THE POWER OF RED™

SYM-PLY®

CONCRETE
FORMING
SYSTEM

APPLICATION GUIDE

SYMONS®
BY DAYTON SUPERIOR

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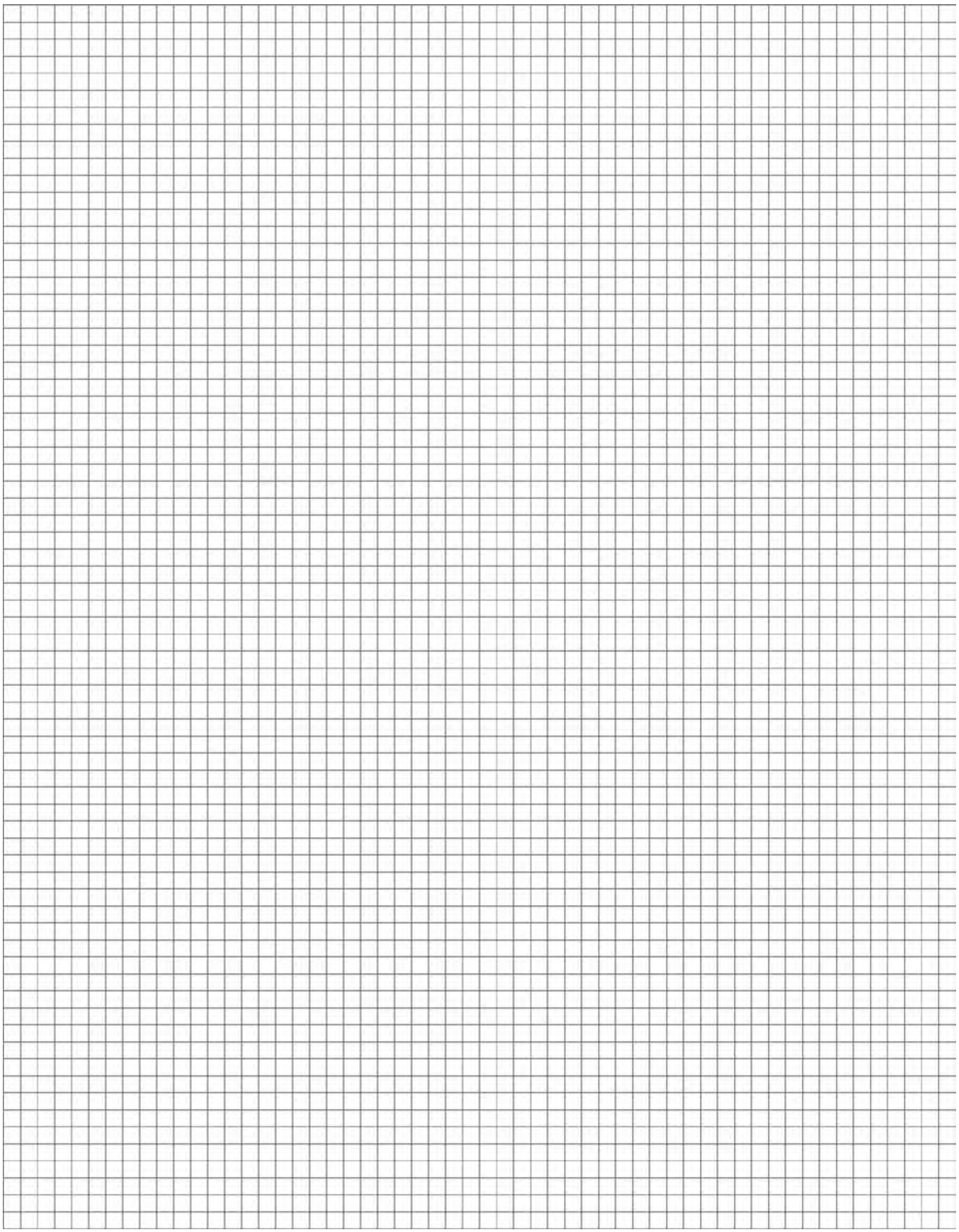
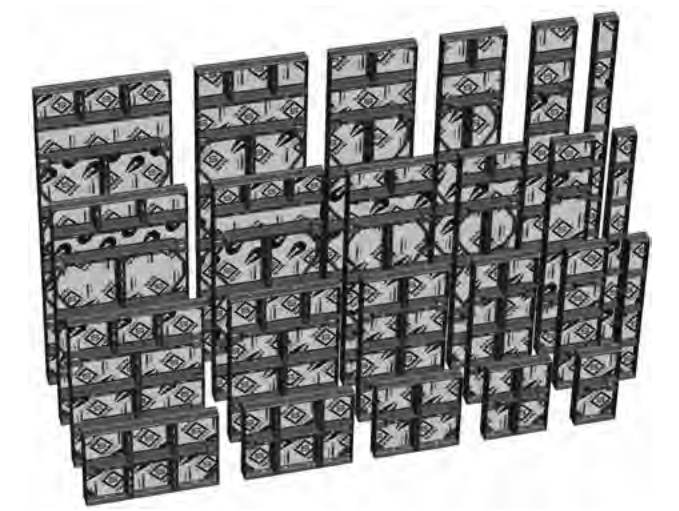




Symons Sym-Ply® concrete forming system is designed and manufactured to the demanding requirements of today's construction projects.

Features

- 1,500psf allowable pressure
- 80ksi steel for strength and durability
- Pins directly to Steel-Ply® panels, fillers, corners, hinges and pilaster forms
- Built-in tie-off holes meet OSHA requirements for fall protection
- Weighs only 8 pounds per square foot
- 5/8" 100/30 HDO standard plywood face
- Profiled side rail allows pry bar access for adjusting gangs to the chalk line
- Clamp or bolt together for maximum versatility
- 1 7/16" diameter tie hole accommodates 50kip or 15mm Taper Ties and She-Bolts
- Plywood protector sleeve plate is buttressed by the tie box for extended sleeve life
- Up to 10 degree batter with 50K ties
- Only 4" deep means more forms per truck
- Manufactured in the U.S.A.
- Manufactured by union workers
- Manufactured by Symons

Note: The drawings in this Application Guide are for illustrative purposes only. Local and federal requirements must be followed when erecting, dismantling or using Sym-Ply formwork. The information contained within this erection instruction is to be used as a guide and is not intended to replace sound engineering practice. Please consult your Symons representative for any application or product use that varies from the specific configurations depicted.

Basic Equipment

Panel Sizes

Sym-Ply panels incorporate 4" deep, high strength 80ksi steel encasing 5/8" 100/30 HDO plywood. The result is a light-weight, high capacity (1,500psf allowable pressure) forming system. The profiled side rail is shaped to allow clamping and has 13/16" diameter holes for wedge bolting directly to Steel-Ply.

P/C	Size	Weight
F56001	36" x 8'	172 lbs
F56002	30" x 8'	155 lbs
F56003	24" x 8'	130 lbs
F56005	12" x 8'	73 lbs
F56006	6" x 8'	51 lbs
F56011	36" x 6'	136 lbs
F56012	30" x 6'	118 lbs
F56013	24" x 6'	100 lbs
F56015	12" x 6'	60 lbs
F56016	6" x 6'	39 lbs
F56021	36" x 4'	94 lbs
F56022	30" x 4'	85 lbs
F56023	24" x 4'	68 lbs
F56025	12" x 4'	40 lbs
F56026	6" x 4'	26 lbs
F56041	36" x 2'	53 lbs
F56042	30" x 2'	50 lbs
F56043	24" x 2'	38 lbs
F56045	12" x 2'	20 lbs

Fillers

Sym-Ply fillers are designed to be bolted directly or clamped into position with the Adjustable Sym-Clamp.

1" Filler

2" Filler

P/C	Size	Weight
F56007	2" x 8'	38.4 lbs
F56008	1" x 8'	32.8 lbs
F56017	2" x 6'	29.0 lbs
F56018	1" x 6'	24.0 lbs
F56027	2" x 4'	19.7 lbs
F56028	1" x 4'	16.6 lbs

Slip Plates

Slip Plates are used to fill in a 3" to 12" gap between gangs. They are very useful for reducing the number of different sized fillers required on a project. Slip Filler Plates lap over the panels, creating an indention of 1/8" in the wall

4' Slip Plate

Steel-Ply Filler Angle

P/C	Size	Weight
F56009	14" x 8'	84 lbs
F56019	14" x 6'	64 lbs
F56029	14" x 4'	42 lbs

Steel-Ply Filler Angles

P/C	Size	Weight
F10826	8'	11 lbs
F10626	6'	9 lbs
F10426	4'	5 lbs

Outside Corners
Profiled outside corners facilitate quick clamped connections.

P/C	Size	Weight
F56035	Sym-Ply OC x 8'	34 lbs
F56036	Sym-Ply OC x 6'	26 lbs
F56037	Sym-Ply OC x 4'	17 lbs

All-Steel Inside Corners
All-steel construction provides durability and eliminates re-plying.

P/C	Size	Weight
F56031	12" x 12" x 8'	163 lbs
F56032	12" x 12" x 6'	129 lbs
F56033	12" x 12" x 4'	87 lbs

Stripping Panels
Stripping Panels are made of two beveled forms that allow one to easily strip away from the other. They are most useful between gangs, pilasters, and inside corners. They are also used to create stripping cores.

P/C	Size	Weight
F56010	12" x 8'	136 lbs
F56020	12" x 6'	108 lbs
F56030	12" x 4'	73 lbs

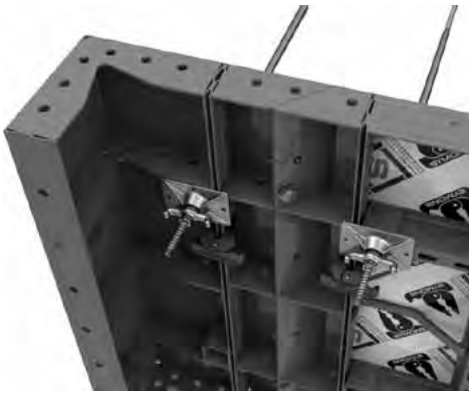
Stripping Corners
The Sym-Ply Stripping Corners are a steel three-piece assembly which bolt together through side flanges that are biased 45 degrees relative to the form face. To facilitate stripping, the bolts are removed allowing the biased sides to slip by one another creating the required relief to strip the corners. These corners are most useful in a core application.

P/C	Size	Weight
F56091	12" x 12" x 8'	224 lbs
F56090	12" x 12" x 6'	167 lbs
F56089	12" x 12" x 4'	116 lbs

Sym-Ply Turnbuckle Bracket P/C F56093 3.2 lbs
The Sym-Ply Turnbuckle Bracket is used with the Stripping Corners and 27" Ratchet Turnbuckle in stripping core formwork. This bracket has the same spring loaded connection as other Sym-Ply Accessories so there are no loose parts.

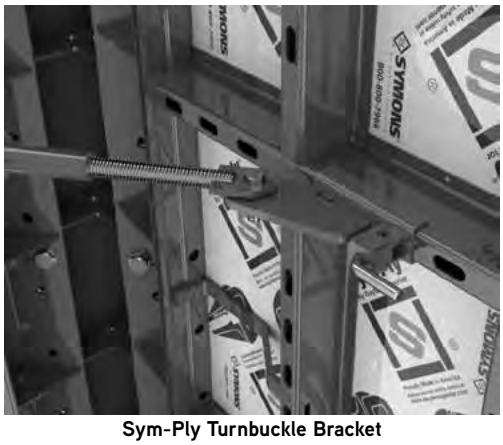
4' Exterior Corner

4' Interior Corner



Stripping Panel

Stripping Corner



Sym-Ply Turnbuckle Bracket

Sym-Clamp® **P/C F56351** **3 lbs**
The Sym-Clamp is the lightest clamp on the market, yet it is extremely durable.

Adjustable Sym-Clamp **P/C F56352** **5 lbs**
Facilitates clamping plastic or lumber fillers up to 4" wide. It is the lightest adjustable clamp on the market.

Wedge Bolts **P/C F60058** **0.13 lbs**
Wedge Bolts can be used for quick attachment of Steel-Ply panels, fillers, corners, filler angles and pilaster forms.

¾" Speed Bolts and Nuts **P/C F32191** **0.54 lbs**
The 13⁄16" diameter side and end rail hole accomodate ¾" bolts and nuts if a bolted connection is desired. The nuts and bolts have 1¼" hexagonal heads.

Sym-Ply Handling Bar **P/C F56353** **1.4 lbs**
The Handling Bar is put into the holes of the panel siderails and used by workers to ease panel shake-out and gang assembly.

Sym-Ply Tie Down Bracket **P/C F56395** **4.4 lbs**
The Sym-Ply Tie Down Bracket is used to help resist uplift loads from battered wall applications or to simply pin a hang in place on the footing.

T-Head Sym-Bolt Assembly **P/C F56062** **4.0 lbs**
The T-Head Sym-Bolt attaches short walers for gangs over 16', or 5" walers when using the Space-Lift™ jump form system.

T-Head Sym-Bolt Assyembly Long **P/C F56096** **4.3 lbs**
This longer T-Bolt allows the use of Symons Soldier® and 8" walers with the Sym-Ply Clamp System.

NOTE: When using the T-Head Sym-Bolt Assembly, always be sure that the T-Handle is perpendicular to the slot length and the T-Head is fully engaged. Then hand-tighten the wing nut plus a quarter turn.

Sym-Clamp

Adjustable Sym-Clamp

Wedge Bolt

¾" Speed Bolt and Nut

Sym-Ply Handling Bar

Sym-Ply Tie Down Bracket

T-Head Sym-Bolt Assembly

T-Head Sym-Bolt Assembly Long

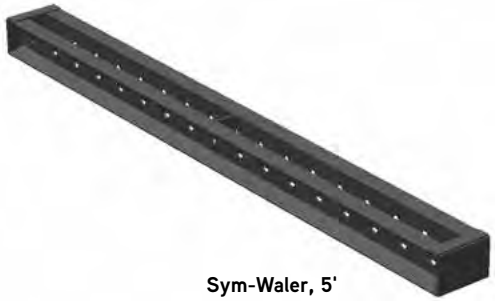
Bulkhead Sym-Hook Long P/C F56097 3.6 lbs

Used to attach the Short Waler supporting bulkhead lumber at construction joints.

Bulkhead Sym-Hook Lomg

Sym-Waler, 5' P/C F56064 38 lbs

The 60" long Sym-Waler stiffens gangs over 16' tall, supports slip plates, and provides bulkhead support.



Sym-Waler, 5'

Sym-Waler, 10' P/C F56098 86 lbs
Sym-Waler, 13' P/C F56099 112 lbs

The 10' and 13' long Sym-Walers are used to stiffen gangs during the picking and placement process.

Sym-Ply Stacking Clamp P/C 56914 23.5 lbs

The Sym-Ply Stacking Clamp is used instead of the Sym-Waler to stiffen the gang during picking and placement processes.

Sym-Ply Stacking Clamp

Sym-Ply Tie-Off Bracket P/C F56092 1.8 lbs

The Sym-Ply Tie-Off Bracket meets OSHA requirements for fall protection. The connecting hardware is fully integrated so there is no loose hardware. The bracket can be placed during gang assembly and the spring loaded connection allows it to be moved quickly and easily if required.

Sym-Ply Tie-Off Bracket

Plastic Sleeve Plate P/C F56070 0.05 lbs

The Plastic Sleeve Plate for Sym-Ply provides plywood protection at tie hole locations. The plate design fits behind the tie box and has two holes which can be used to screw the plate in custom locations in the panel. A plastic plug (F56071) can be placed into the opening when a tie hole is not being used.

Plug

15mm Sleeve Insert P/C F56084 0.02 lbs

The Sleeve Insert reduces the tie hole diameter from 1.44" to 1.13", greatly reducing concrete seepage when 15mm Taper Ties are used. The insert snaps into the existing Sleeve Plate. A smaller plastic plug (F56085) can be placed into the insert opening when a tie hole is not being used.

15mm Sleeve Insert

Plastic Sleeve Plate

15mm x 4" x 6" Tie/Plate Nut F722110 2.2 lbs
Attaches Short Walers when used in combination with 15mm ties and the Bulkhead Sym-Bolt.

15mm Tie Nut

Tie Systems

P/C	Size	Weight
	50 K Ties	
F31526	37" Taper Tie	10 lbs
F31527	47" Taper Tie	13 lbs
F31528	57" Taper Tie	16 lbs
F31377	1" Taper Tie Hammering Cap	1.25 lbs
F31613	1" Contour Nut	1.0 lbs
F31614	1¼" Contour Nut	0.8 lbs
F31525	Cast Bearing Washer	3 lbs
F31522	1" Cast Contour Nut	1.5 lbs
F31524	1¼" Cast Contour Nut	1.5 lbs
31626	Batter Plate Casting	3.5 lbs
	15mm Ties	
FSW667023	41" Taper Tie	5.1 lbs
FSW667022	49" Taper Tie	6.5 lbs
FSW667021	57" Taper Tie	7.9 lbs
FSW667020	65" Taper Tie	9.3 lbs
F54680	15mm Taper Tie Hammering Tool	0.5 lbs
F56354	15mm 7" Round Tie Plate	5.2 lbs
F54557	15mm Nut	1.01 lbs
	20 mm 65K Ties	
145555	37" Taper Tie	8.15 lbs
145556	47" Taper Tie	11 lbs
145557	57" Taper Tie	13.85 lbs
145558	67" Taper Tie	15.8 lbs
145554	20mm Swivel Wing Nut with 7" round plate	5.94 lbs

Frame Tie Plate

15mm x 7" Circular Tie Plate and Nut

She Bolt Cone

Tie Rod Sleeve with Internal Plastic Spacer Cones

50 K Hammering Cap

Top Tie Bracket

50K Batter Plate Casting

Top Tie Bracket P/C F56069 4.3 lbs
The Top Tie Bracket is used for dry tie application at the top of the panel or in a bulkhead situation. (See sections on Top Tie Brackets, Bulkheads, and Other Tying Considerations) Capacity of 7,000 lbs at a 2 to 1 factor of safety.

50 K Cast Contour Nut

50K Cast Bearing Washer

15 mm Tie Rod

15mm Taper Tie

15mm Hammering Cap

50K She Bolt

She Bolt

50K Taper Tie

65K Taper Tie

20mm x 7" Circular Tie Plate and Nut

Lift Bracket **P/C F56065** **9.9 lbs**
Unique design straddles the tie boxes or crossmembers. The 2,000 pound capacity means that two brackets will typically lift a 400 square foot gang.

Walkway Bracket **P/C F56067** **13.7 lbs**
The Walkway Bracket accommodates three 2x10 lumber planks. It has a capacity of 500 lbs at a 4:1 safety factor, and can be spaced up to 8' on center. The connecting hardware is fully integrated so there is no loose hardware

Guardrail Post **P/C FSW556042** **9.9 lbs**
Strong steel pipe that slides into the end pocket of the Walkway Bracket. The guardrail post facilitates the attachment of guardrail lumber.

Fall Forward Bracket **P/C F56068** **4.7 lbs**
The Fall Forward Bracket is designed to provide guardrail protection on the side of the wall opposite from the walkways. It can be used when the Walkway Brackets are located less than 42" from the top of the form. It features the same integrated hardware as the Walkway Bracket. The guardrail post pocket is angled at 15 degrees to avoid interference when placing concrete by bucket.

Quick Hook Handles
The Sym-Ply Quick Hook Handles provide a versatile and easy additional tie off points on Sym-Ply panels. The handles are placed on the panels wherever is they should be of most benefit, and are secured through the slots in the cross-member vertical legs utilizing a $^{9}/_{16}$" lock-nut and washer. The Quick Hook Handles also serve as convenient handles for carrying and working on gangs. The Quick Hook Handles are purchase only items that come with all required nuts and washers when ordered.

P/C	Description	Lbs.
F56171	Sym-Ply Quick Hook Handle – Small Diagonal (utilized on 30" wide panels)	1.10
F56172	Sym-Ply Quick Hook Handle – Large Diagonal (utilized on 36" wide panels)	1.50
F56173	Sym-Ply Quick Hook Handle – Square	1.25


Lift Bracket


Walkway Bracket


Fall Forward Bracket


Guardrail Post


Diagonal Quick Hook Handle


Square Quick Hook Handle

Form Alignment and Attachments

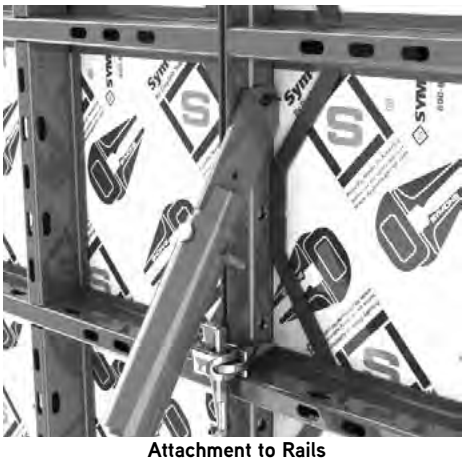
Pipe Form Aligner P/C F33697 111 lbs.
Aligns formwork panels. Connects to panel siderails with Wedge Bolts.

Pier Cap Brace
Aligns formwork panels. Connects to panel siderails with Wedge Bolts.

P/C	Description	Lbs.
F39979	67½" Pier Cap Brace	42
F39980	85½" Pier Cap Brace	48
F39981	56" Extension	16
F39982	92" Extension	26
F40132	5⁄8" dia. x 4½" Pin	0.4
F36653	Hair Pin Clip	0.2

Brace Kicker Bracket P/C F33693 7.3 lbs.
Acts as an aligner shoe for connecting an aligner and a kicker.

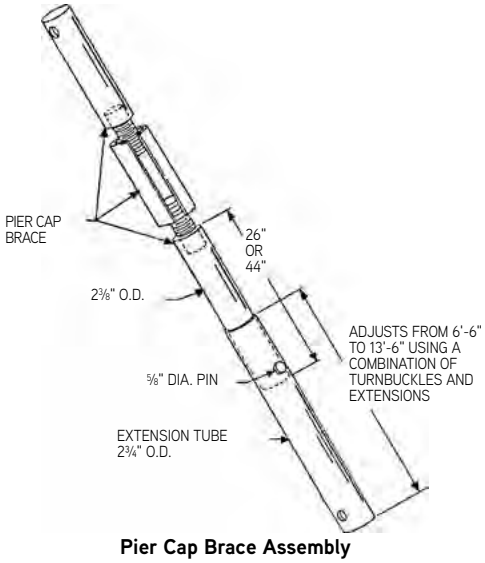
Aligner Bracket P/C F56066 3.3 lbs
The Aligner Bracket uses the same integrated hardware as the other accessories. It is designed to accept multiple types of plumbing and bracing devices.



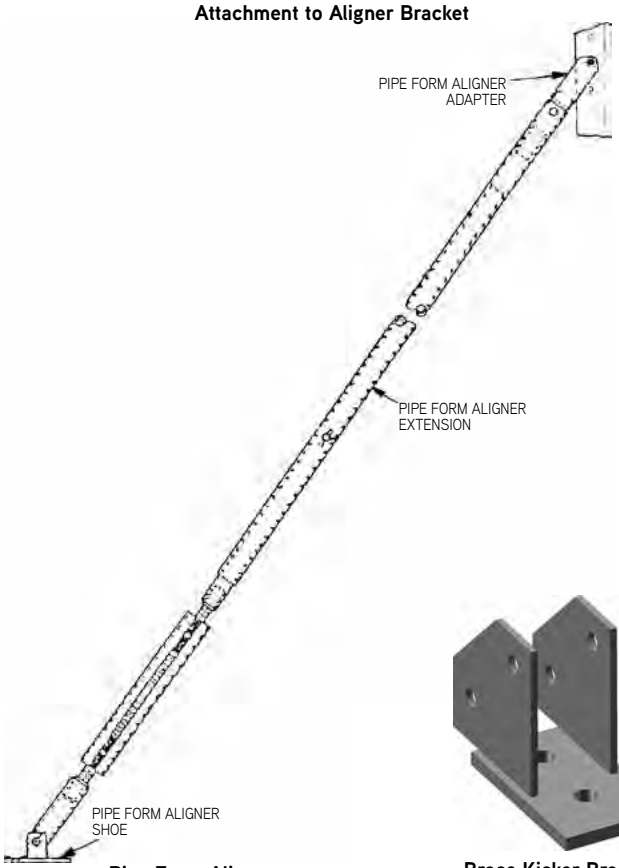
Attachment to Rails

Attachment to Aligner Bracket

Aligner Bracket



Pier Cap Brace Assembly

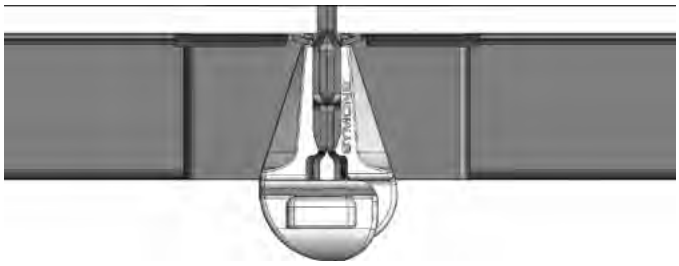


Pipe Form Aligner 13'-9" to 19'-9" Range

Brace Kicker Bracket

Clamps

Clamps shall be adjacent to tie hole locations.



Sym-Clamp Plan View

Clamp Adjacent to Tie Box

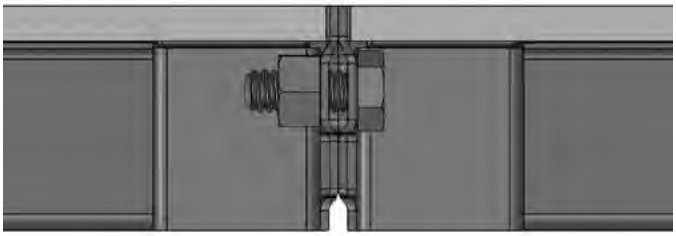
Adjustable Sym-Clamp with 1" Filler

Adjustable Sym-Clamp with 2" Filler

Adjustable Sym-Clamp with 4" Filler

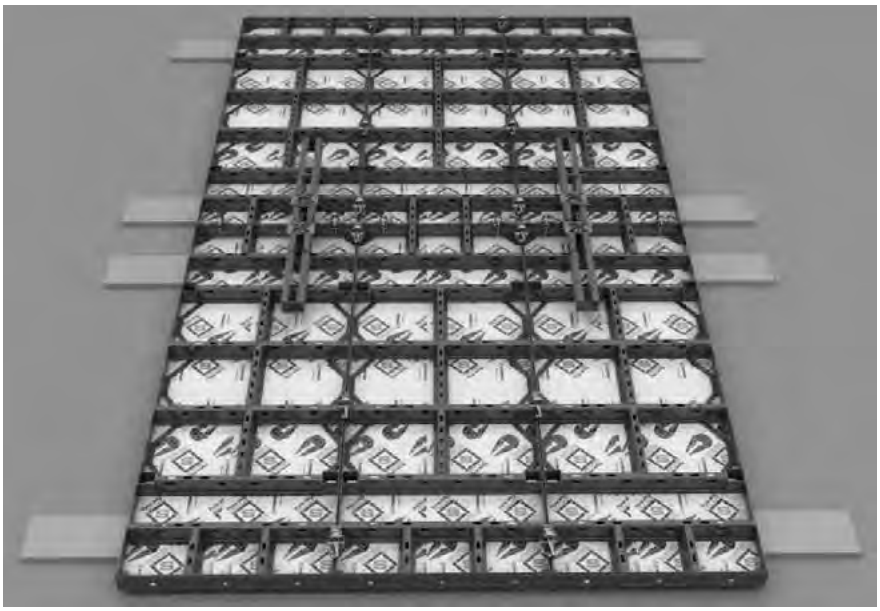
Bolts

When using a bolted connection, a ¾" bolt shall be located at the first hole location from crossmembers/endmembers, endrails or tie-off bars.



Typical Bolt Connection

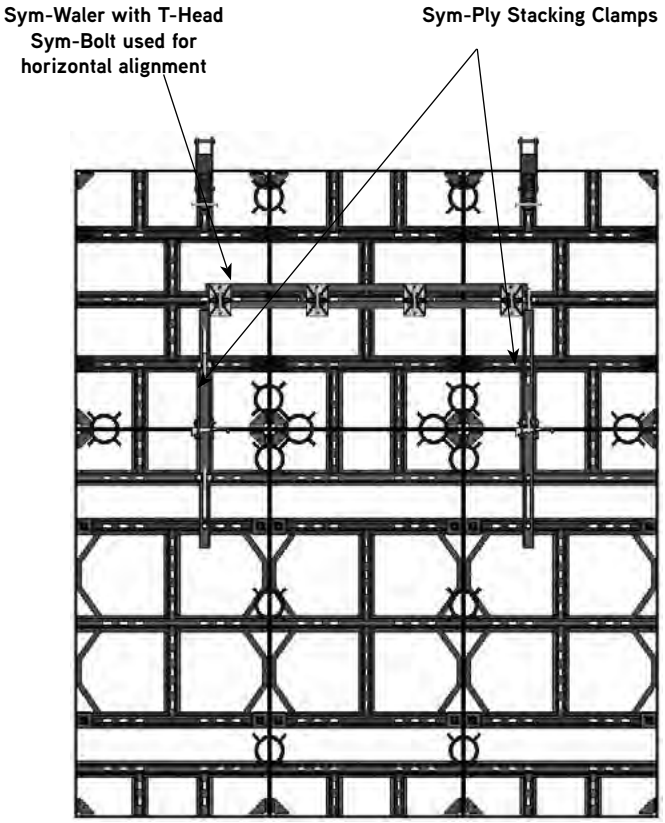
Sym-Ply Gang Assembly



1. Ensure lay down area is sufficient for the largest gang to be assembled and any equipment access required during assembly and picking of the gang(s). The lay down area should be clear and flat. It is recommended to place timber under the panels to ease in panel alignment and speed assembly time.
2. Align the bottom and one side of the gang using a snap line or other means.
3. Install one clamp per vertical and horizontal joint to lock in the gang. DO NOT over-tighten the clamps.
4. Install the vertical Sym-Walers at the recommended locations with the shim side bearing on the vertical cross-members and tighten the "J" hook and the T-Head Sym-Bolt Assemblies. Vertical Stacking Clamps may be used in place of Sym-Walers per gang assembly chart options shown in the following pages. If horizontal walers are required, install them after the vertical walers. In some cases, the clamps directly below horizontal walers may need to be placed and tightened first.
5. Install remaining Sym-Clamps as required ensuring panel edges remain flush. A spud bar may aide in alignment at times. DO NOT over-tighten the clamps.
6. Install lift brackets, brace brackets, scaffold brackets, and other accessories as required.
7. Lift and set gang.

IMPORTANT: See following pages for proper clamp and waler or stacking clamp locations. Please consult your Regional Engineer with questions.

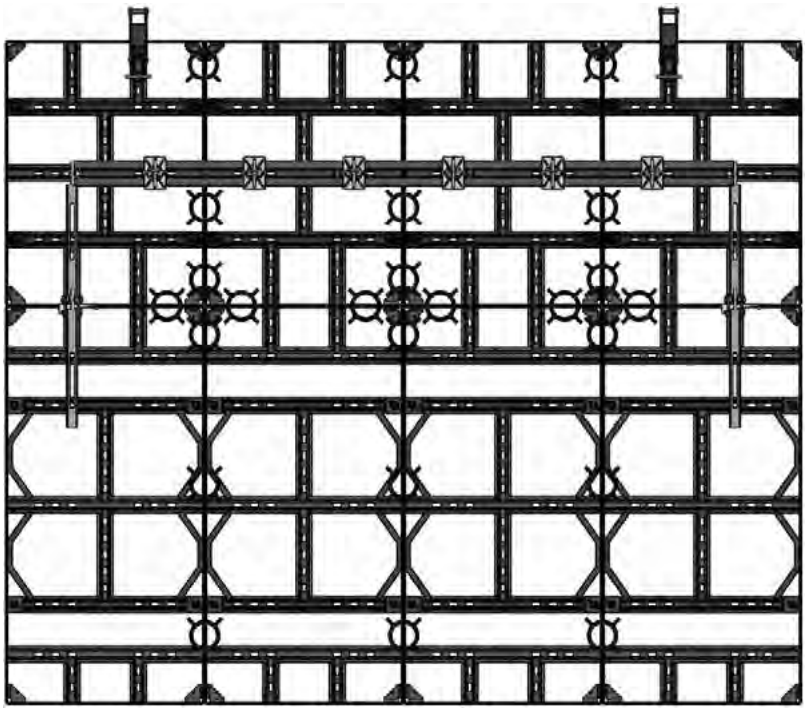
Stacking Panels Gang Options with Stacking Clamps



GANG — 3'-0" Wide x 6'-0" High + 4'-0" High x 3 Panels Wide

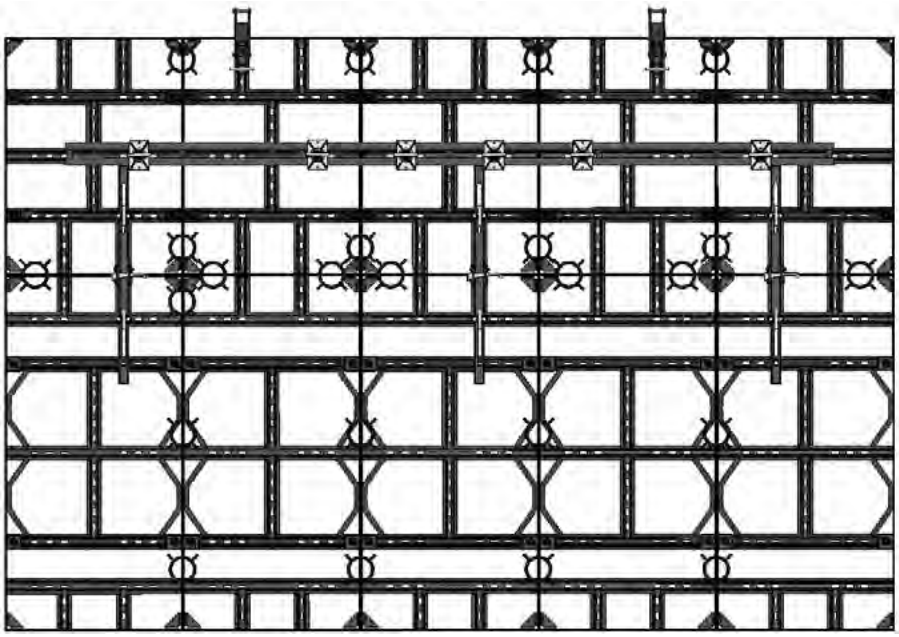
NOTES:

1. For gangs over 24' high, use 5" or 8" Walers to stiffen. Consult a Regional Engineer.
2. When using the T-Head Sym-Bolt Assembly, always be sure that the T-Handle is perpendicular to the slot length and the T-Head is fully engaged. Then hand-tighten the wing nut plus a quarter turn.
3. Crossed circle (¤) in drawings indicates Sym-Clamp location.
4. Lift Bracket locations shown help prevent excessive flex during front or back picks.
5. One row of clamps must be placed at the very top edge at panel joints.

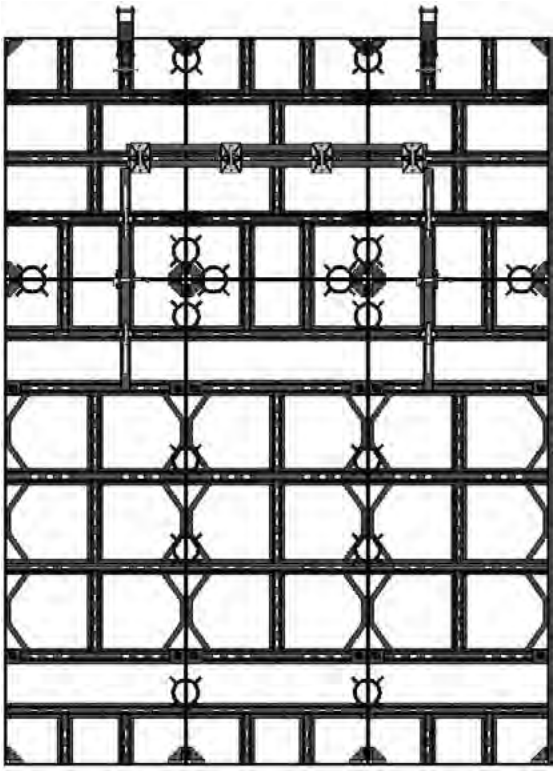


GANG — 3'-0" Wide x 6'-0" High + 4'-0" High x 4 Panels Wide

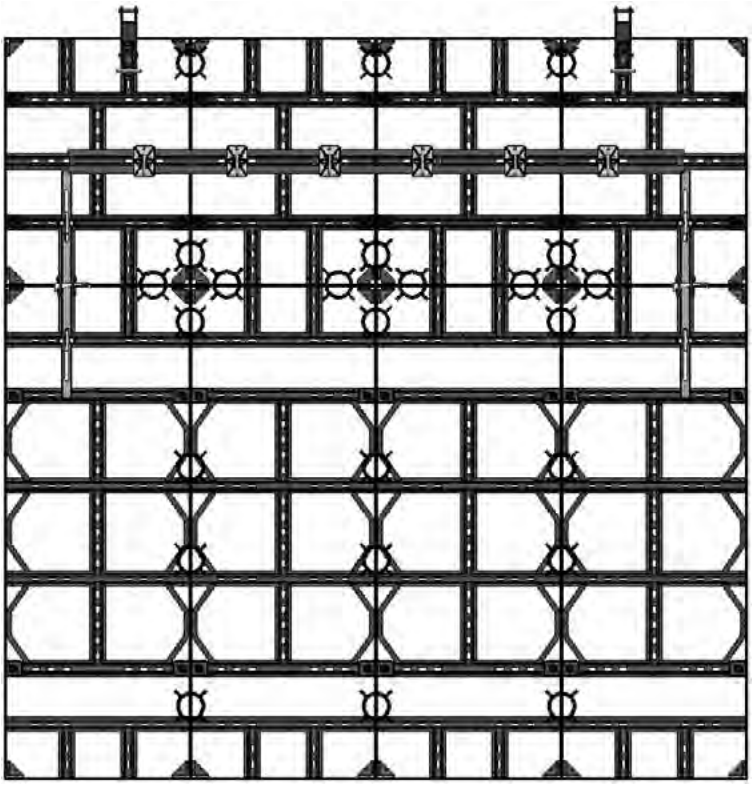
Sym-Ply Gang Options with Stacking Clamps, continued



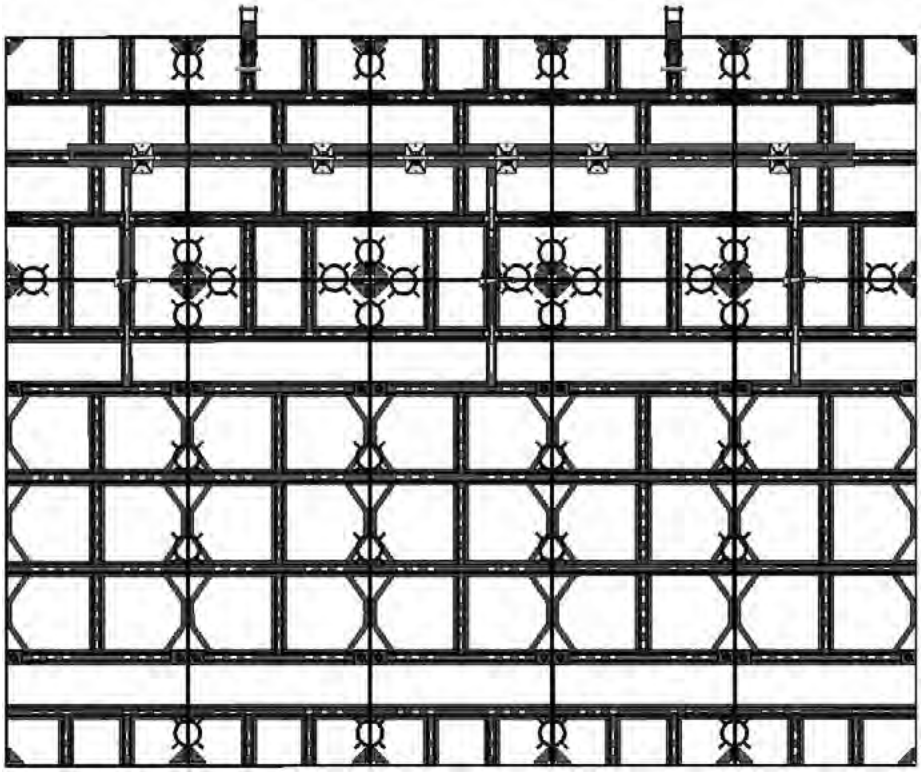
GANG — 3'-0" Wide x 6'-0" High + 4'-0" High x 5 Panels Wide



GANG — 3'-0" Wide x 8'-0" High + 4'-0" High x 3 Panels Wide

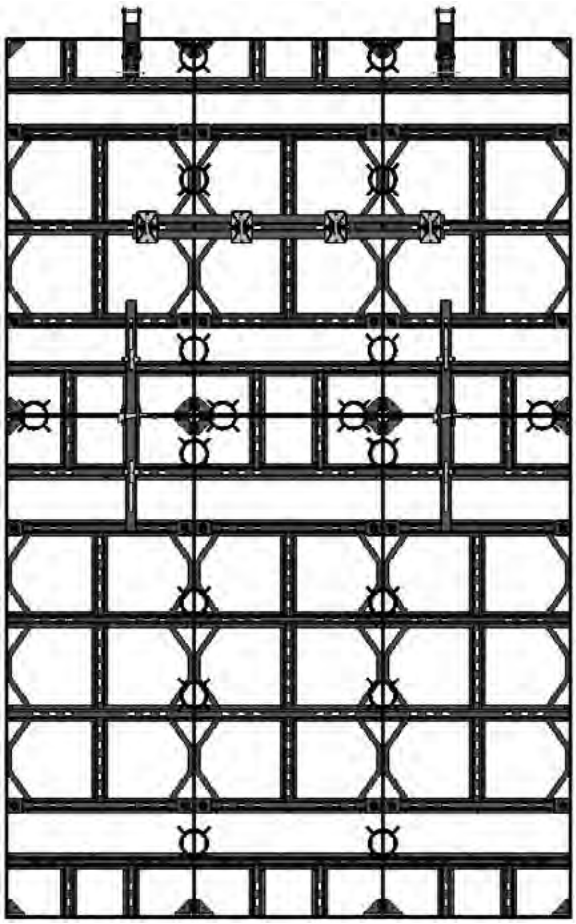


GANG — 3'-0" Wide x 8'-0" High + 4'-0" High x 4 Panels Wide

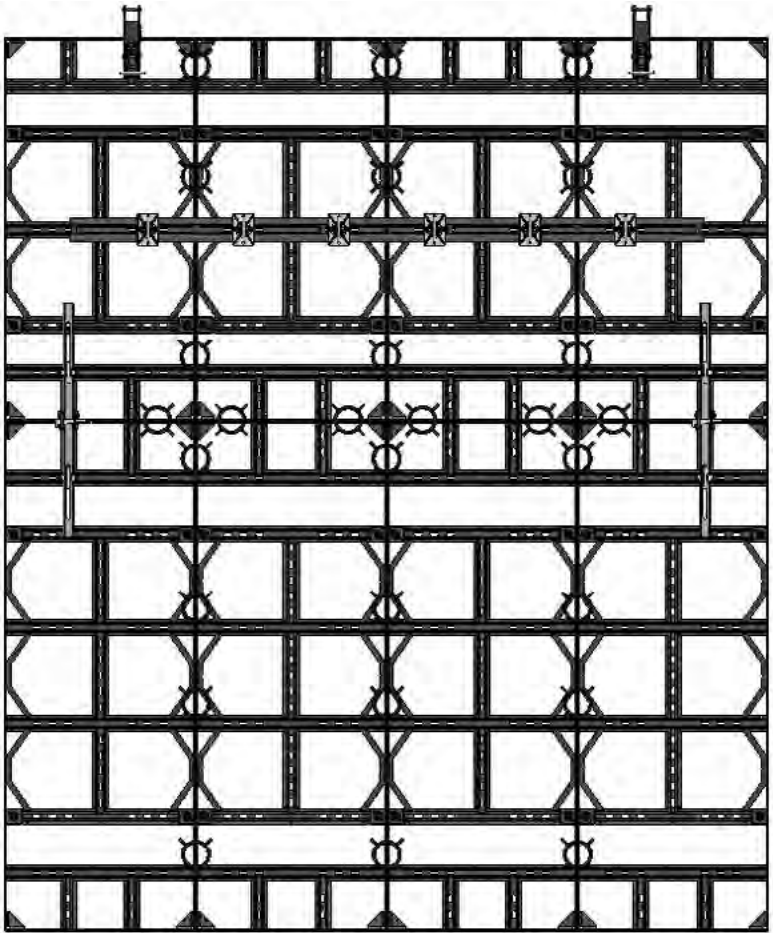


GANG — 3'-0" Wide x 8'-0" High + 4'-0" High x 5 Panels Wide

Sym-Ply Gang Options with Stacking Clamps, continued

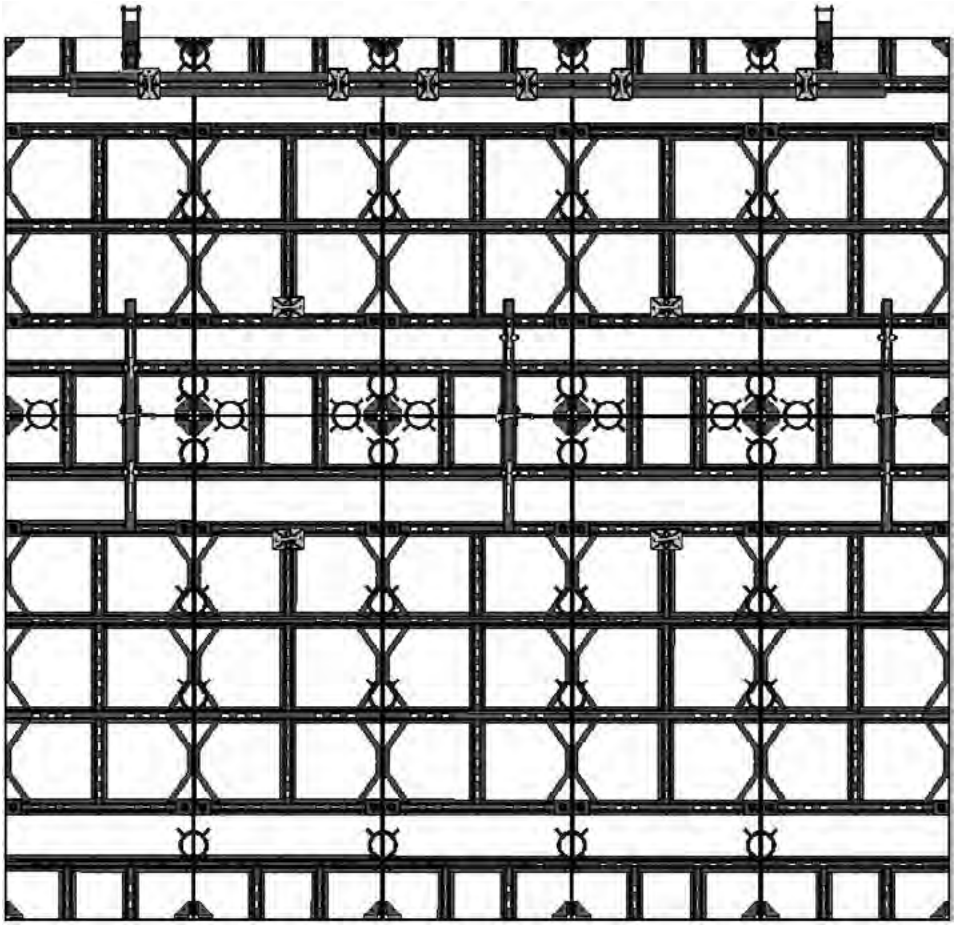


GANG — 3'-0" Wide x 8'-0" High + 6'-0" High x 3 Panels Wide

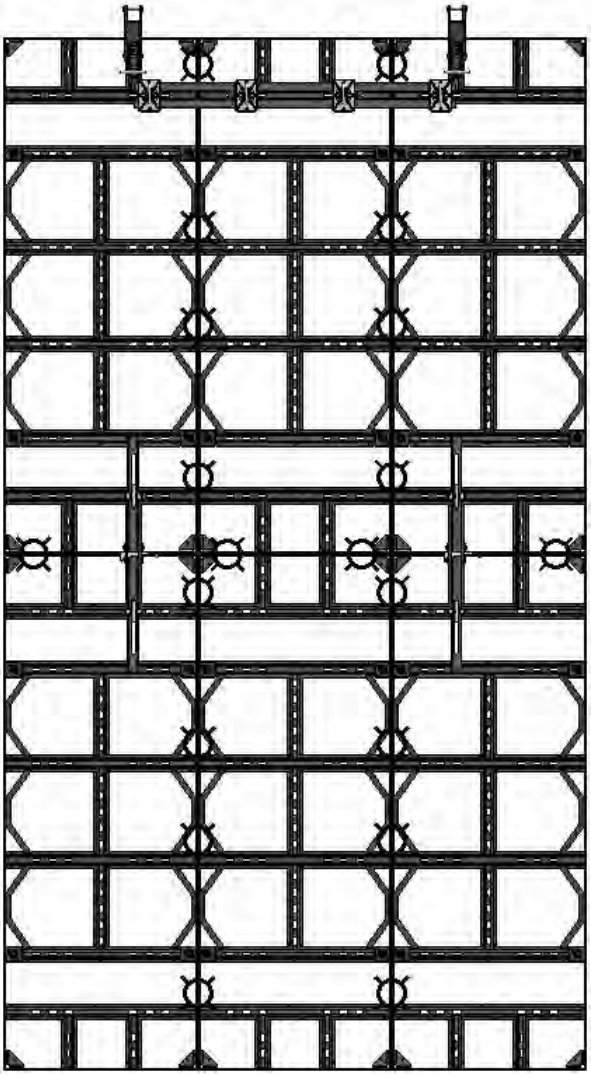


GANG — 3'-0" Wide x 8'-0" High + 6'-0" High x 4 Panels Wide

Sym-Ply Gang Options with Stacking Clamps, continued

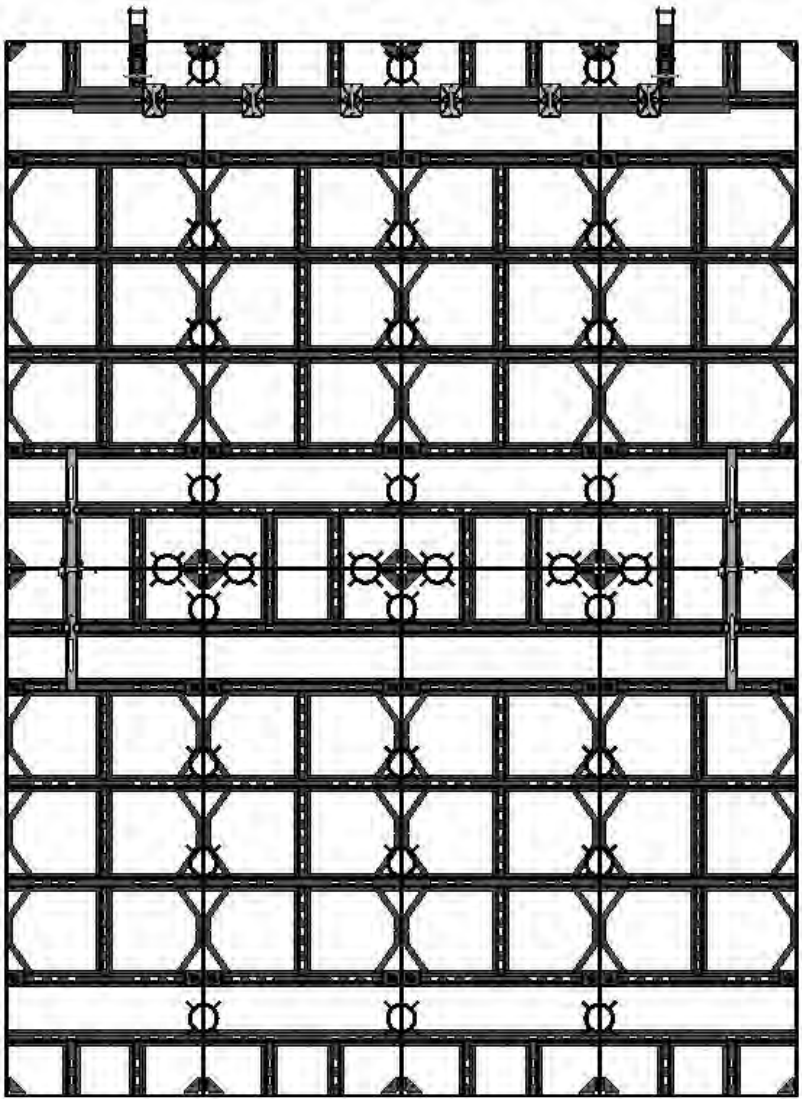


GANG — 3'-0" Wide x 8'-0" High + 6'-0" High x 5 Panels Wide

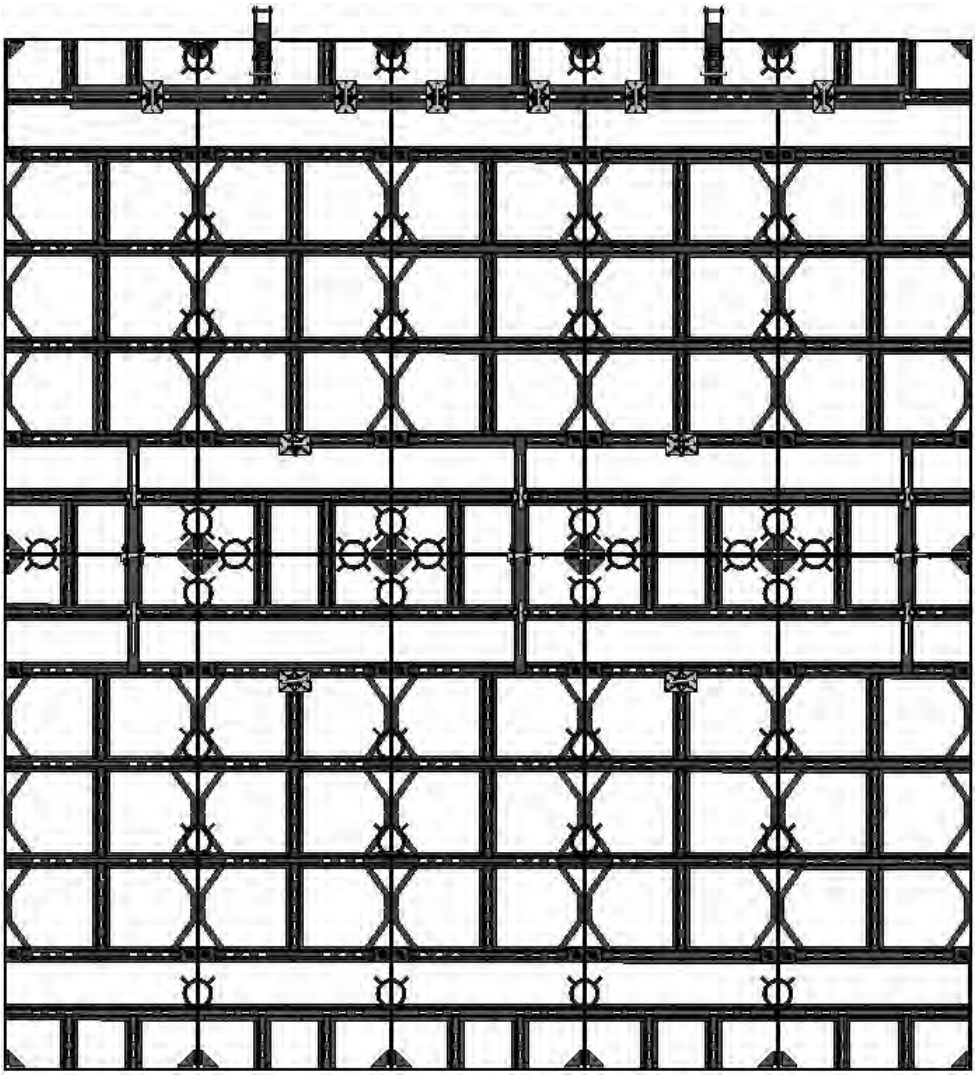


GANG — 3'-0" Wide x 8'-0" High + 8'-0" High x 3 Panels Wide

Sym-Ply Gang Options with Stacking Clamps, continued

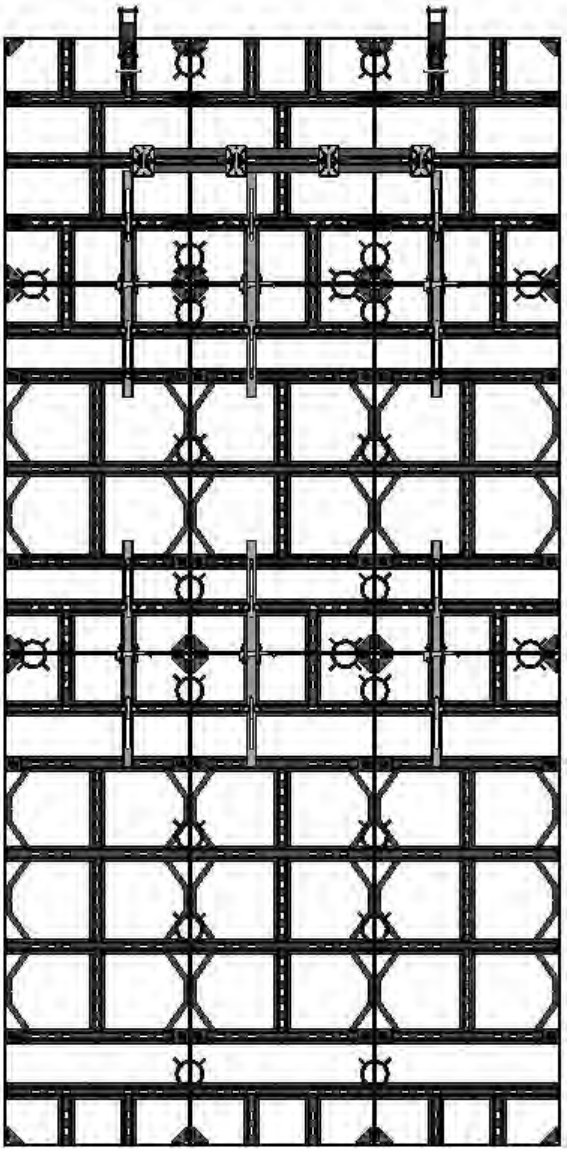


GANG — 3'-0" Wide x 8'-0" High + 8'-0" High x 4 Panels Wide

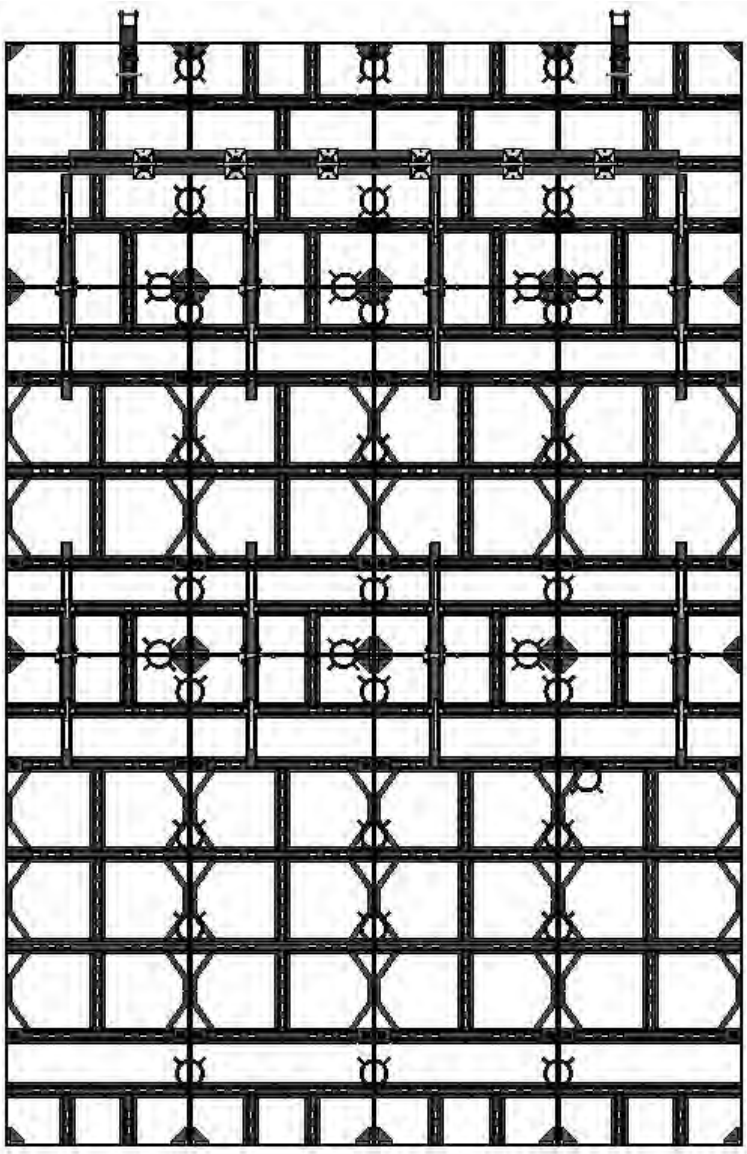


GANG — 3'-0" Wide x 8'-0" High + 8'-0" High x 5 Panels Wide

Sym-Ply Gang Options with Stacking Clamps, continued

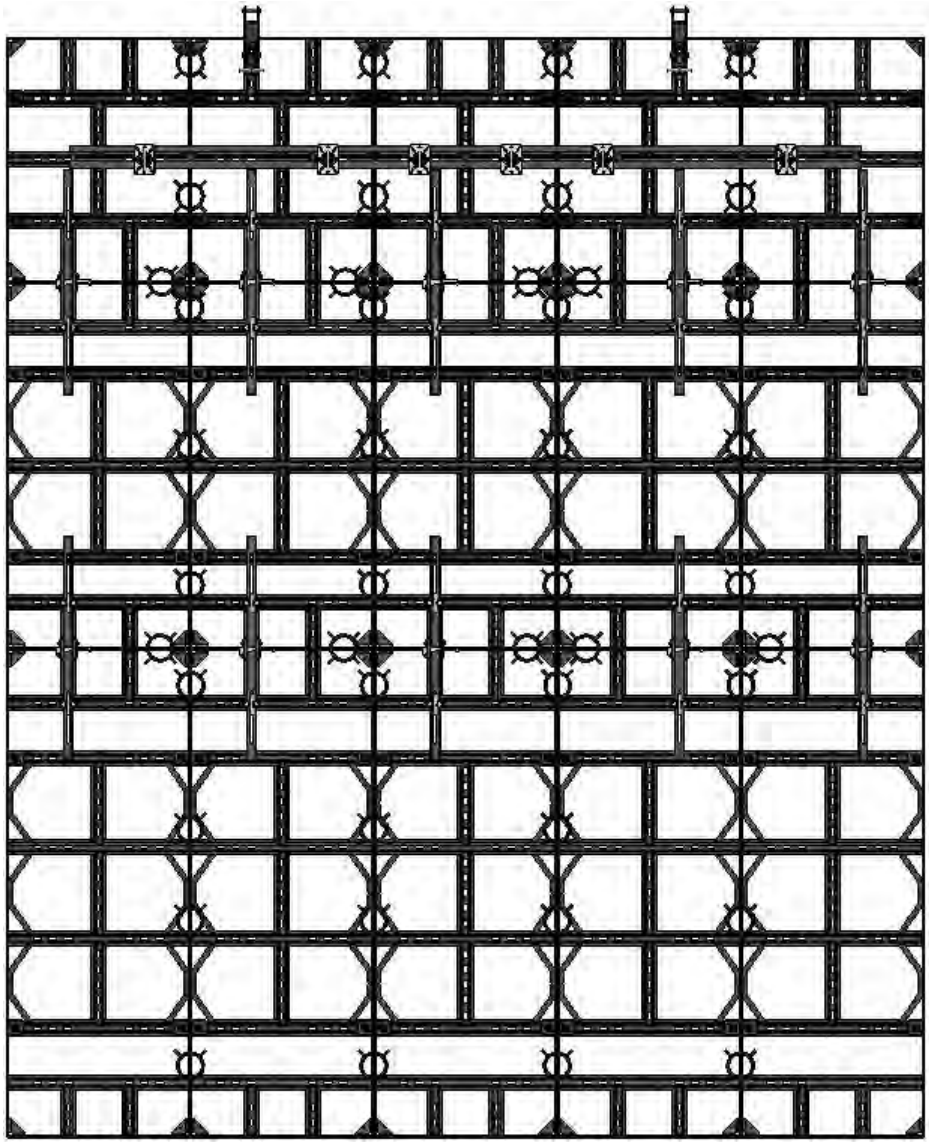


GANG — 3'-0" Wide x 8'-0" High + 6'-0" High + 4'-0" High x 3 Panels Wide

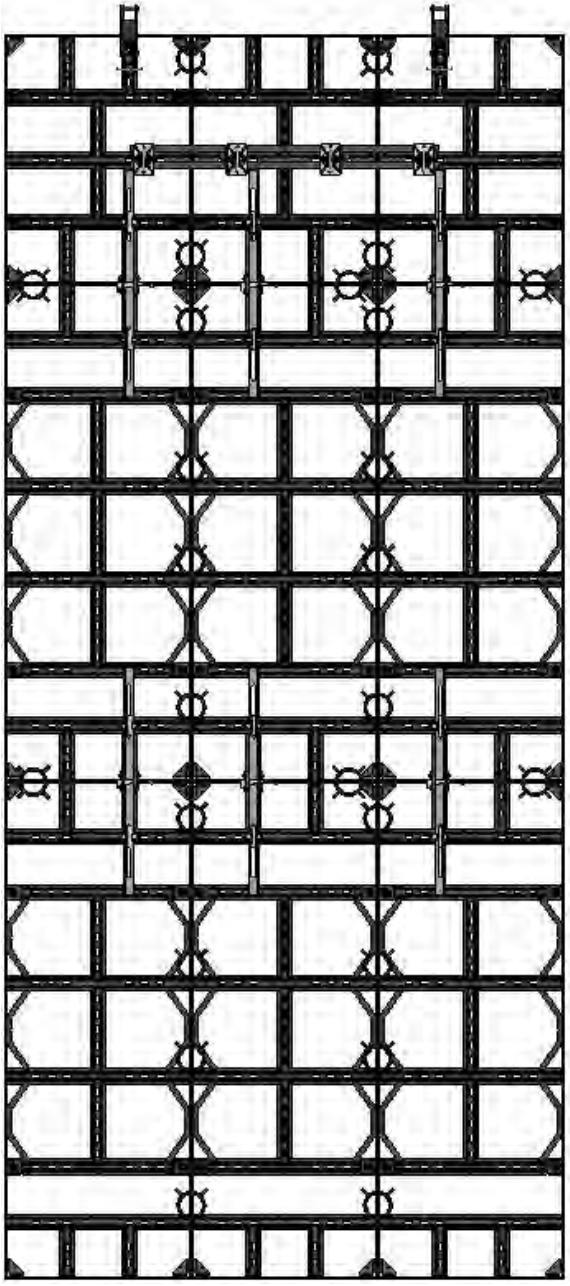


GANG — 3'-0" Wide x 8'-0" High + 6'-0" High + 4'-0" High x 4 Panels Wide

Sym-Ply Gang Options with Stacking Clamps, continued

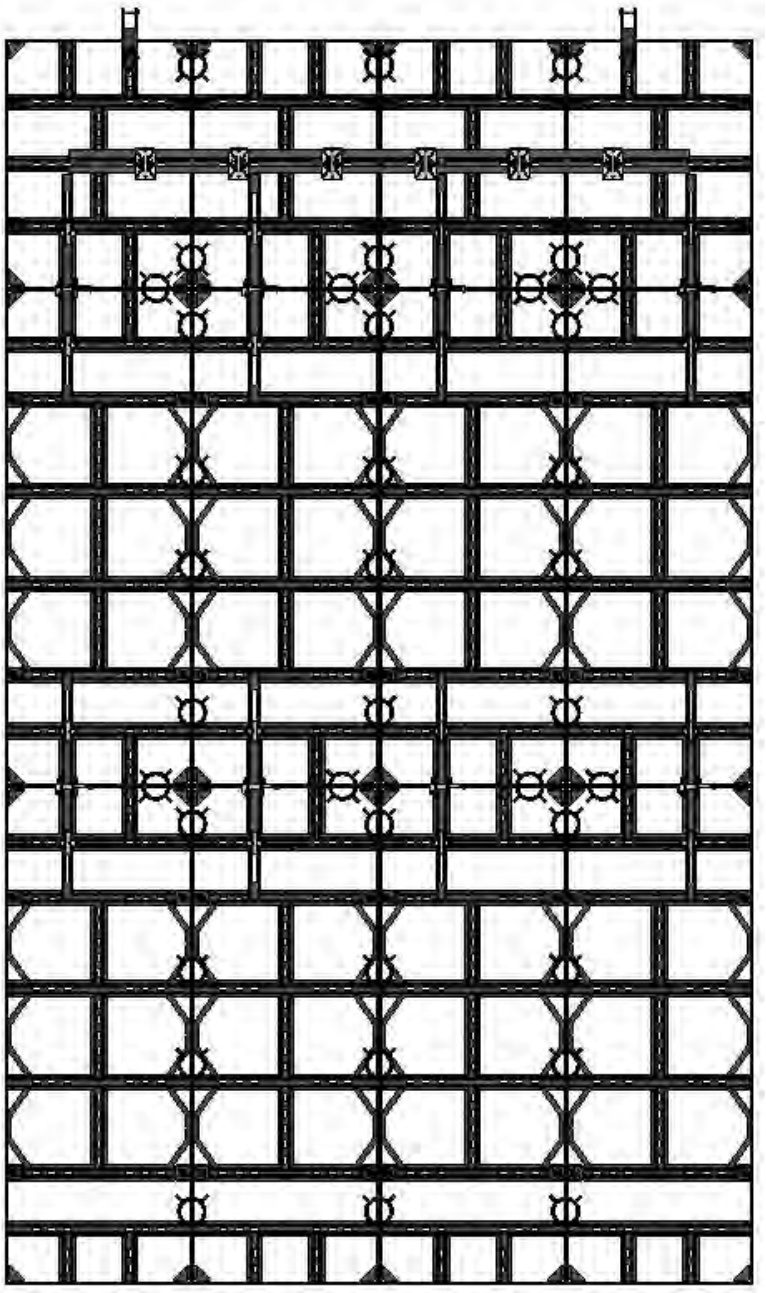


GANG — 3'-0" Wide x 8'-0" High + 6'-0" High + 4'-0" High x 5 Panels Wide

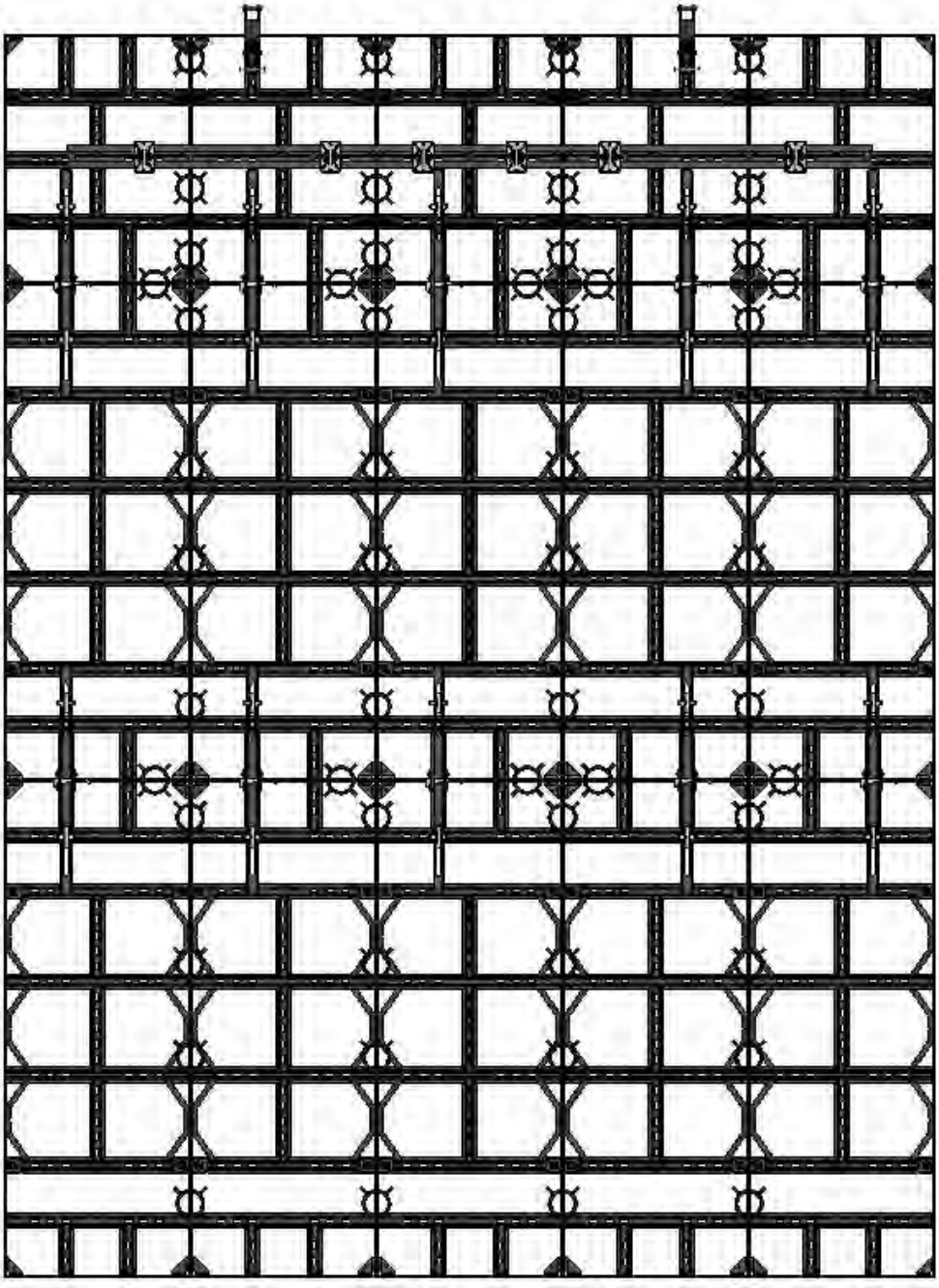


GANG — 3'-0" Wide x 8'-0" High + 8'-0" High + 4'-0" High x 3 Panels Wide

Sym-Ply Gang Options with Stacking Clamps, continued

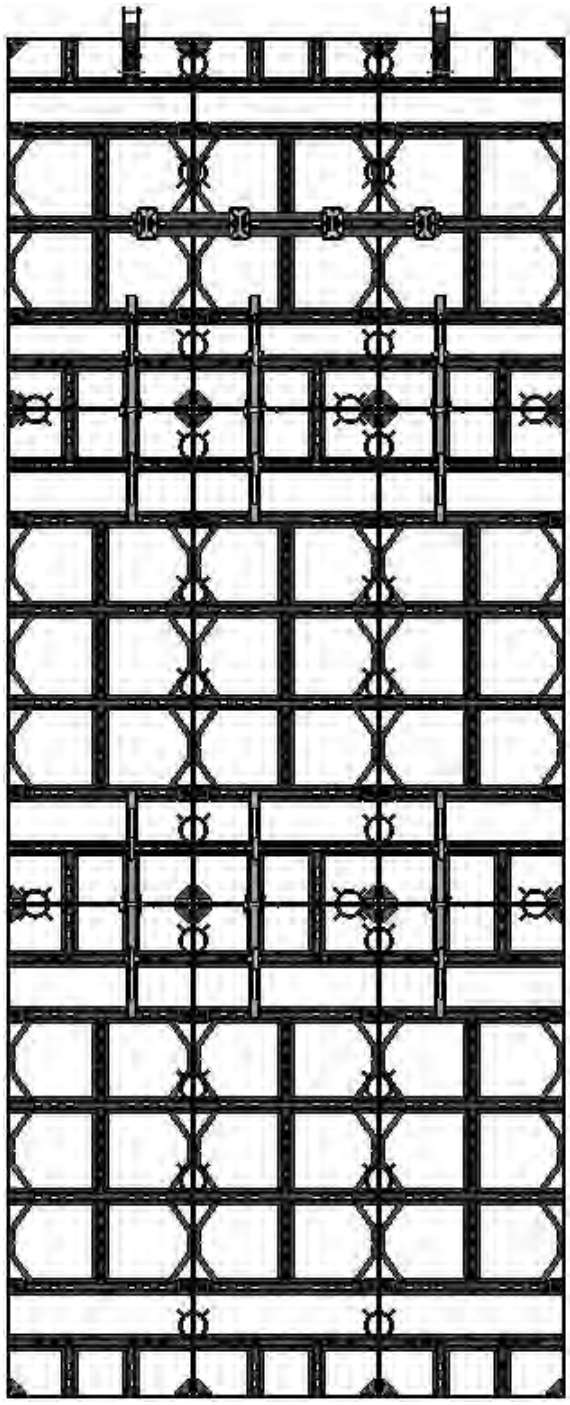


GANG — 3'-0" Wide x 8'-0" High + 8'-0" High + 4'-0" High x 4 Panels Wide

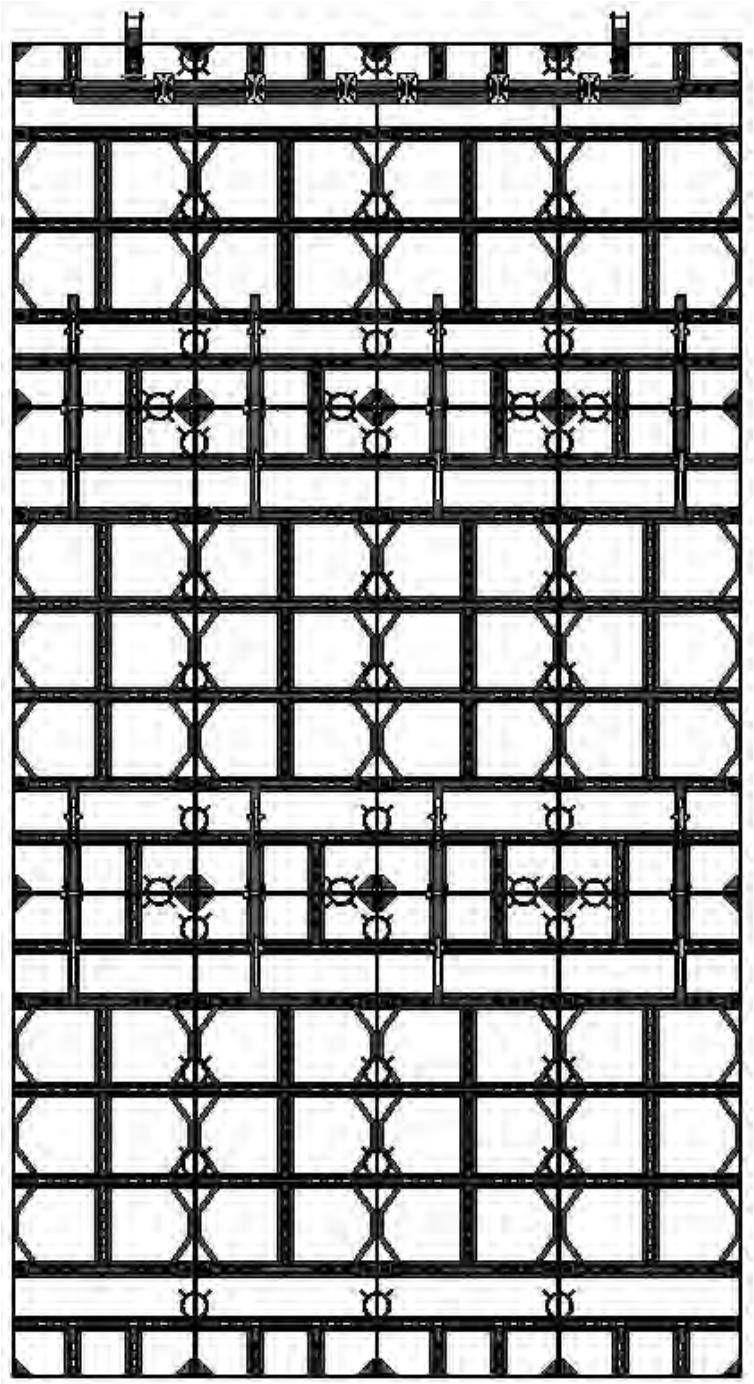


GANG — 3'-0" Wide x 8'-0" High + 8'-0" High + 4'-0" High x 5 Panels Wide

Sym-Ply Gang Options with Stacking Clamps, continued

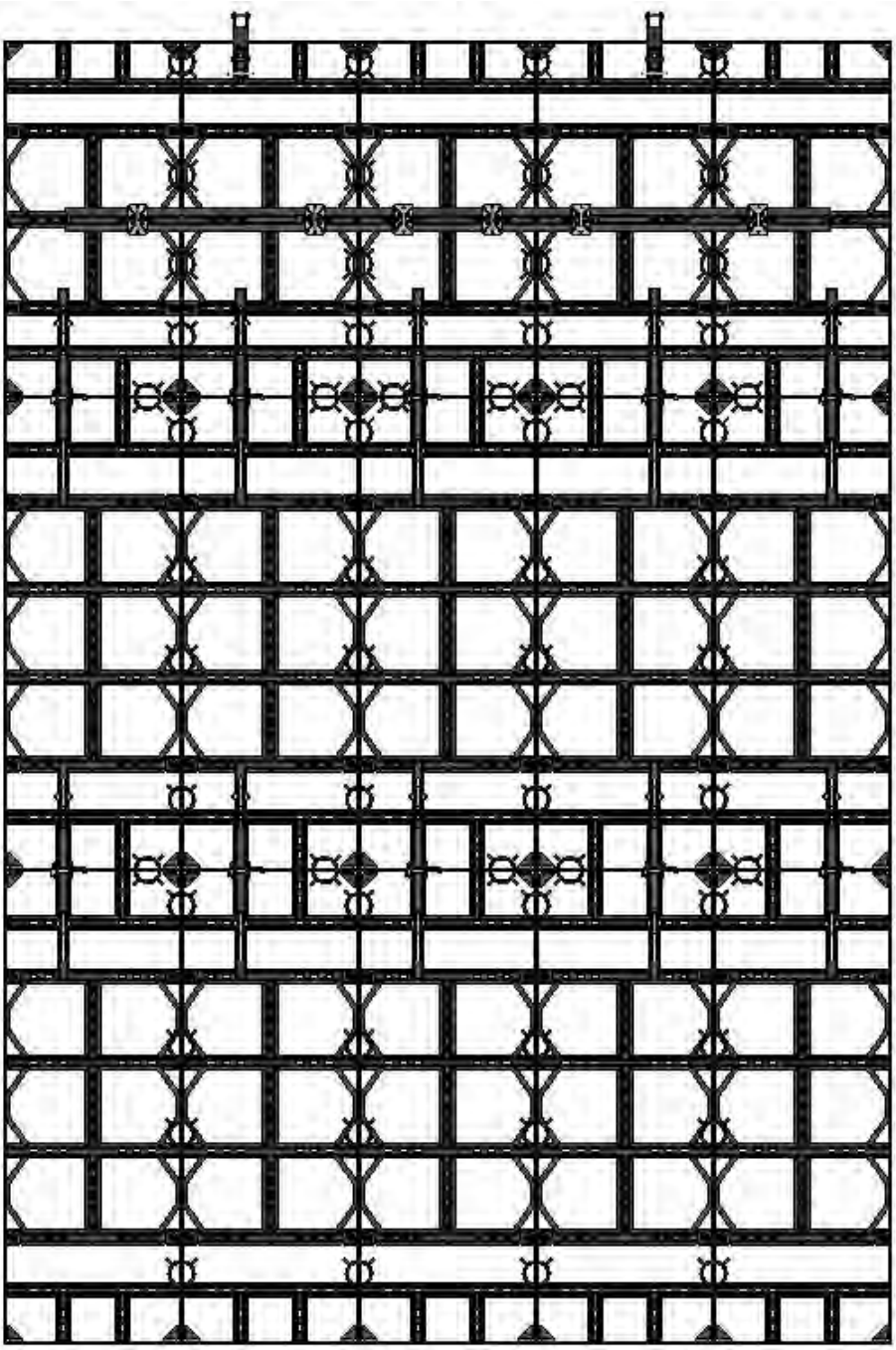


GANG — 3'-0" Wide x 8'-0" High + 8'-0" High + 6'-0" High x 3 Panels Wide

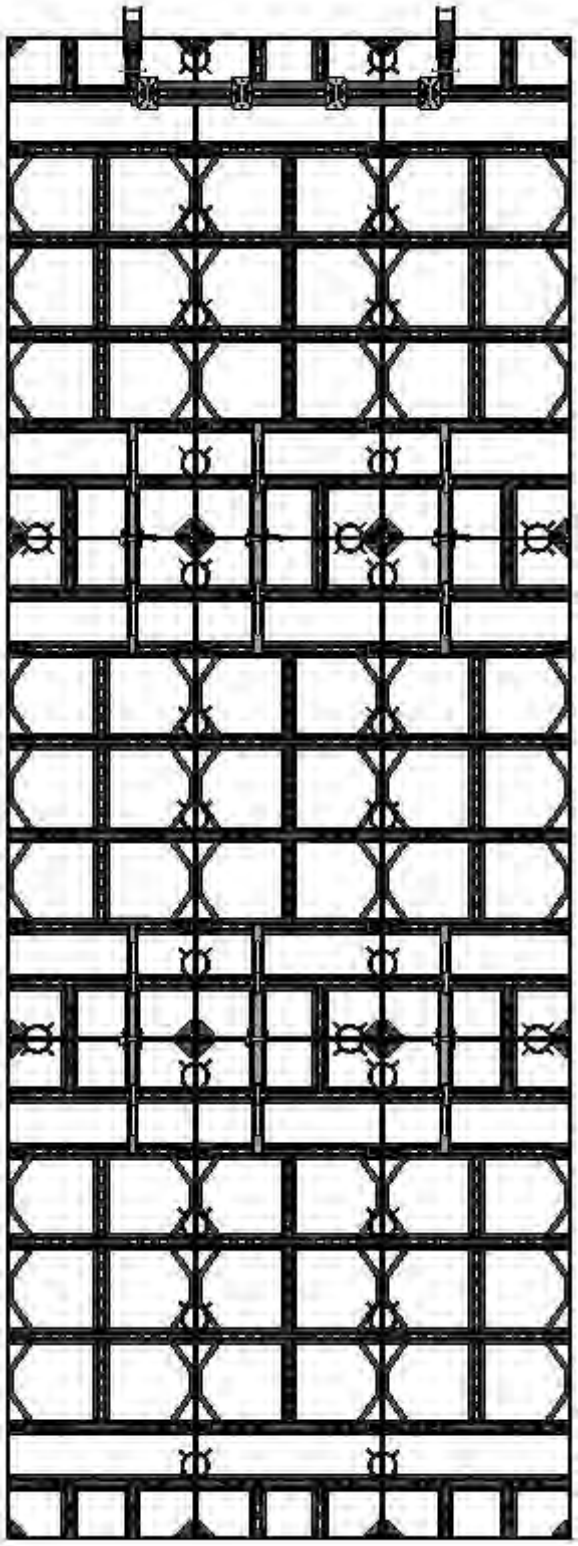


GANG — 3'-0" Wide x 8'-0" High + 8'-0" High + 6'-0" High x 4 Panels Wide

Sym-Ply Gang Options with Stacking Clamps, continued

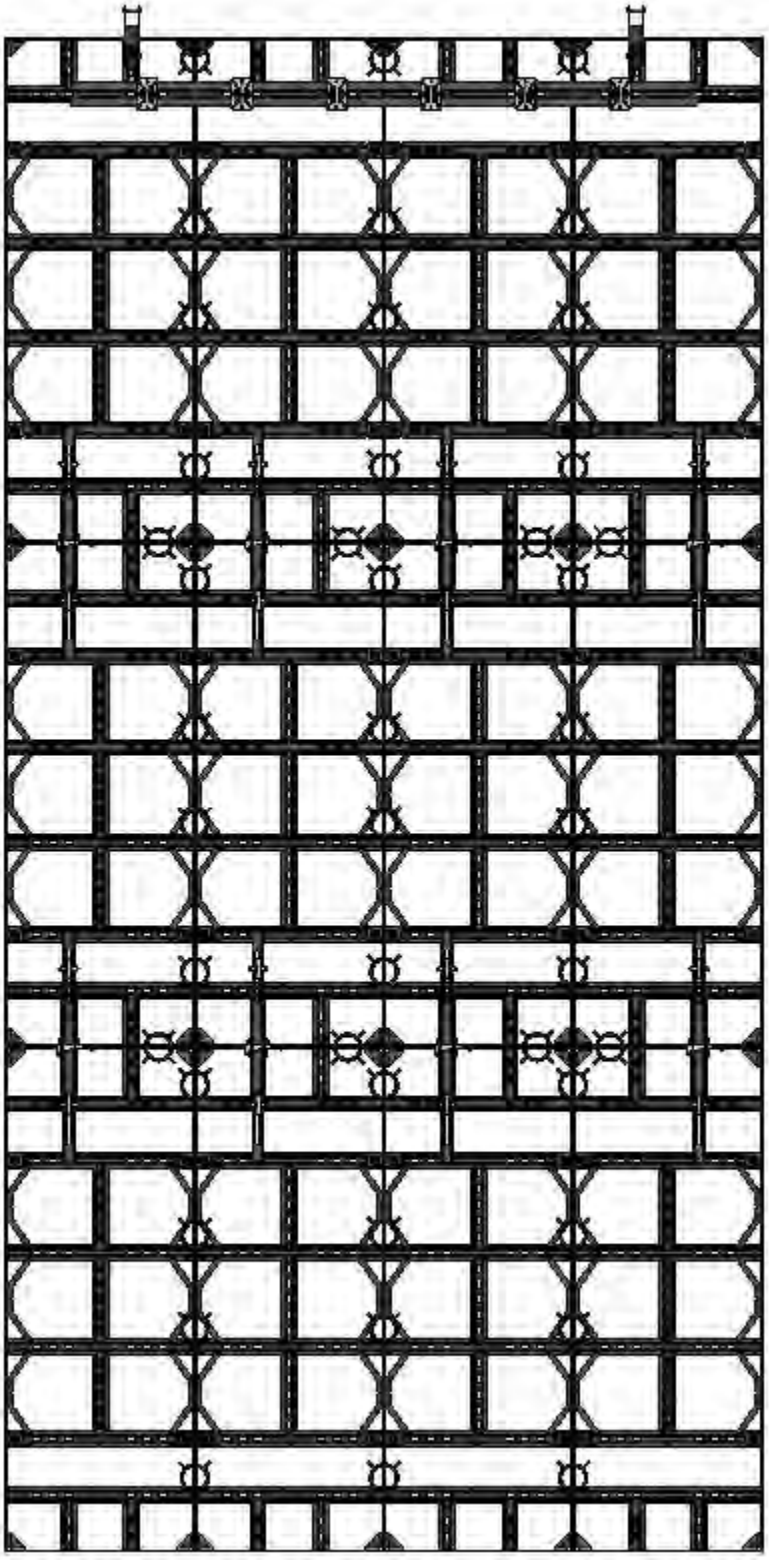


GANG — 3'-0" Wide x 8'-0" High + 8'-0" High + 6'-0" High x 5 Panels Wide

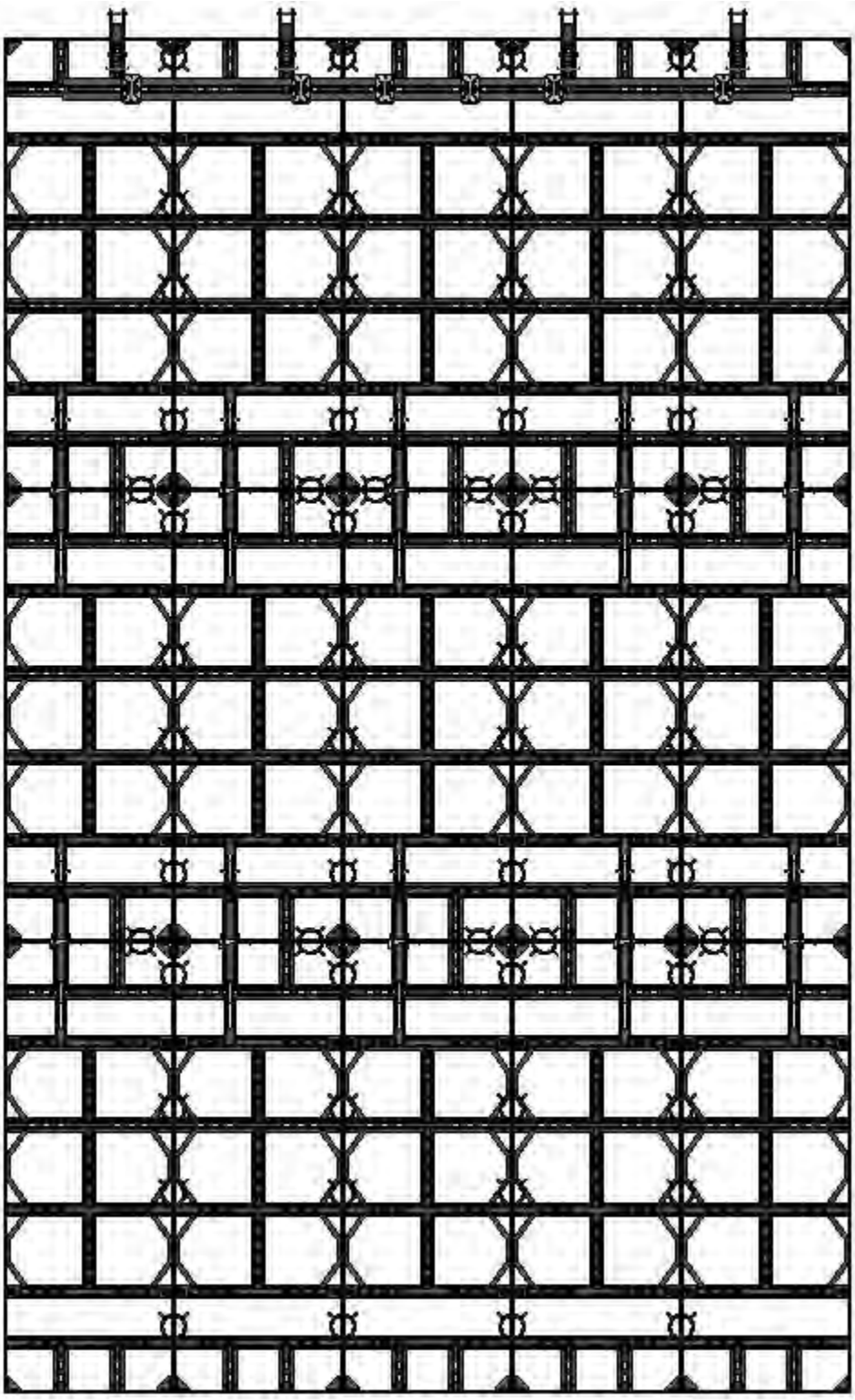


GANG — 3'-0" Wide x 8'-0" High + 8'-0" High + 8'-0" High x 3 Panels Wide

Sym-Ply Gang Options with Stacking Clamps, continued



GANG — 3'-0" Wide x 8'-0" High + 8'-0" High + 8'-0" High x 4 Panels Wide

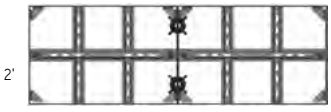


GANG — 3'-0" Wide x 8'-0" High + 8'-0" High + 8'-0" High x 5 Panels Wide

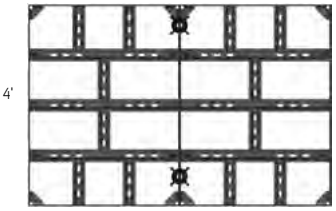
Stacking Panels with Sym-Walers

NOTES:

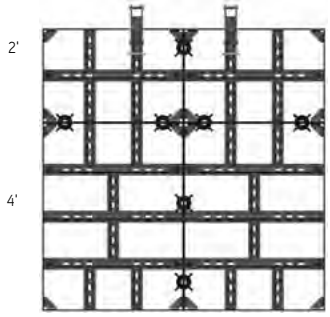
1. For gangs over 24' high, use 5" or 8" Walers to stiffen. Consult a Regional Engineer.
2. When using the T-Head Sym-Bolt Assembly, always be sure that the T-Handle is perpendicular to the slot length and the T-Head is fully engaged. Then hand-tighten the wing nut plus a quarter turn.
3. Crossed circle (¤) in drawings indicates Sym-Clamp location.
4. Lift Bracket locations shown help prevent excessive flex during front or back picks.
5. One row of clamps must be placed at the very top edge at panel joints.



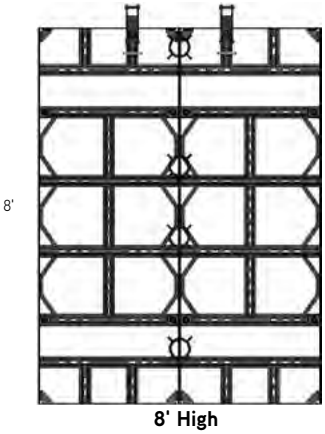
2' High



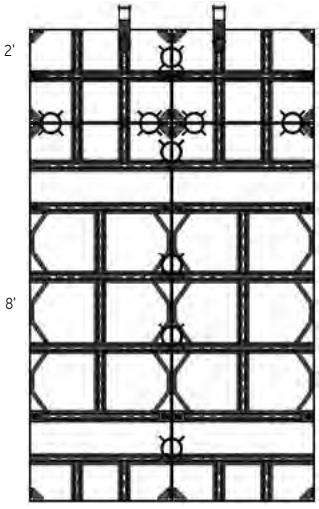
4' High



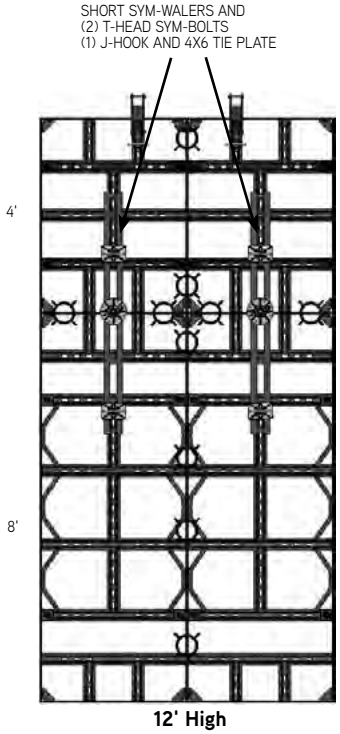
6' High



8' High



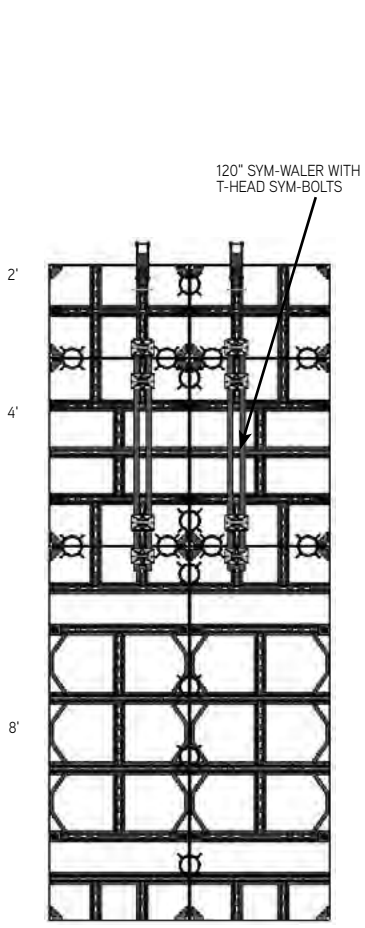
10' High



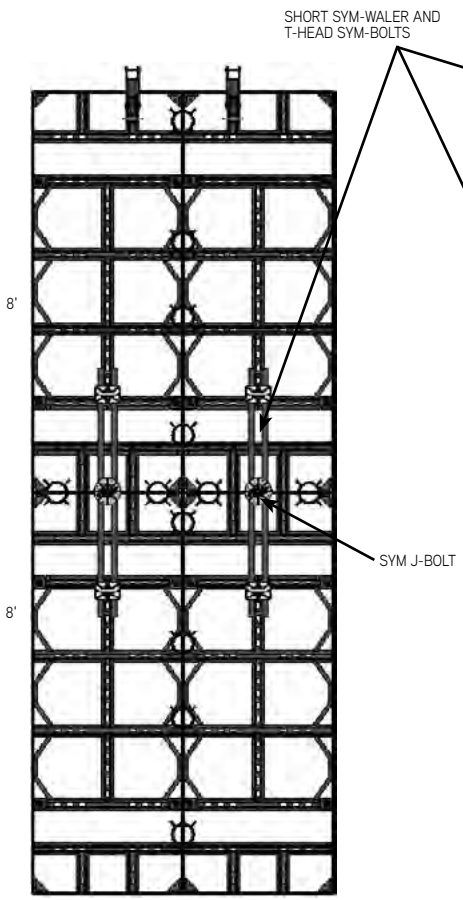
12' High

NOTES:

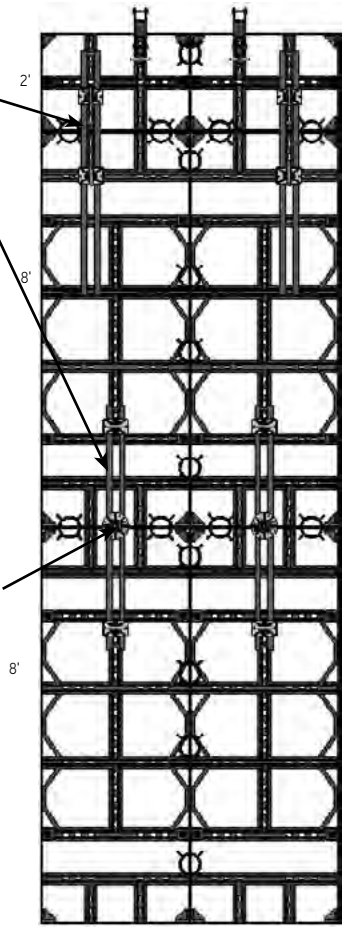
1. For gangs over 24' high, use 5" or 8" Versiform Walers to stiffen. Consult a Regional Engineer.
2. When using the T-Head Sym-Bolt Assembly, always be sure that the T-Handle is perpendicular to the slot length and the T-Head is fully engaged. Then hand-tighten the wing nut plus a quarter turn.
3. Crossed circle (¤) in drawings indicates Sym-Clamp location.



14' High

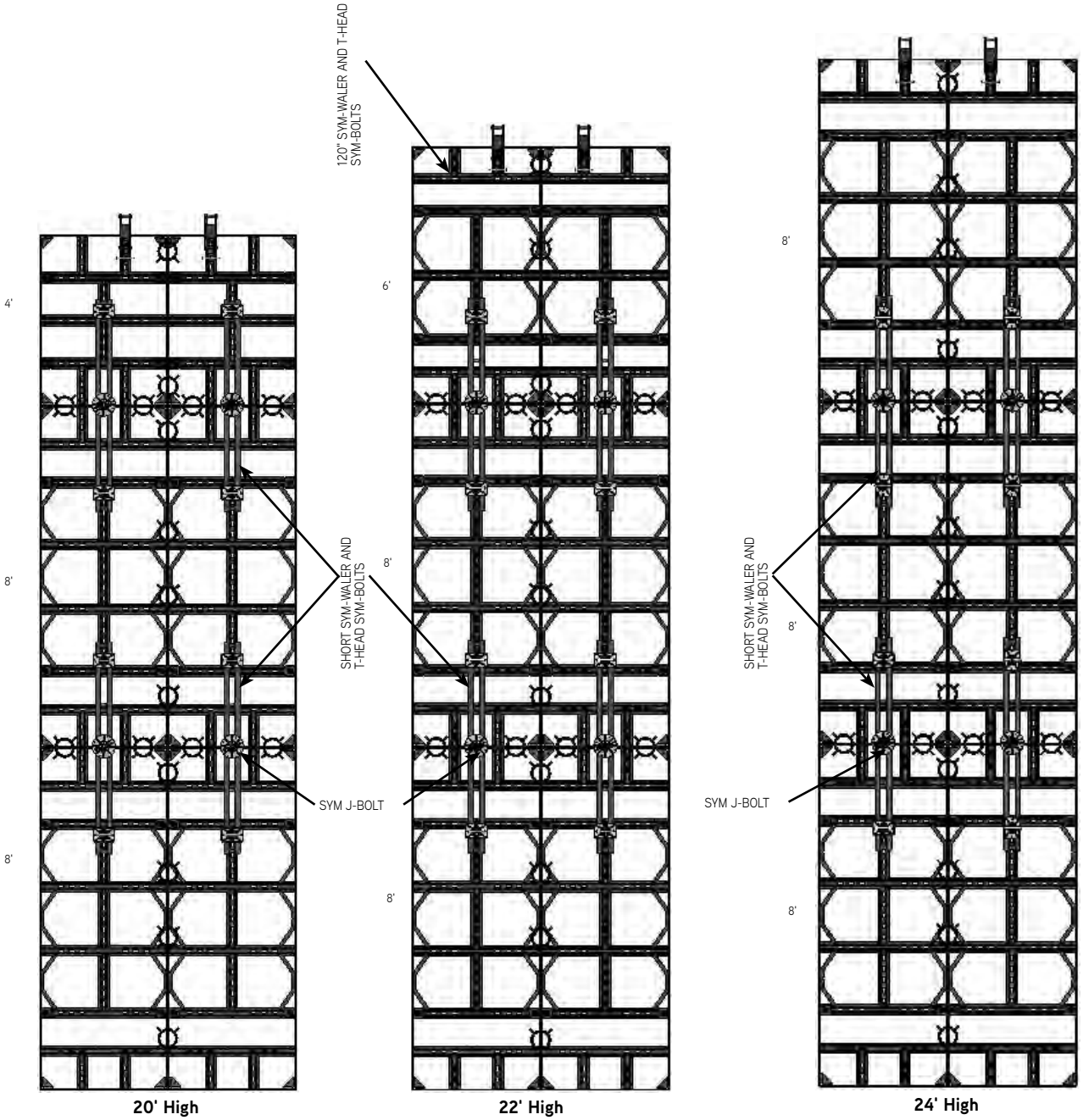


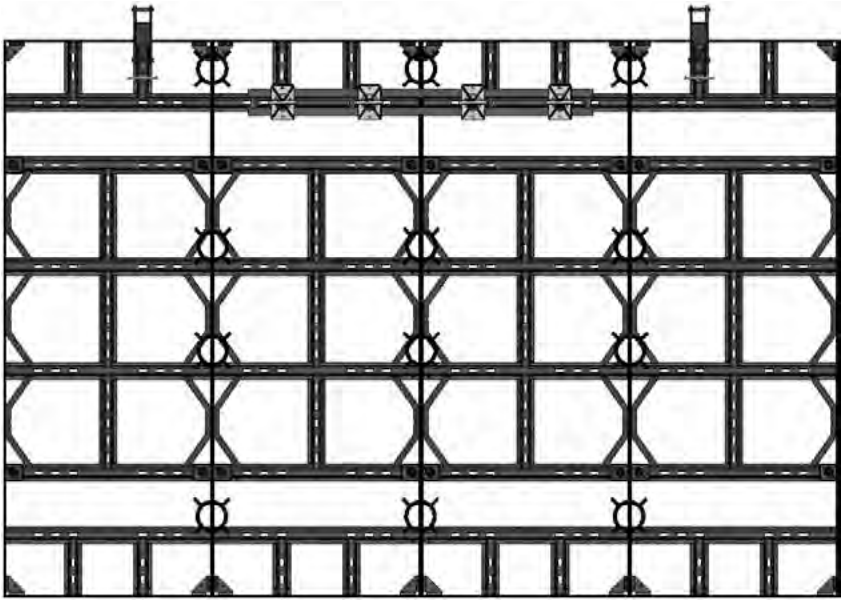
16' High



18' High

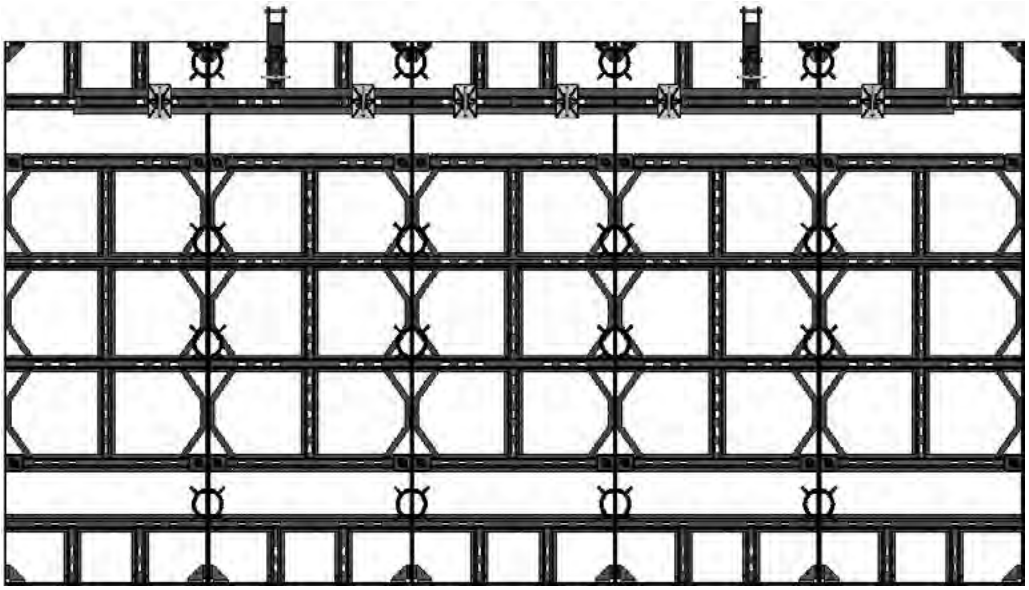
Stacking Panels with Sym-Walers, continued





GANG — 3'-0" Wide x 8'-0" High x 4 Panels Wide

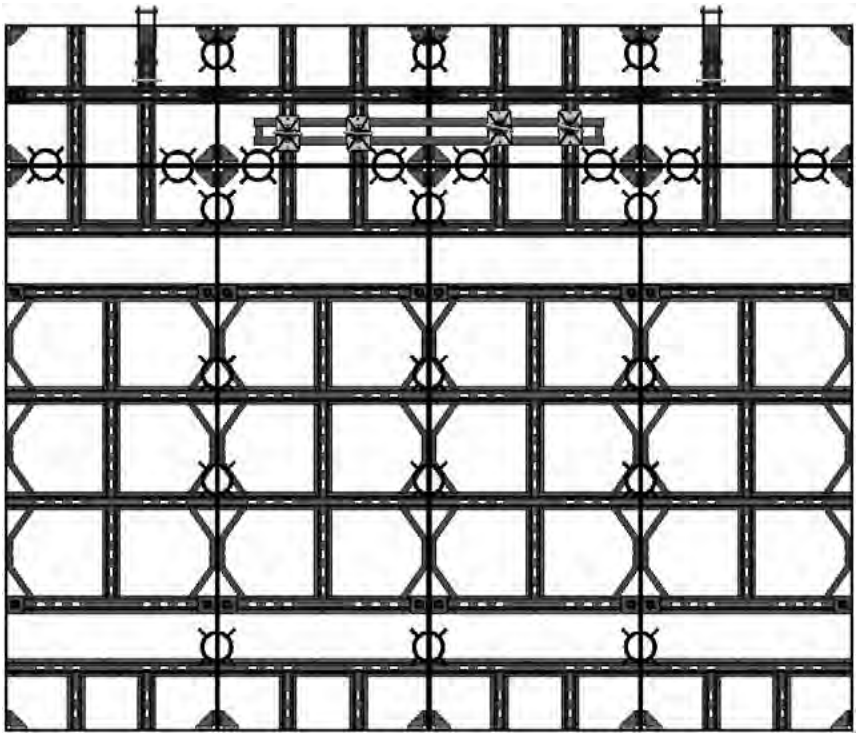
- Lift Bracket locations help prevent excessive flex during front or back picks.
- Horizontal waler prevents excess flex when laying panels on back (use 4 T-Head Sym-Bolts).
- One row of clamps must be placed at the very top edge at panel joints.



GANG — 3'-0" Wide x 8'-0" High x 5 Panels Wide

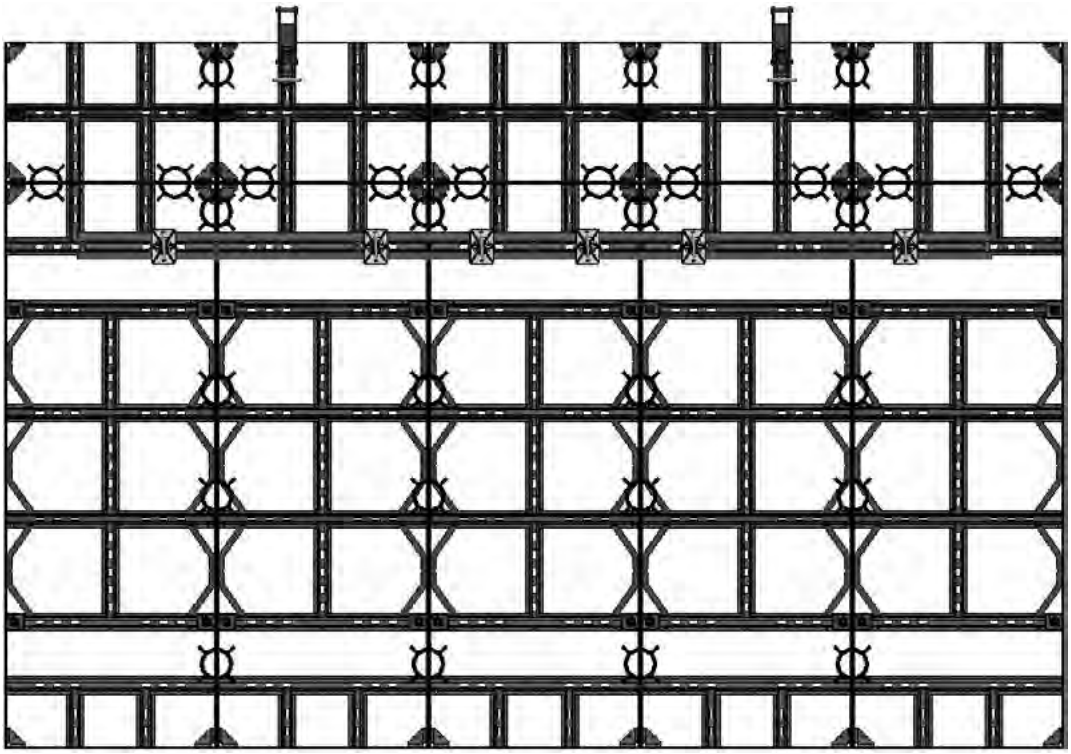
- Lift Bracket locations help prevent excessive flex during front or back picks.
- Horizontal waler prevents excess flex when laying panels on back (use 6 T-Head Sym-Bolts).
- One row of clamps must be placed at the very top edge at panel joints.

Sym-Ply Gang Options with Sym-Waler, continued



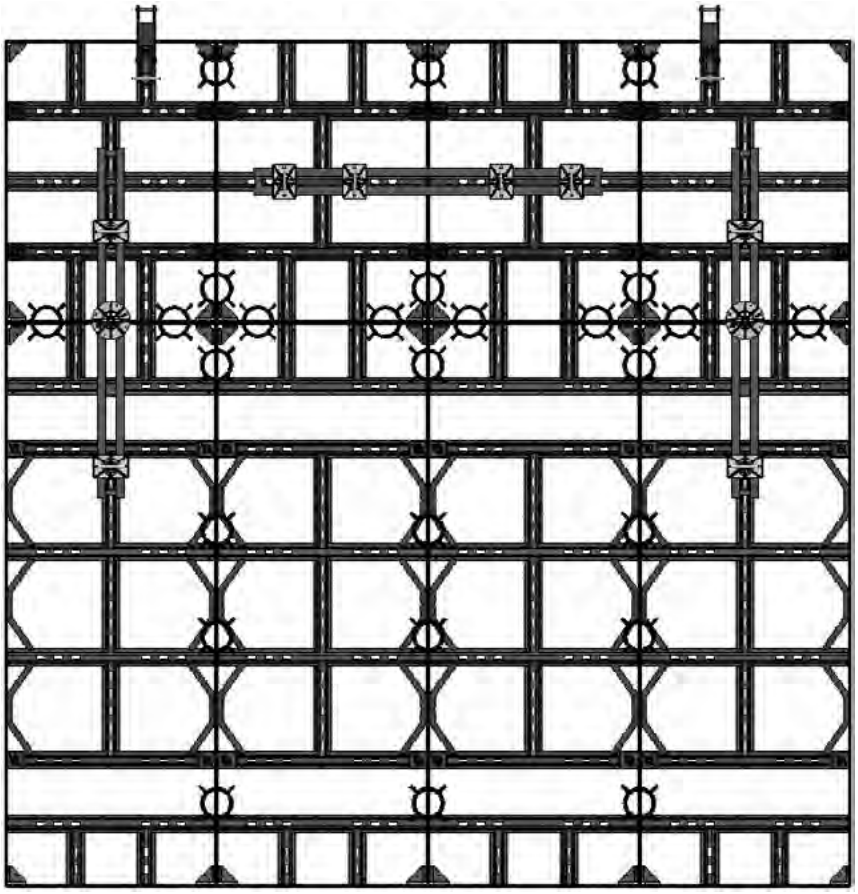
GANG — 3'-0" Wide x 8'-0" High + 2'-0" High x 4 Panels Wide

- Lift Bracket locations help prevent excessive flex during front or back picks.
- Horizontal waler prevents excess flex when laying panels on back (use 4 T-Head Sym-Bolts).
- One row of clamps must be placed at the very top edge at panel joints.



GANG — 3'-0" Wide x 8'-0" High + 2'-0" High x 5 Panels Wide

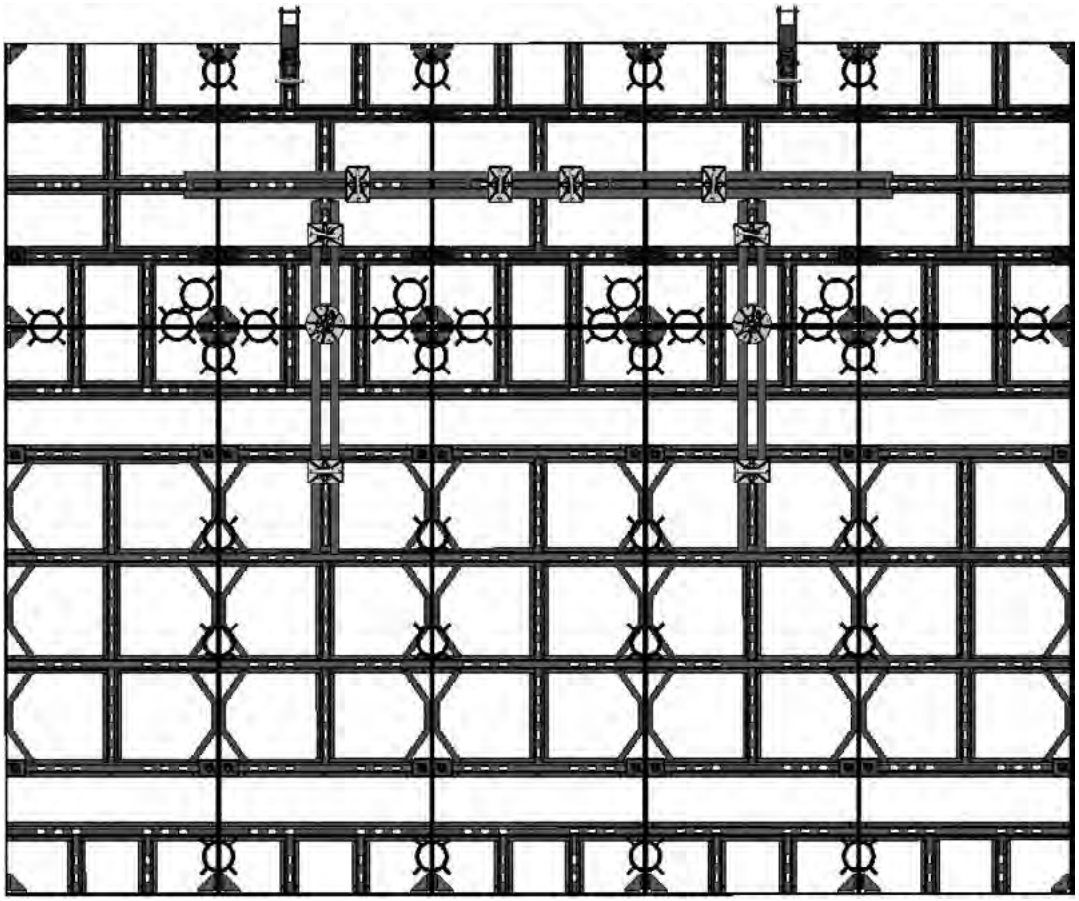
- Lift Bracket locations help prevent excessive flex during front or back picks.
- Horizontal waler prevents excess flex when laying panels on back (use 6 T-Head Sym-Bolts).
- One row of clamps must be placed at the very top edge at panel joints.



GANG — 3'-0" Wide x 8'-0" High + 4'-0" High x 4 Panels Wide

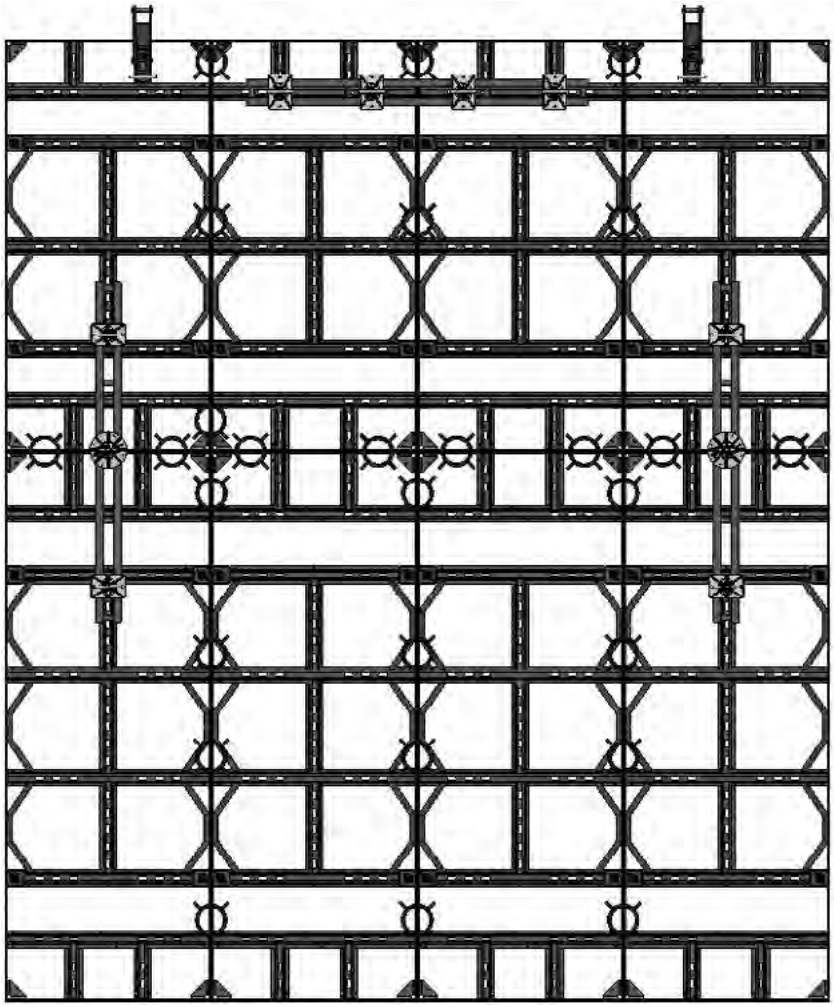
- Lift Bracket locations help prevent excessive flex during front or back picks.
- Horizontal waler prevents excess flex when laying panels on back (use 4 T-Head Sym-Bolts).
- One row of clamps must be placed at the very top edge at panel joints.

Sym-Ply Gang Options with Sym-Waler, continued



GANG — 3'-0" Wide x 8'-0" High + 4'-0" High x 5 Panels Wide

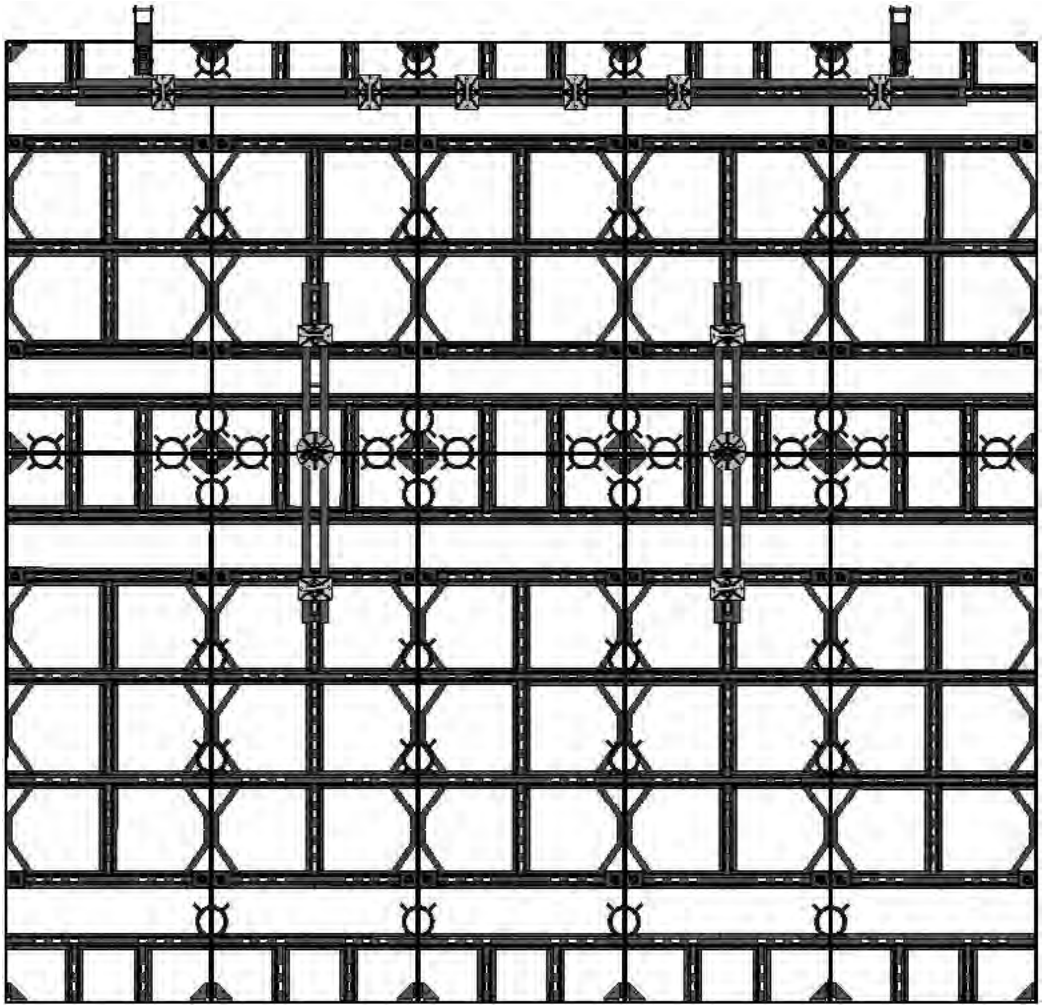
- Lift Bracket locations help prevent excessive flex during front or back picks.
- 120" Horizontal waler prevents excess flex when laying panels on back (use 4 T-Head Sym-Bolts).
- One row of clamps **must** be placed at the very top edge at panel joints.
- Vertical walers are shifted down slightly to allow room for horizontal walers.



GANG — 3'-0" Wide x 8'-0" High + 6'-0" High x 4 Panels Wide

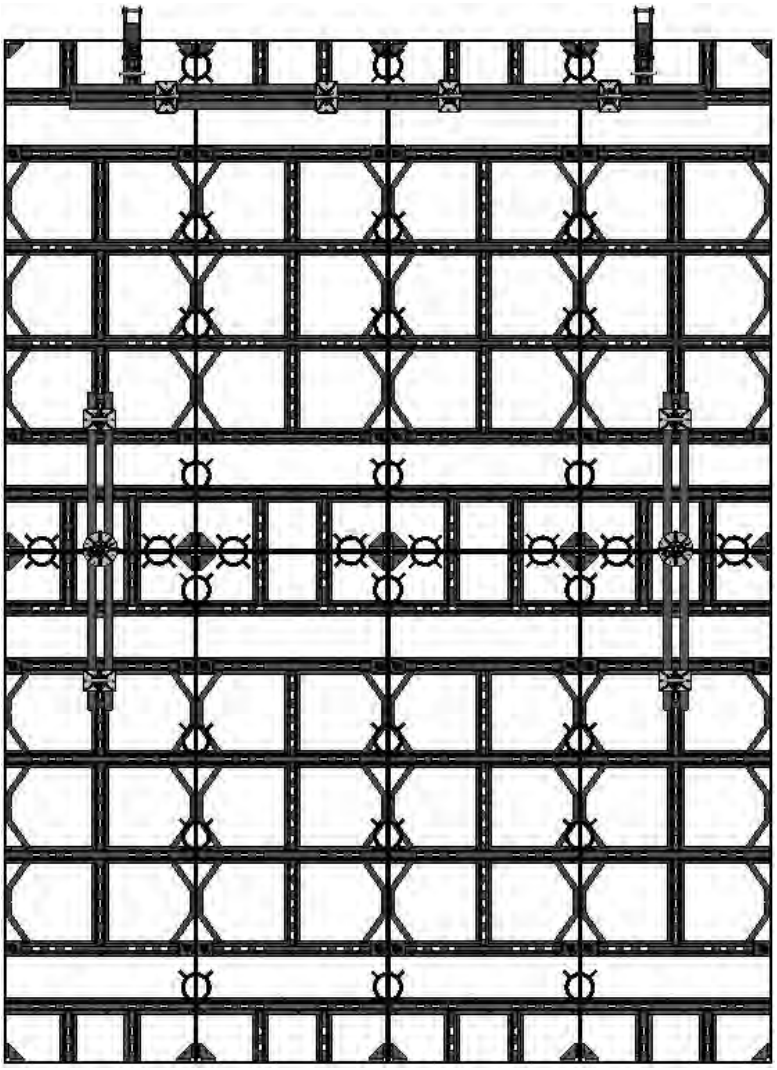
- Lift Bracket locations help prevent excessive flex during front or back picks.
- Horizontal waler prevents excess flex when laying panels on back (use 4 T-Head Sym-Bolts).
- One row of clamps **must** be placed at the very top edge at panel joints.
- Vertical short Sym-Walers cover the horizontal panel joints.

Sym-Ply Gang Options with Sym-Waler, continued



GANG — 3'-0" Wide x 8'-0" High + 6'-0" High x 5 Panels Wide

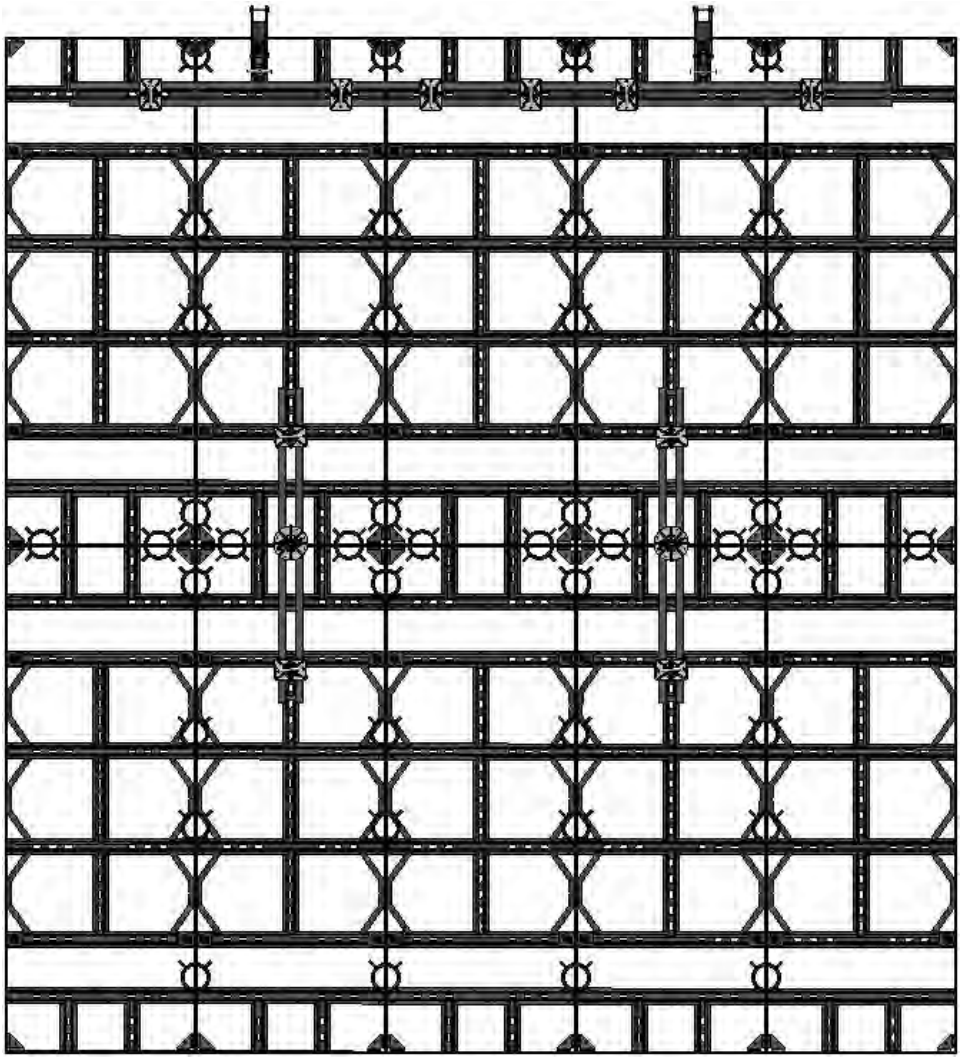
- Lift Bracket locations help prevent excessive flex during front or back picks.
- 120" horizontal Sym-Waler prevents excess flex when laying panels on back (use 6 T-Head Sym-Bolts).
- One row of clamps **must** be placed at the very top edge at panel joints.
- Vertical short Sym-Walers cover the horizontal panel joints.



GANG — 3'-0" Wide x 8'-0" High + 8'-0" High x 4 Panels Wide

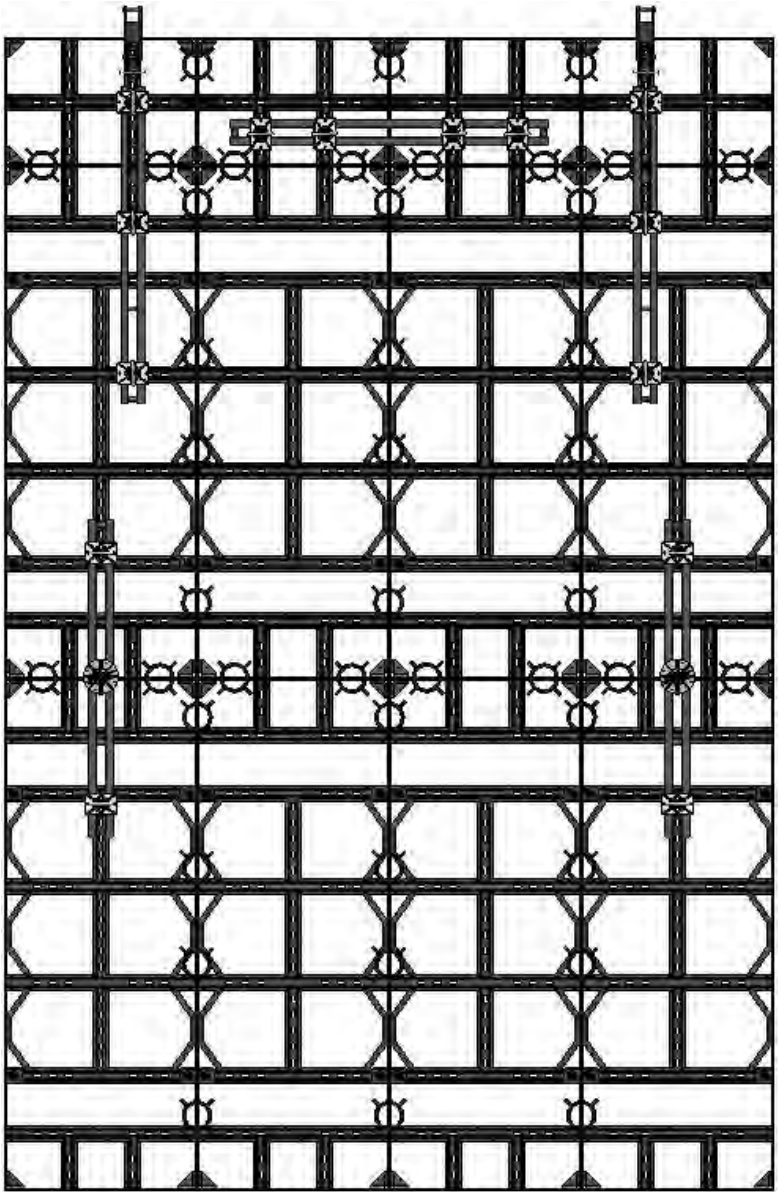
- Lift Bracket locations help prevent excessive flex during front or back picks.
- Horizontal waler prevents excess flex when laying panels on back (use 4 T-Head Sym-Bolts).
- One row of clamps **must** be placed at the very top edge at panel joints.

Sym-Ply Gang Options with Sym-Waler, continued



GANG — 3'-0" Wide x 8'-0" High + 8'-0" High x 5 Panels Wide

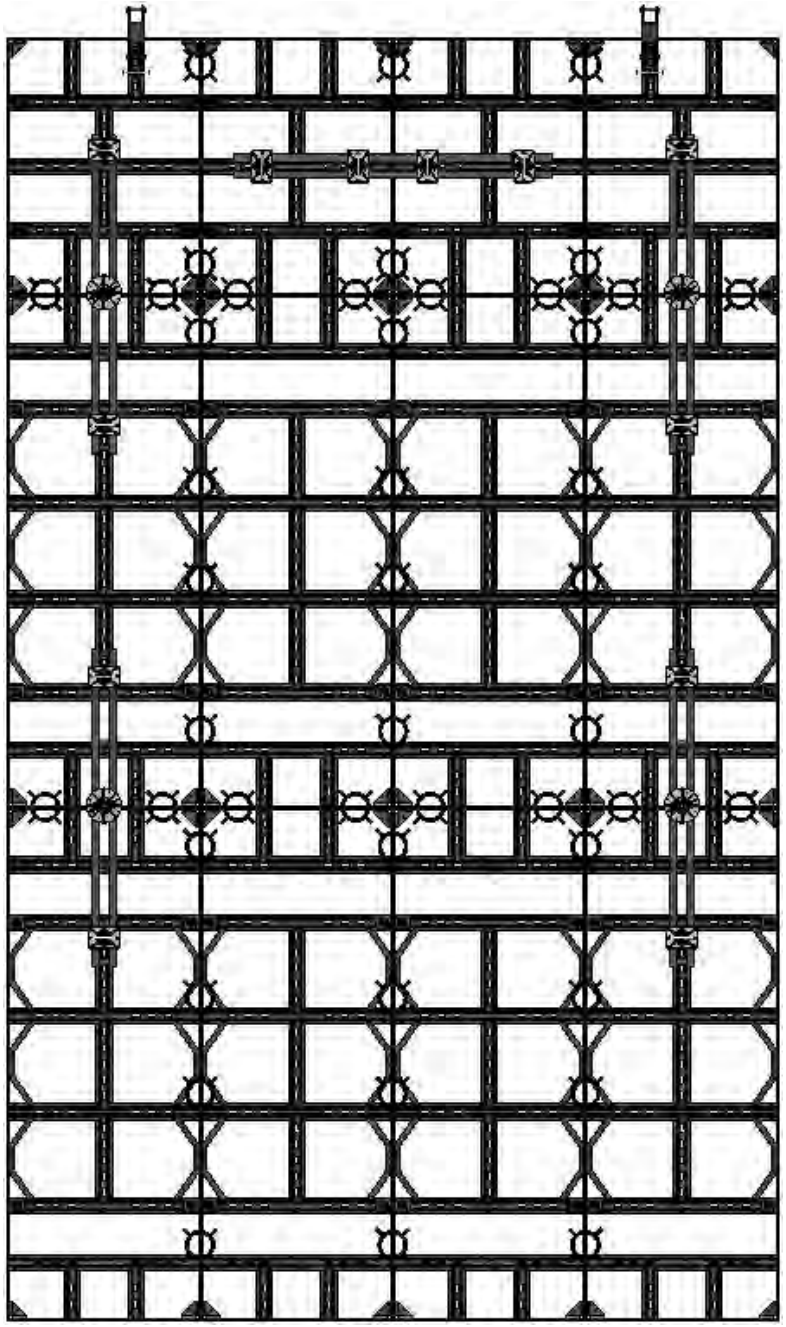
- Lift Bracket locations help prevent excessive flex during front or back picks.
- 120" long horizontal Sym-Waler prevents excess flex when laying panels on back (use 6 T-Head Sym-Bolts).
- One row of clamps **must** be placed at the very top edge at panel joints.



GANG — 3'-0" Wide x 8'-0" High + 8'-0" + 2'-0" High x 4 Panels Wide

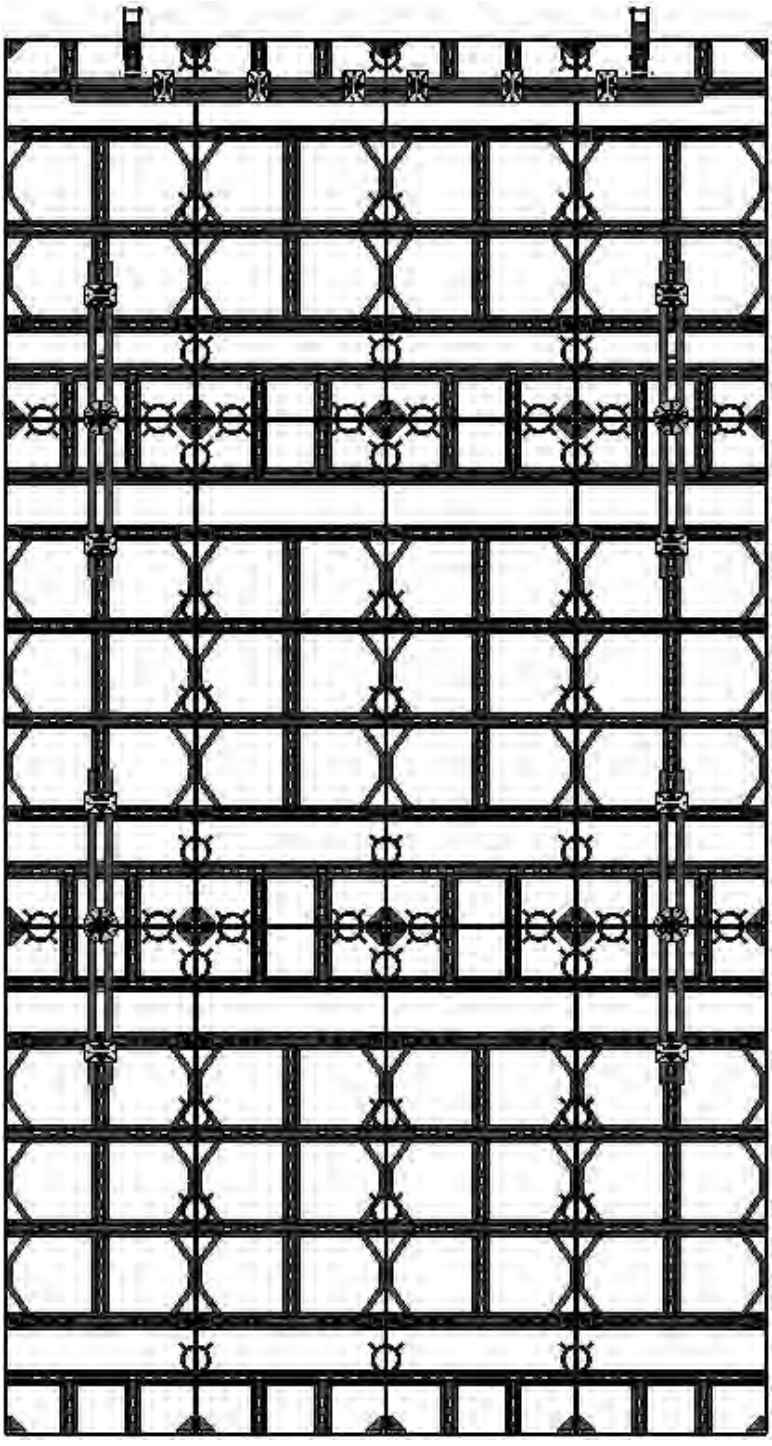
- Lift Bracket locations help prevent excessive flex during front or back picks.
- Horizontal waler prevents excess flex when laying panels on back (use 4 T-Head Sym-Bolts).
- One row of clamps **must** be placed at the very top edge at panel joints.
- Top vertical walers are shifted down as shown.

Sym-Ply Gang Options with Sym-Waler, continued



GANG — 3'-0" Wide x 8'-0" High + 8'-0" High + 4'-0" High x 4 Panels Wide

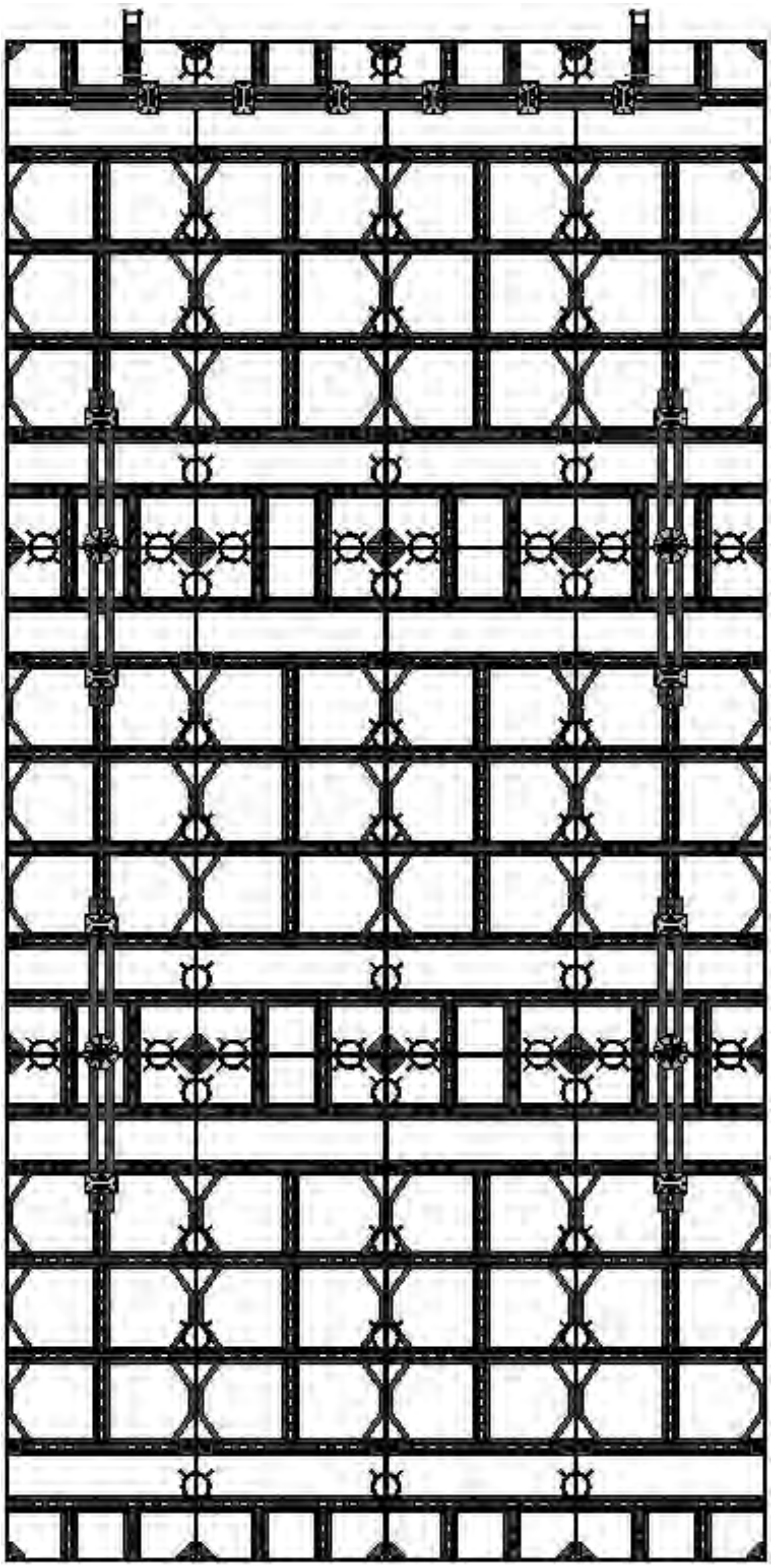
- Lift Bracket locations help prevent excessive flex during front or back picks.
- 60" long horizontal Sym-Waler prevents excess flex when laying panels on back (use 4 T-Head Sym-Bolts).
- One row of clamps **must** be placed at the very top edge at panel joints.



GANG — 3'-0" Wide x 8'-0" High + 8'-0" + 6'-0" High x 4 Panels Wide

- Lift Bracket locations help prevent excessive flex during front or back picks.
- 60" long Versiform horizontal waler prevents excess flex when laying panels on back (use 6 T-Head Sym-Bolts).
- One row of clamps **must** be placed at the very top edge at panel joints.
- Sym-Waler covers the horizontal panel joint.

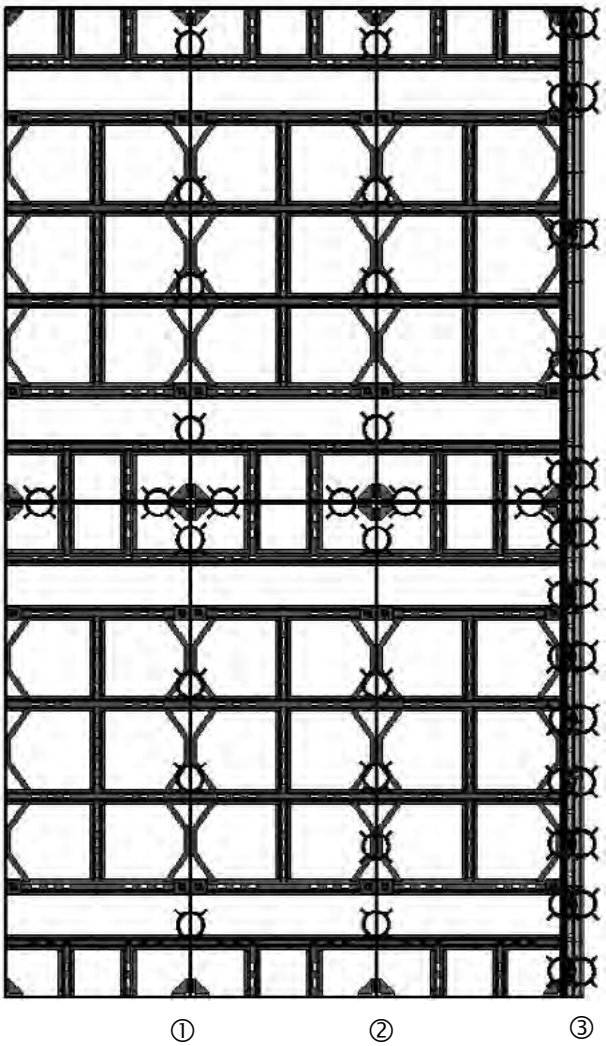
Sym-Ply Gang Options with Sym-Waler, continued



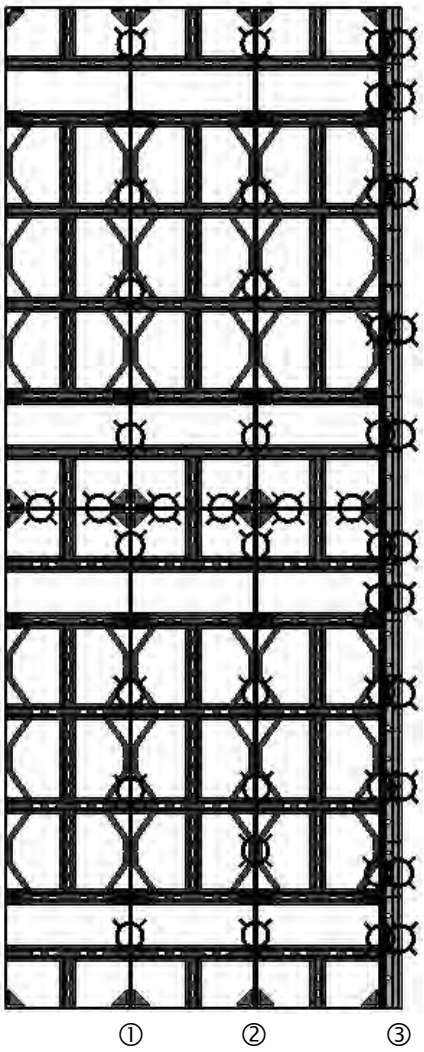
GANG — 3'-0" Wide x 8'-0" High + 8'-0" High + 8'-0" High x 4 Panels Wide

- Lift Bracket locations help prevent excessive flex during front or back picks.
- 60" long horizontal Sym-Waler prevents excess flex when laying panels on back (use 6 T-Head Sym-Bolts).
- One row of clamps **must** be placed at the very top edge at panel joints.

Corner and Bulkhead Details



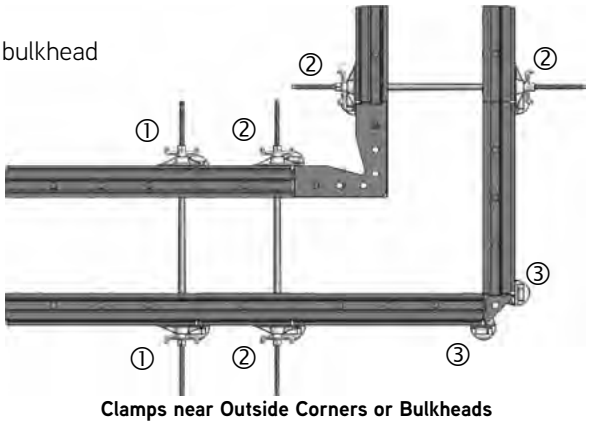
Corner and Bulkhead Clamp Spacing (for Panel Widths of 3' and 2'-6")



Corner and Bulkhead Clamp Spacing (for Panel Widths of 2' and Less)

① Typical interior joint
② First joint from Outside Corner or bulkhead
③ Joint at Outside Corner

CAUTION: For wall thicknesses greater than 23", consult your Regional Engineering Manager.



Clamps near Outside Corners or Bulkheads

Corner and Column Details

Sym-Ply Version 1

Version 1 of Sym-Ply was manufactured up to August of 2012. While this version has the same 1500psf capacity, use in columns and corners should be handled in the methods shown in the renderings to follow. Version 1 can easily be identified in several ways:

1. In panels 18" and wider, the vertical cross-member runs continuous
2. In panels 24" and wider, Version 1 utilizes a tie-off bar located between side rails and vertical cross-members
3. The tie-box of Version 1 is a solid formed box which goes down to the plastic tie-plate on the back side of the form.

Sym-Ply Version 2

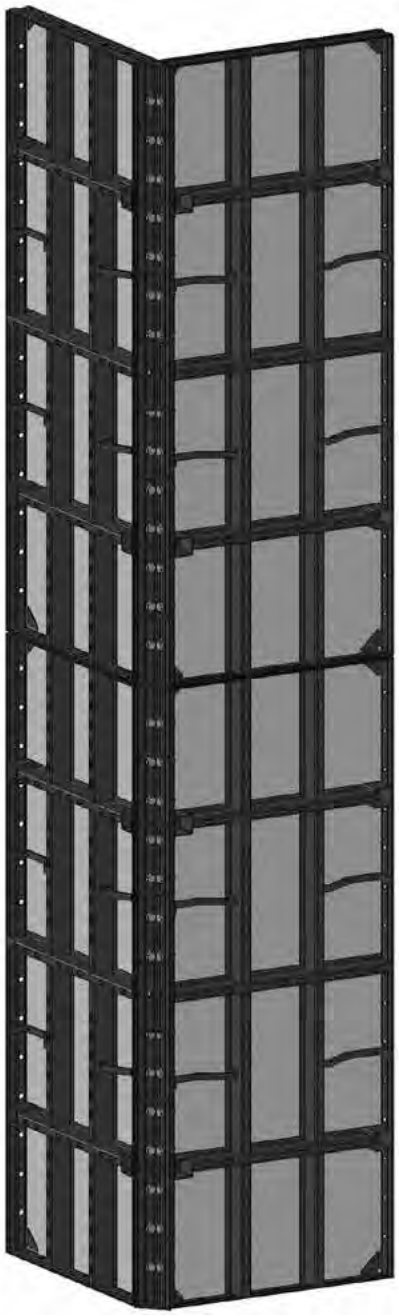
Version 2 of Sym-Ply was manufactured after August of 2012. Version 2 can be identified in several ways:

1. In panels 18" and wider, the vertical cross-member does not run continuous
2. In all panels, Version 2 utilizes slots punched in the "legs" of the cross-members for tie-off points. There are NO tie-off bars.
3. The tie-box of Version 2 has cut-outs near the plastic tie plates.

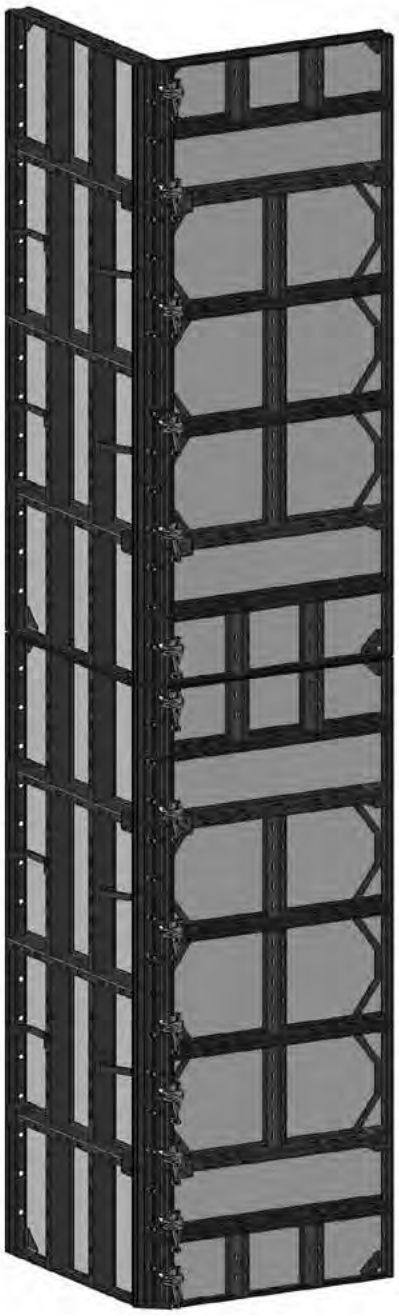
Version 1
3'Wide x 8' High Panel

Version 2
3'Wide x 8' High Panel

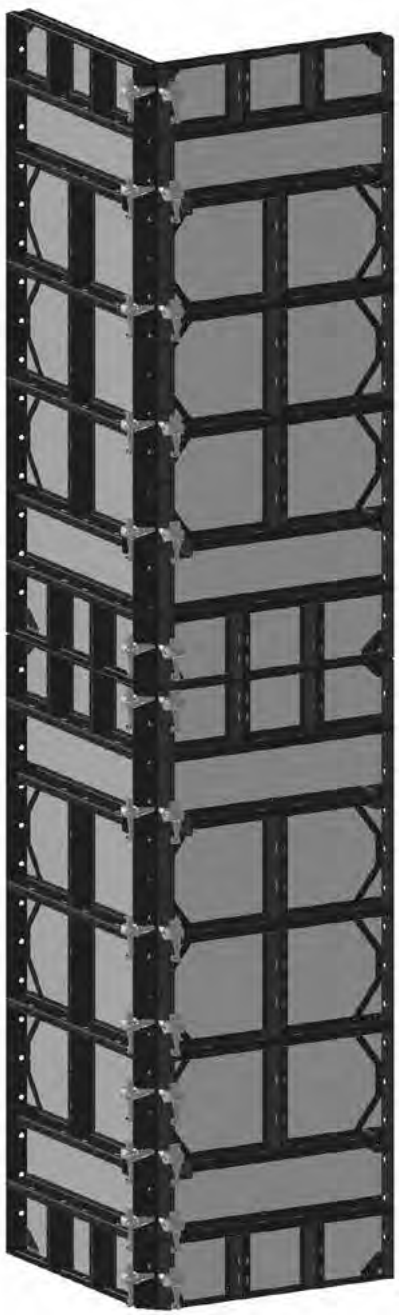
CAUTION: Columns and corners exert extreme loads on forming equipment. Both tension and shear are transferred into panel connections in these applications. Designs should accommodate and properly support these loads.



Application #1
Sym-Ply Version 1 to Sym-Ply Version 1
When connecting Version 1 to Version 1, Wedge Bolts or ¾" Speed Bolts and Nuts should be placed at every usable hole location as shown in the rendering.



Application #2
Sym-Ply Version 1 to Sym-Ply Version 2
When connection Version 1 to Version 2, Wedge Bolts or ¾" Speed Bolts and Nuts should be placed at every usable hole location at the Version 1 panel connection. Sym-Clamps can be used on the Version 2 panel connection as shown. Where the concrete pressure exceeds 1,200psf clamps shall be placed one (1) foot on center. Contact your Dayton Regional Engineering Manager with questions or concerns.

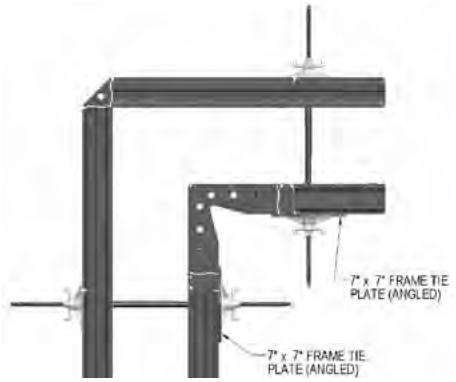


Application #3
Sym-Ply Version 2 to Sym-Ply Version 2
The connection for Version 2 to Version 2 can be done using Sym-Clamps as shown. Where the concrete pressure exceeds 1,200psf clamps shall be placed one (1) foot on center. Contact your Dayton Regional Engineering Manager with questions or concerns.

Typical Details

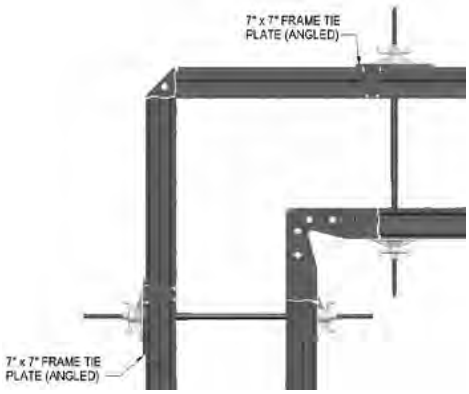
Corner with Fillers

Wall Thickness (inches)	Panel Width (inches)	Filler Width (inches)
8	24	4
10	24	2
12	24	0
14	30	4
16	30	2
18	30	0
20	36	4
22	36	2
24	36	0



90˚ Corner with Fillers at Inside Corner

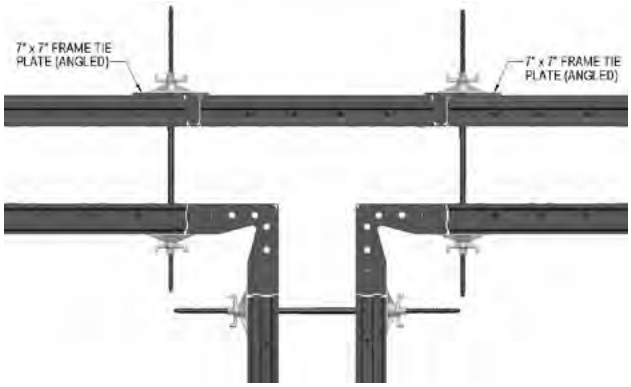
Wall Thickness (inches)	Panel Width (inches)	Filler Width (inches)
4	12	4
12	24	0
14	24	2
16	24	4
18	30	0
20	30	2
22	30	4
24	36	0
26	36	2
28	36	4



90˚ Corner with Fillers at Outside Corner

T-Wall Detail

Wall Thickness (inches)	Panel Width (inches)	Filler Width (inches)
6	30	0
8	30	2
10	30	3
12	24	0
14	36	2
16	36	4
18	36	6
20	36	8

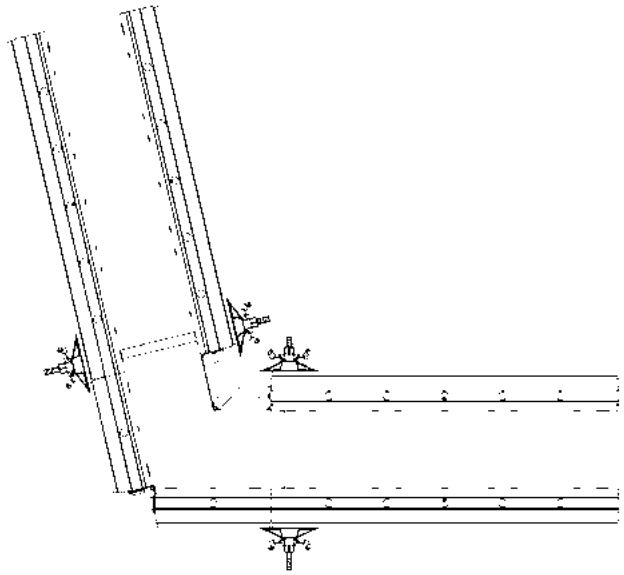


Typical T-Wall with Fillers

NOTE: When using fillers, ensure the tie plate bears on both panel rails on either side of the filler. The use of a 7"x7" tie plate, waler, or additional ties may be necessary. Consult your Regional Engineer for additional information.

Non-Perpendicular Corners

Non-perpendicular corners can be easily formed with standard Steel-Ply Hinged Corners. Because Sym-Ply connects directly to Steel-Ply, Wedge Bolts can be used for a "no hassle" connection.



Non-Perpendicular Corner with Steel-Ply Hinged Corners

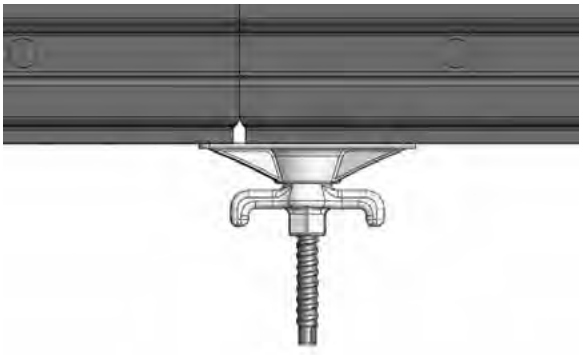
Taper Ties and She-Bolts

Taper Ties with 15mm thread and the 50K Taper Ties can be used with Sym-Ply.

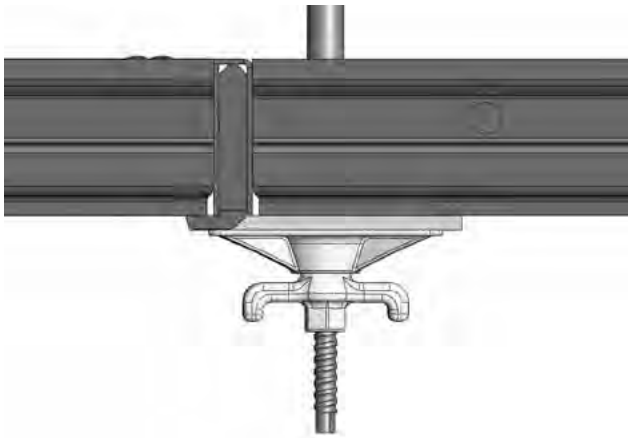
Typically, the ties should pass through the larger of two adjacent panels, and unused tie holes are plugged.

IMPORTANT: Note taper direction for setting and stripping.

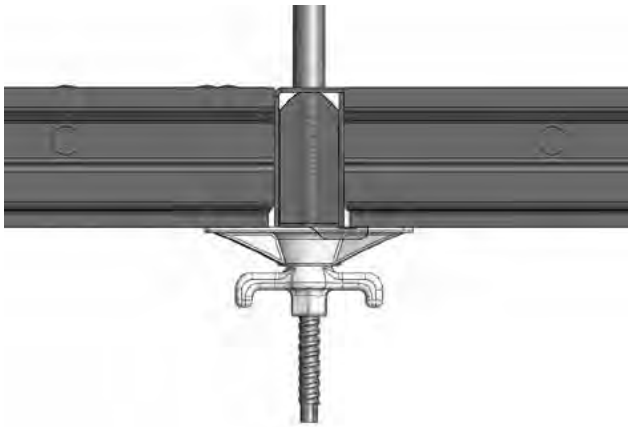
(For clarity, clamps are not shown in these drawings.)



Typical Tie Placement



Typical Tie Placement Adjacent to 1" Filler



Typical Tie Placement Through 2" Filler

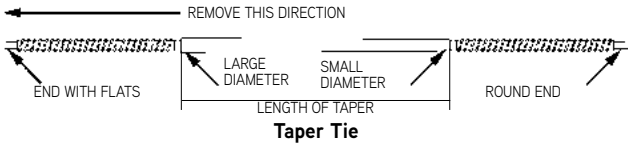
She Bolts

Safe working load is 18,000 lbs. at a 2:1 Safety Factor.

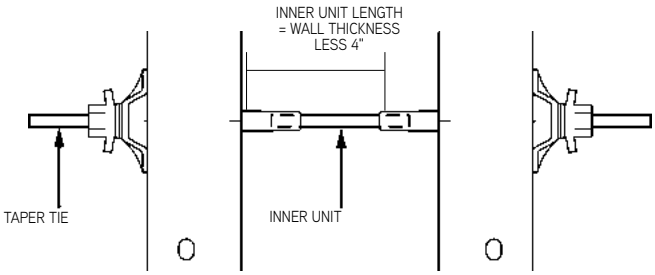
She Bolts with 15mm threaded inner unit are another tying option.

Use only round DCR bar-type Inner Units to avoid concrete build-up in the nose of the She Bolt.

CAUTION: Do not use with bent Inner Units!



Taper Tie



Typical She-Bolt Application

Top Tie Bracket

The Top Tie Bracket provides a tie bearing location for a dry tie at the top of a pour or bulkhead. The bracket must straddle a crossmemer/endmember or tie box.

NO

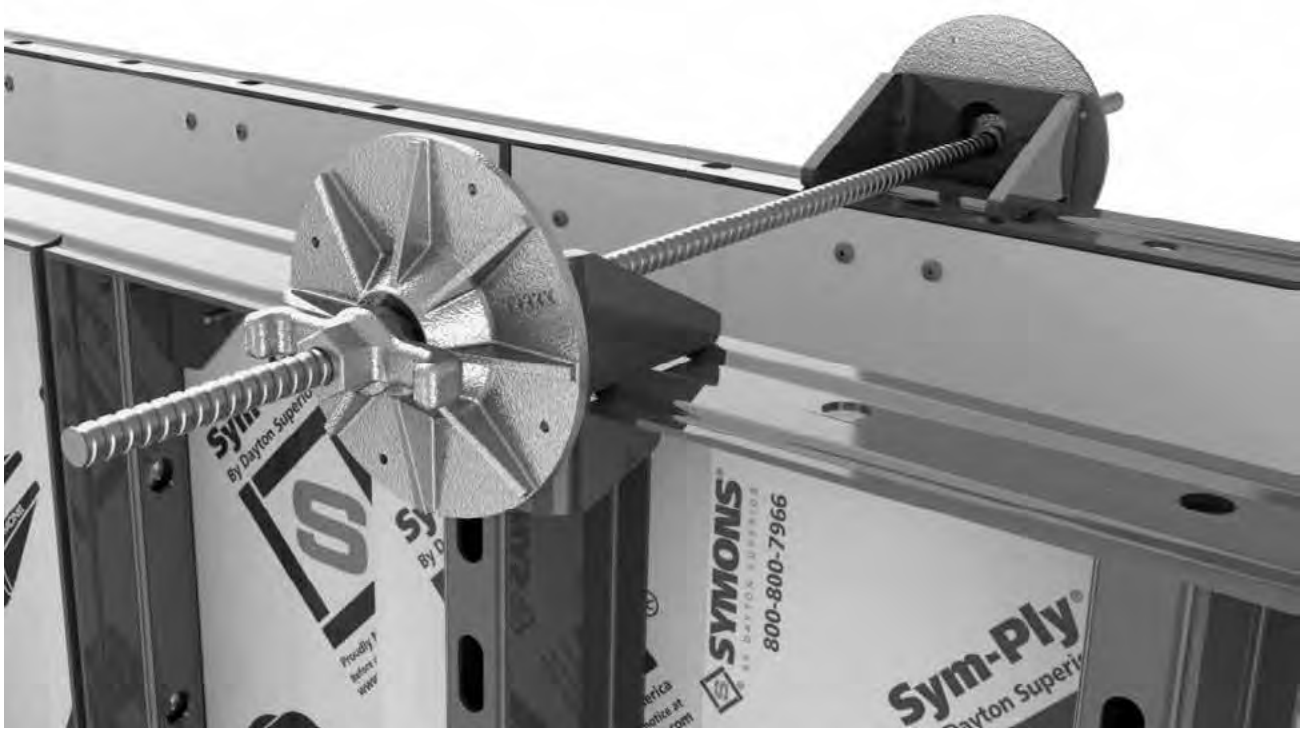
YES

YES

NO

YES

YES

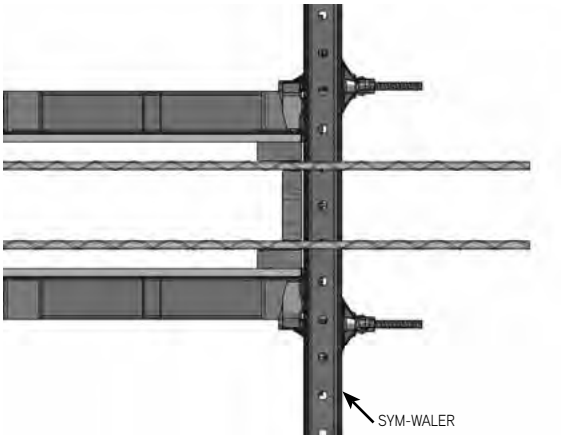


Typical Top Tie Application

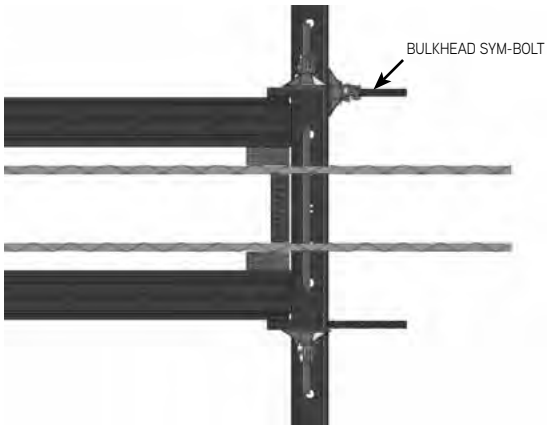
Bulkheads

Bulkheads are easily constructed with Sym-Walers and Bulkhead Rods using the slots in the Sym-Ply crossmembers or stiffeners. The walers support the bulkhead plywood and lumber (supplied by the contractor). Typically, walers are required 3' on center.

In addition, Top Tie Brackets can be used externally as shown. This simplifies bulkhead construction by avoiding interference with the bulkhead lumber.

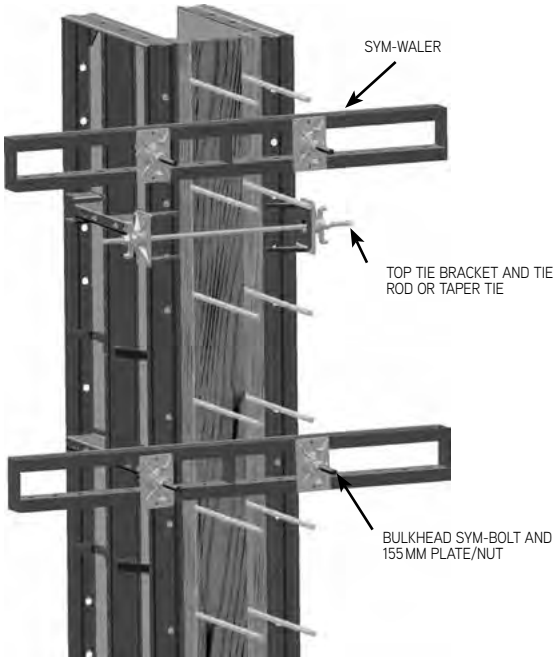


Typical Bulkhead with Sym-Waler

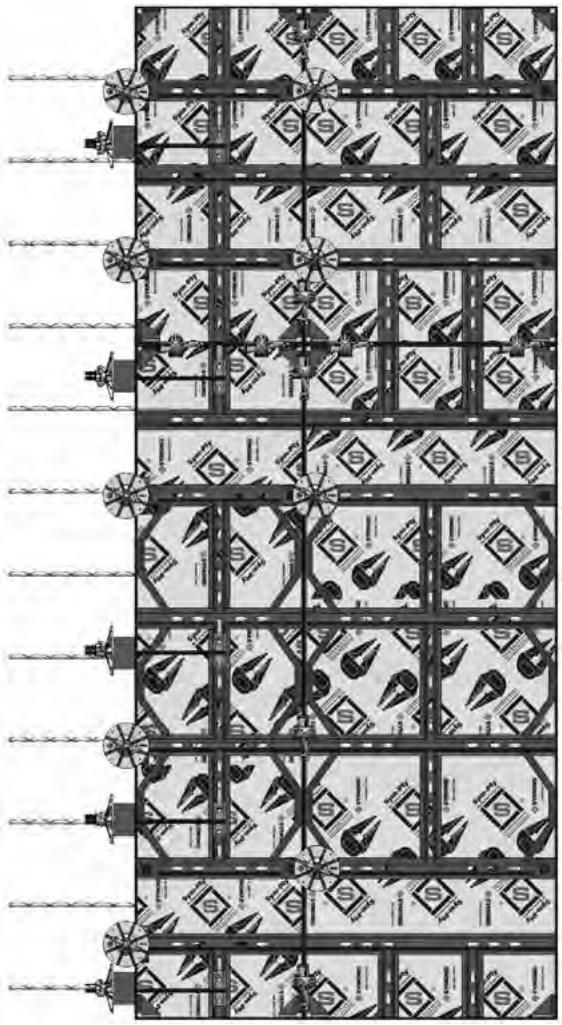


Typical Bulkhead with External Tie

NOTE: Spacing of the Sym-Waler and Top Tie Brackets are dependent on several factors, including wall thickness and end panel size. Consult your Regional Engineer for spacing.



Typical Bulkhead with External Tie

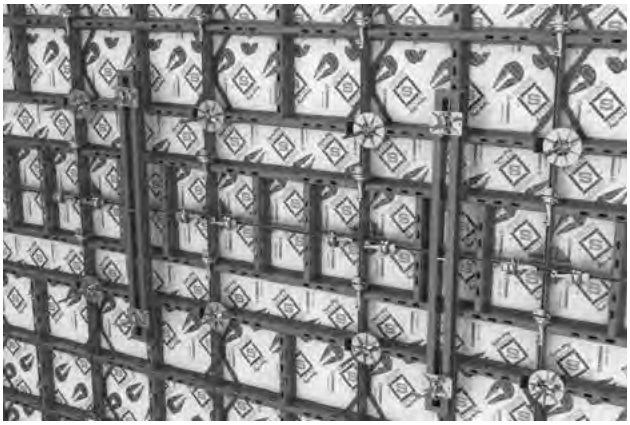


Elevation at Bulkhead

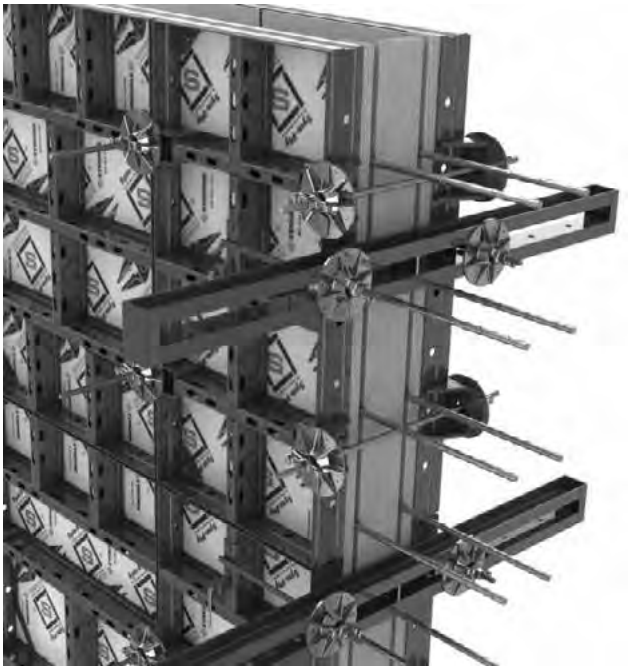
60" Sym-Waler

Sym-Walers stiffen gangs for common operations:

- Lifting gangs from horizontal
- Bulkhead timber support
- Aligning gangs across a job-built filler (see next section)
- Supporting Slip Plates

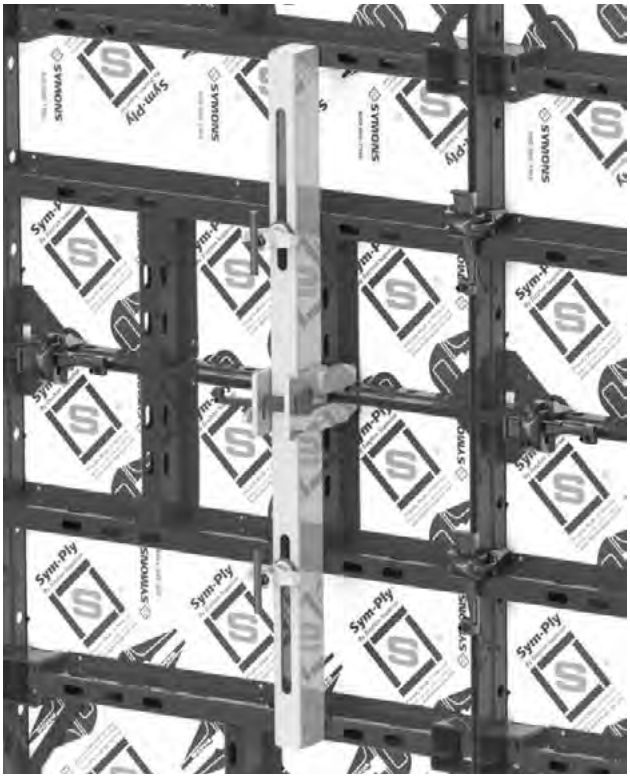


Stiffen Gangs with Sym-Waler
(See Stacking Panels section for locations)



Bulkhead with Sym-Waler

Stacking Clamp



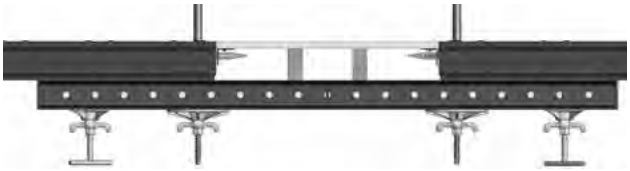
Stacking Clamp on Panels

Job-Built Fillers

NOTES:
Job-built fillers near bulkheads or outside corners require tension rods from siderail-to-siderail of panels.

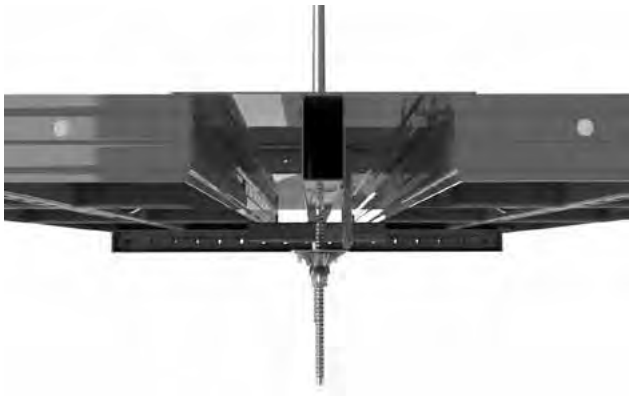
When using the T-Head Sym-Bolt Assembly, always be sure that the T-Handle is perpendicular to the slot length and the T-Head is fully engaged. Then hand-tighten the wing nut plus a quarter turn.

Wood Filler Option 1
(½" Plywood with 2x4s Backed by Short Waler
Adjustable Clamp or ¾" Bolt and Nut for Attachment)



Wood Filler Option 2
(¾" PLYWOOD WITH STEEL-PLY FILLER ANGLES BACKED BY SHORT WALER
FILLER ANGLES ATTACHED WITH WEDGE BOLTS)

Slip Plate (3" to 12" Fill Range)



Slip Plate with Sym-Waler

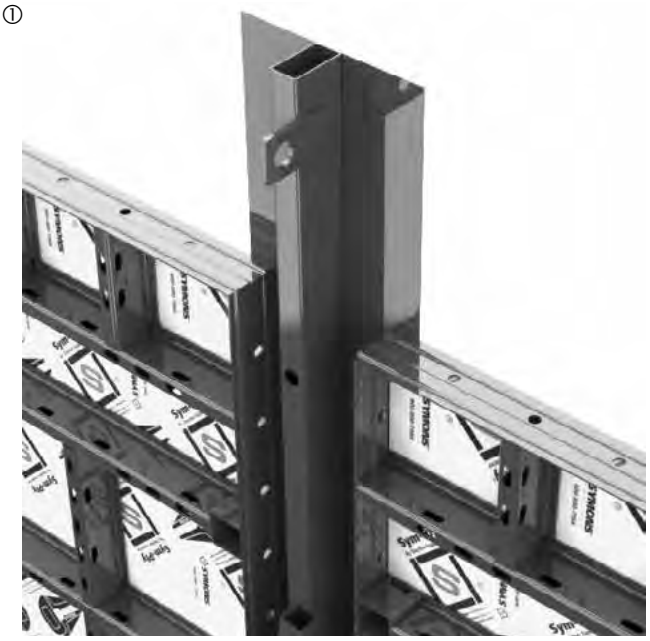
NOTES:

Slip Plates leave a ⅛" deep, 14" wide indentation in the wall face.

Do not locate Slip Plate near outside corner or bulkheads as there is no tension resistance parallel to the forms.

When using the T-Head Sym-Bolt Assembly, always be sure that the T-Handle is perpendicular to the slot length and the T-Head is fully engaged. Then hand-tighten the wing nut plus a quarter turn.

①

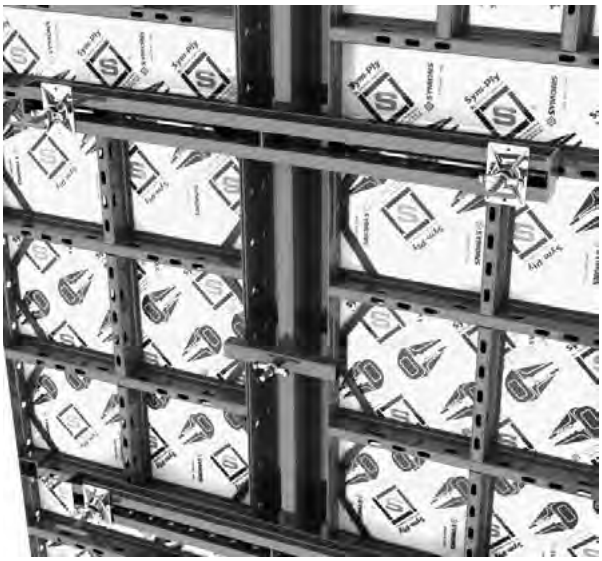


With gangs in position, lower the Slip Plate into position.

②

Turn Position Bar horizontal and hand-tighten the nut.

③



Add 60" Sym-Waler at tie locations.

④

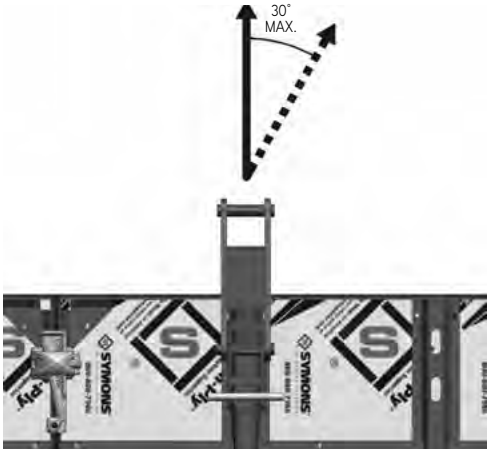
Tie through the center of the Slip Plate.

Lift Bracket

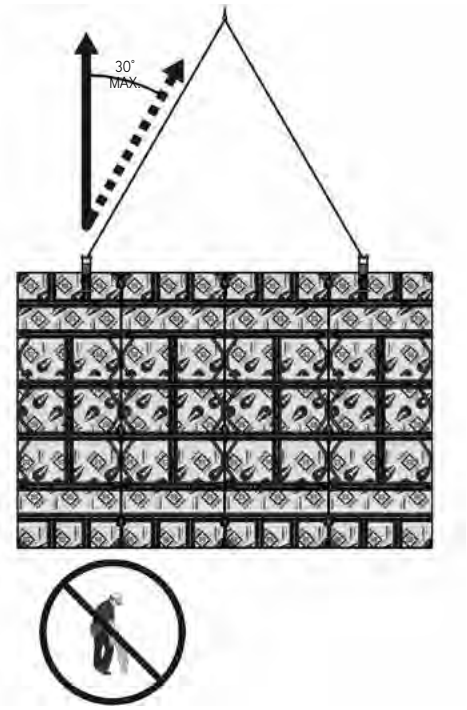
To Attach

In Place

To Remove



2,000 lbs. at 5 to 1 Safety Factor



Do not fly over people.
Do not ride gang.

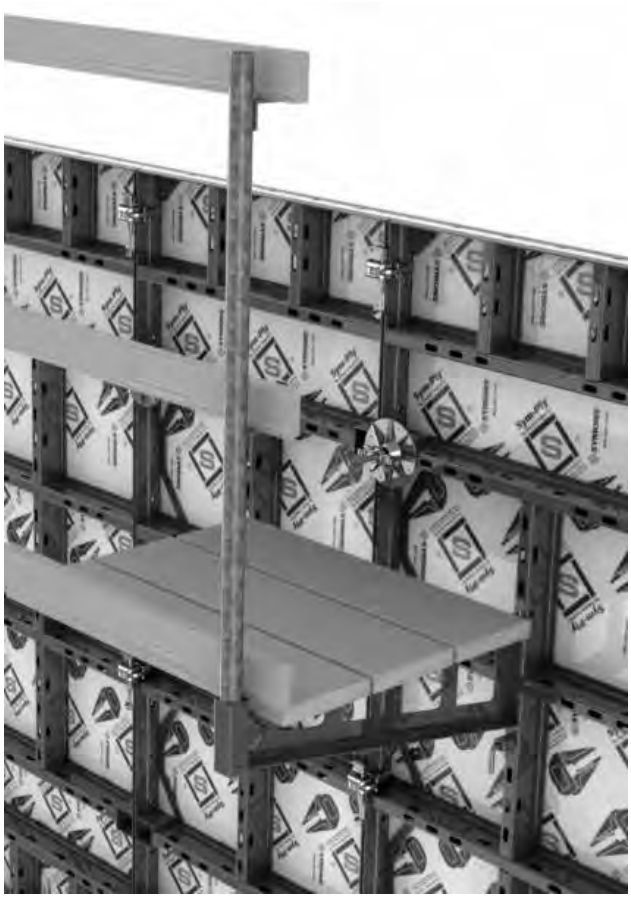
Do not use to strip gang.

Walkway Bracket

To Attach

To Remove

NOTE: Ends of walkway runs must also be guardrailed.



SAFETY NOTES:

500 lbs capacity at 5:1 factor of safety.

8'-0" maximum allowable spacing.

Access to the Walkway Bracket platform must be provided in accordance with applicable local, state, provincial or Federal OSHA regulations. Do not climb crossmembers to access platform!

The tie-off holes in the Sym-Ply panel crossmembers are intended for attaching fall protection hooks positioning during assembly and disassembly of formwork.

Safety goggles, hardhats, gloves and steel-toed shoes should be worn as recommended by state or Federal OSHA regulations.

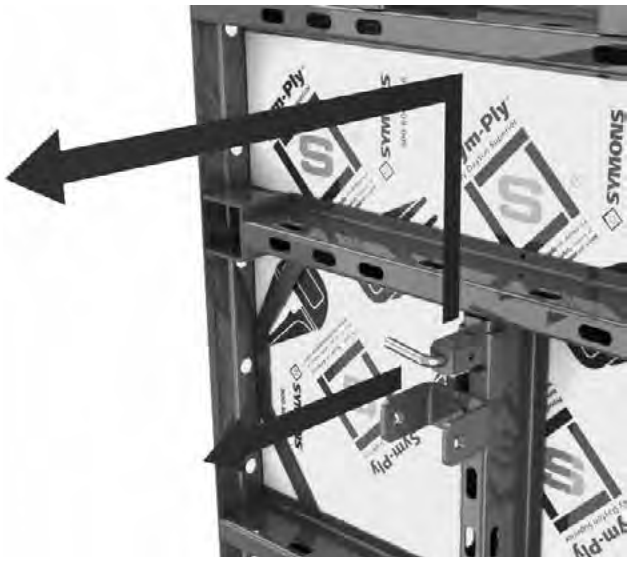
Aligning Formwork

These methods are to be used for alignment only and should be placed approximately 8'-0" on for single panel high applications.

Turnbuckle to Siderail

Pipe Form Aligner Adapter to Siderail

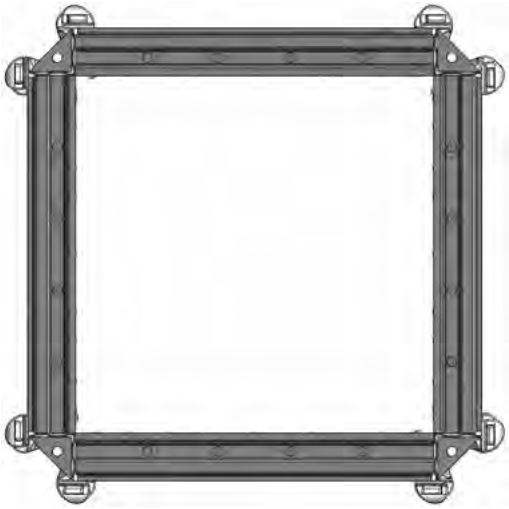
Aligner Bracket Installation



Aligner Bracket Removal

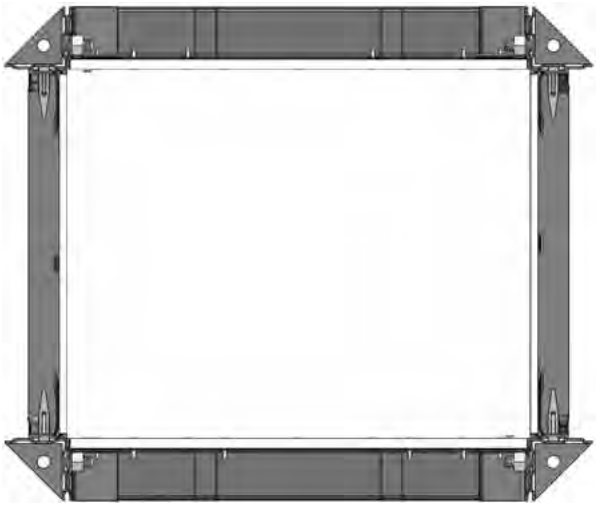
Pier Cap Brace or
Pipe Form Aligner to Vertical or Horizontal Crossmember

Columns



Sym-Ply Panels
1,500 psf allowable pressure

NOTE: For all Sym-Ply Panels and Outside Corners, connections may be clamped or bolted with ¾" Speed Bolts and Nuts. See "Corner and Bulkhead Details" section for clamp spacing



Mix of Sym-Ply Panels and Steel-Ply Fillers

Column with Lift Bracket

NOTES:
Consult with your Regional Engineer for allowable pour pressure when using Sym-Ply and Steel-Ply.

When using Sym-Ply Outside Corners, use ¾" Speed Bolts and Nuts if connecting to Sym-Ply, and Wedge Bolts if connecting to Steel-Ply.

When Using Steel-Ply Outside Corners, use all Wedge Bolts.

Other Tying Considerations

Foundation Formwork

Foundation formwork can be set up by using a panel laid horizontally. Use the 15mm Tie Plate in the lower position.

Top Tie Brackets can be used along the top edge of the panels instead of tying through the panels.

Battered Walls

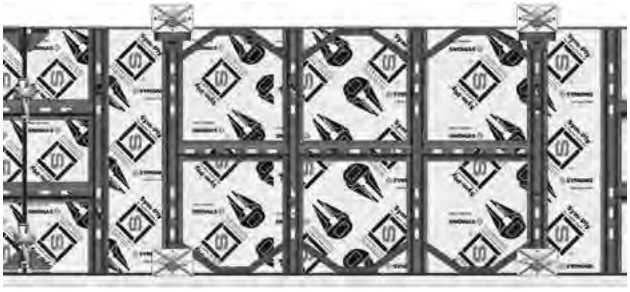
Battered walls of up to approximately 10˚ (2 in 12) inclination on either side of the wall may be formed with Taper Ties or She-Bolts. A swivel tie nut is required in these cases.

Single-Sided Batters

When only one side of the wall is battered, the panel should be raised with a built-up sill. This sill should be constructed to equalize the angle between the tie and the form face.

Sym-Ply Tie-Down Bracket

The Sym-Ply Tie-Down Brackets can be anchored to the footing to provide up to 7,000 lbs of uplift resistance. The Tie-Down Bracket shall be placed so that it straddles a crossmember section.



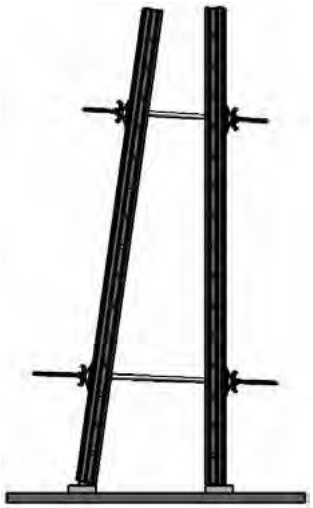
Typical Foundation Application

Typical Top Tie Application

Typical Tie-Down Bracket Application

Inclination on Both Sides

CAUTION: Uplift forces on battered forms must be resisted with tie-downs or counterweights.



Inclination on One Side

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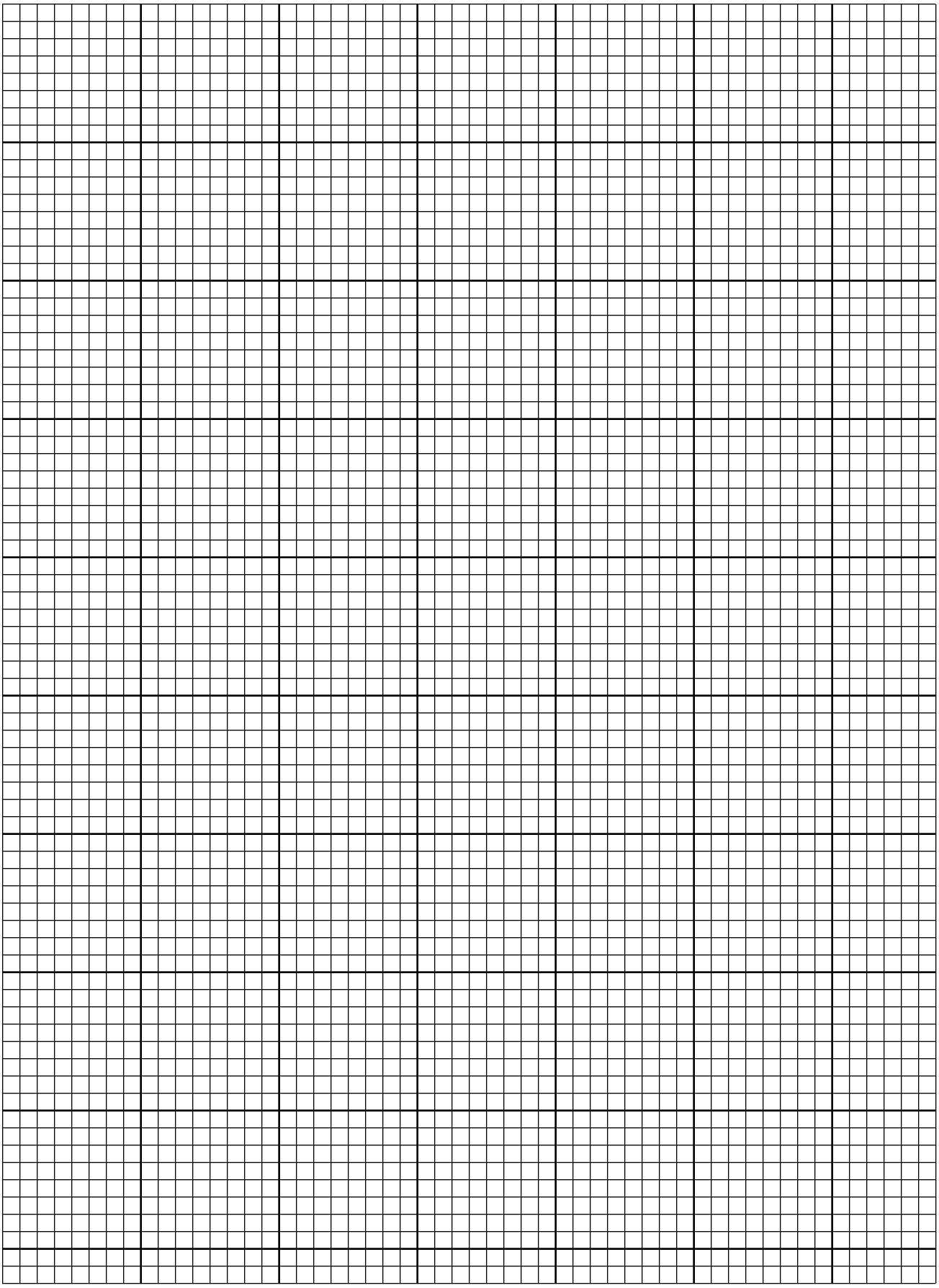

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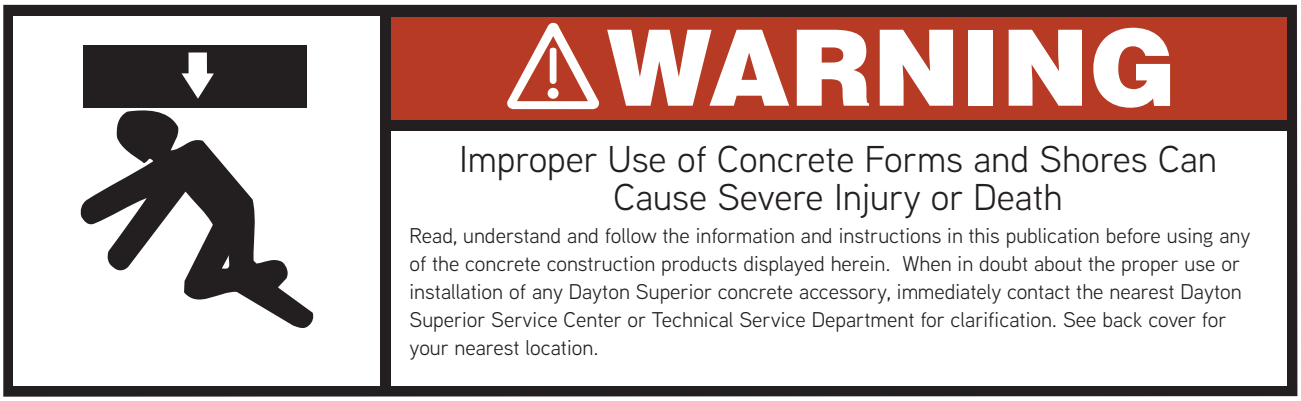
Safety Information



⚠ WARNING

Improper Use of Concrete Forms and Shores Can Cause Severe Injury or Death

Read, understand and follow the information and instructions in this publication before using any of the concrete construction products displayed herein. When in doubt about the proper use or installation of any Dayton Superior concrete accessory, immediately contact the nearest Dayton Superior Service Center or Technical Service Department for clarification. See back cover for your nearest location.

Dayton Superior products are intended for use by trained, qualified and experienced workmen only. Misuse or lack of supervision and/or inspection can contribute to serious accidents or deaths. Any application other than those shown in this publication should be carefully tested before use.

The user of Dayton Superior products must evaluate the product application, determine the safe working load and control all field conditions to prevent applications of loads in excess of a product's safe working load. Safety factors shown in this publication are approximate minimum values. The data used to develop safe working loads for products displayed in this publication are a combination of actual testing and/or other industry sources. Recommended safe working loads given for the products in this publication must never be exceeded.

Worn Working Parts

For safety, concrete forms must be properly used and maintained. Concrete products shown in this publication may be subject to wear, overloading, corrosion, deformation, intentional alteration and other factors that may affect the device's performance. All reusable products must be inspected regularly by the user to determine if they may be used at the rated safe working load or should be removed from service. The frequency of inspections depends upon factors such as (but not limited to) the amount of use, period of service and environment. It is the responsibility of the user to schedule inspections for wear and remove the hardware from service when wear is noted.

Shop or Field Modification

Welding can compromise a product's safe working load value and cause hazardous situations. Knowledge of materials, heat treating and welding procedures is necessary for proper welding. Consult a local welding supply dealer for assistance in determining required welding procedures.

Since Dayton Superior cannot control workmanship or conditions in which modifications are done, Dayton Superior cannot be responsible for any product altered in the field.

Interchangeability

Many concrete products that Dayton Superior manufactures are designed as part of a system. Dayton Superior strongly discourages efforts to interchange products supplied by other manufacturers with components supplied by Dayton Superior. When used properly, and in accordance with published instructions, Dayton Superior products have proven to be among the best designed and safest in the industry. Used improperly or with incompatible components supplied by other manufacturers, Dayton Superior products or systems may be rendered unsafe.

Installation

WARNING

1. Dayton Superior Corporation products shall be installed and used only as indicated on the Dayton Superior Corporation installation guidelines and training materials.
2. Dayton Superior Corporation products must never be used for a purpose other than the purpose for which they were designed or in a manner that exceeds specific load ratings.
3. All instructions are to be completely followed to ensure proper and safe installation and performance
4. Any improper misuse, misapplication, installation, or other failure to follow Dayton Superior Corporation's instruction may cause product malfunction, property damage, serious bodily injury and death.

THE CUSTOMER IS RESPONSIBLE FOR THE FOLLOWING:

1. Conformance to all governing codes
2. Use of appropriate industry standard hardware
3. The integrity of structures to which the products are attached, including their capability to safely accept the loads imposed, as evaluated by a qualified engineer.

SAFETY INSTRUCTIONS:

All governing codes and regulations and those required by the job site must be observed. Always use appropriate safety equipment

Design Changes

Dayton Superior reserves the right to change product designs, rated loads and product dimensions at any time without prior notice.

Note: See Safety Notes and Safety Factor Information.

SYMONS®
BY DAYTON SUPERIOR

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