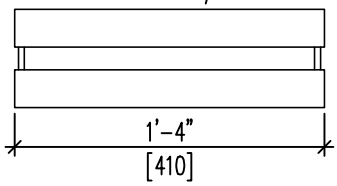


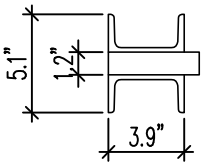




12.12 Compensation channel

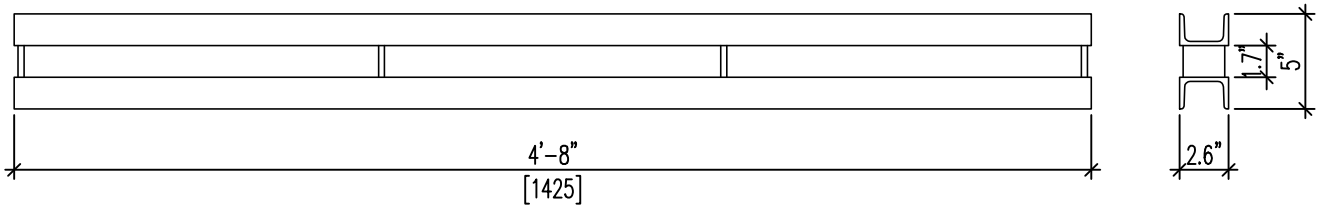
Part-No. 135109 *For fillers up to 10”*
Weight 21 lb





12.13 Alignment channel

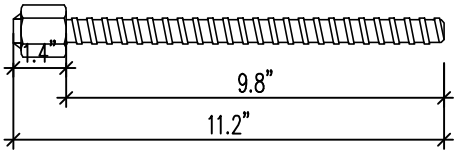
Part-No. 135210 Weight 47 lb *For alignment and stacking panels*



12.14 Bolts

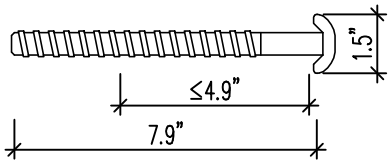
Connection bolt

Part–No. 135019 Weight 1.1 lb

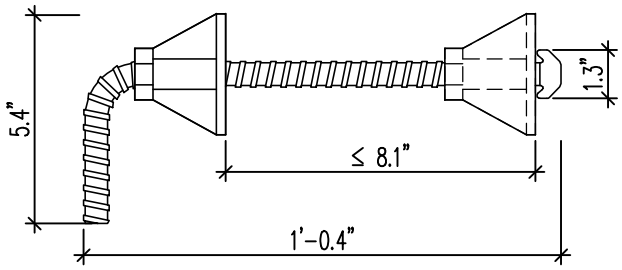


Hammerhead bolt

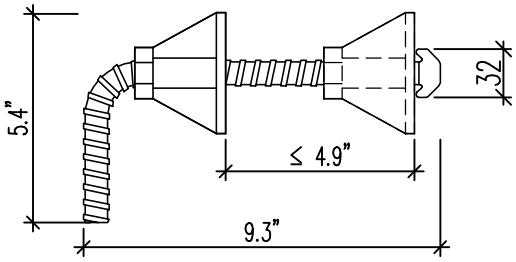
Part–No. 319301 Weight 0.7 lb



Hammerhead bolt with handle

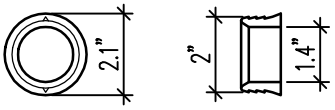
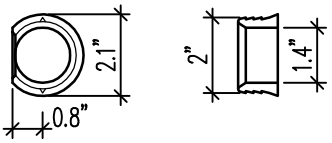


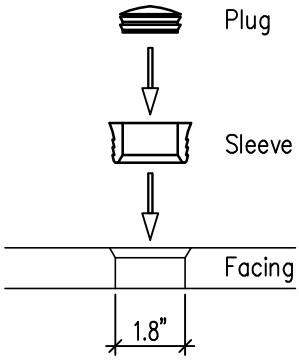
Part–No. 319339
Weight 2.7 lb



Part–No. 319338
Weight 2.5 lb

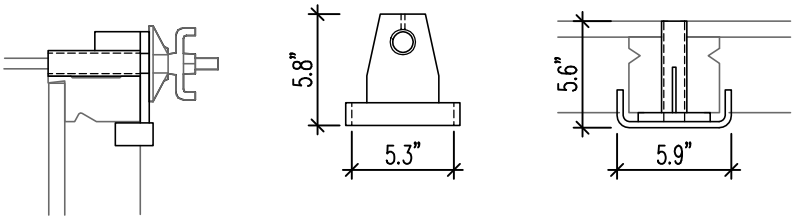
12.15 Plastic plugs and sleeves

Part Nr.	Type
693410	Plug SFL 40 silver–grey 250 pcs. 
843012	Sleeve int. 250 pcs. 
843013	Sleeve ext. 250 pcs. 



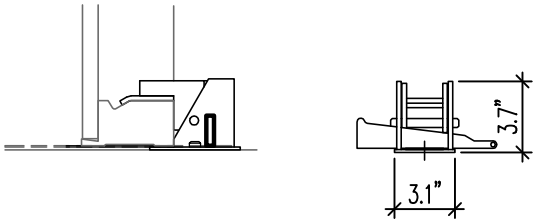
12.16 Top–Tying Claw *For tying outside the tie hole*

Part–No. 137500
Weight 4 lb



12.17 Foundation clamp

Part–No. 137297
Weight 3.3 lb

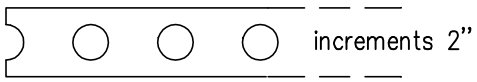


Use strip steel stressing device for foundations

12.18 Strip–steel device

Part–No. 108031
Weight 53 lb

Cut in the middle of hole

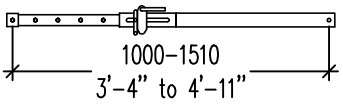


Delivered in 164 ft rolls
max. tensile strength 3600 lbf

12.19 Raking props

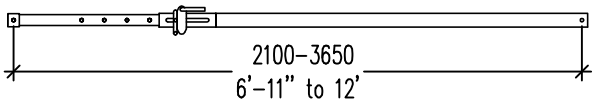
Prop push–pull 1000–1500 mm / 3'–4" up to 4'–11"

Part No. 697026 Weight 20,7 lb
perm. load capacity 4340 lb



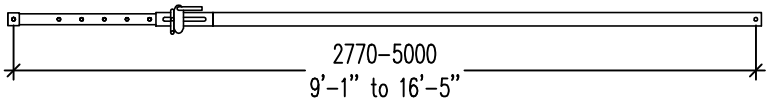
Prop push–pull 2100 – 3650 mm / 6'–11' up to 12'

Part No. 697027 Weight 42,1 lb
perm load capacity 4340 – 1230 lb



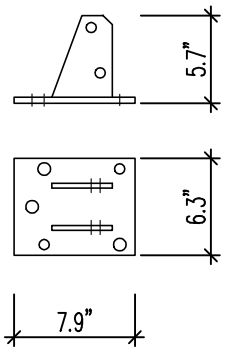
Prop push–pull 2770–5000 mm / 9'–1" up to 16'–5"

Part No. 697028 Weight 57 lb
perm. load capacity 6440 – 1100 lb



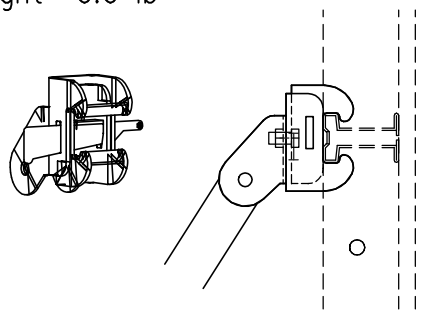
Base plate for push–pull brace

Part no. 697014
Weight 8.4 lb



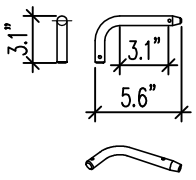
NOEtop stabilizer connector

Part no. 697032
Weight 6.6 lb



L–pin D16

Part no. 697010
Weight 0.7 lb



Spring pin for securing the L–pin

Part no. 913304
Weight 0.04 lb

THE FORMWORK

NOE-Schaltechnik
Georg Meyer-Keller GmbH + Co. KG

Kuntzestr. 72, 73079 Suessen, Germany
T + 49 7162 13-1
F + 49 7162 13-288
info@noe.de
www.noe.de
www.noeplast.com

Austria
NOE Schaltechnik
www.noe-schaltechnik.at
noe@noe-schaltechnik.at

Belgium
NOE Bekistingtechniek N.V.
www.noe.be
info@noe.be

Brazil
Mills do Brasil
Estruturas e Serviços Ltda.
www.mills.com.br
millsbr@cepa.com.br

Bulgaria
NOE Schaltechnik
www.noebg.com
noe-bg@netbg.com

Croatia
NOE oplatna tehnika d.o.o.
www.noe.hr
noe@noe.hr

France
NOE France
www.noefrance.fr
info@noefrance.fr

Netherlands
NOE Bekistingtechniek b.v.
www.noe.nl
info@noe.nl

Poland
NOE PL Sp Zo.o.
www.noe.com.pl
noe@noe.com.pl

Russia
NOE Moscow
info@noe-moscow.ru

NOE St. Petersburg
noe@sovintel.ru

Saudi Arabia
NOE Global Trade Est.
NOE - The Formwork
www.noe.de
jeddah@noe.de

Serbia
NOE Sistemske Oplate d.o.o.
www.noe-scg.com
noe-scg@eunet.rs

Switzerland
NOE Schaltechnik
www.noe.ch
info@noe.ch

Turkey
NOE Beton Kalıpları A.Ş.
www.noe.com.tr
info@noe.com.tr

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