Concrete Forming

Products

- MultiPour® Plus
- MultiPour® HDO
- Classic HDO
- B-Matte™ 333 MDO
- Basic HDO
- Basic MDO

Basic HDO Form

Basic HDO Form is designed to balance initial cost, multiple reuse and concrete appearance. Basic HDO Form is an economical plywood panel for concrete forming applications where the superior surface uniformity and higher reuse of OPP's Classic HDO or MultiPour HDO is not needed.

B-Matte™ 333

B-Matte™ 333 features an advanced overlay that provides a superior matte finish and delivers seven times more alkalinity resistance than standard MDOs.

B-Matte™ 333 is a workhorse concrete forming panel designed to deliver a smooth matte concrete surface.

General Specifications

- **Width**: 4’ only
- **Length**: 8’ only
- **Thicknesses**: 1/2”, 5/8” - 5 ply; 3/4” - 7 ply
- **Working Surface**: Yellow/buff colored high density phenolic resin impregnated cellulose sheet (HDO). Available with one working surface only.
- **Back Surface**: HDO backer sheet for balance and moisture resistance.

B-Matte™ 333 Load Span Tables – Basic HDO

<table>
<thead>
<tr>
<th>Support Spacing</th>
<th>1/2”</th>
<th>5/8”</th>
<th>3/4”</th>
<th>1-1/8”</th>
</tr>
</thead>
<tbody>
<tr>
<td>8”</td>
<td>1000</td>
<td>1000</td>
<td>1320</td>
<td>1580</td>
</tr>
<tr>
<td>12”</td>
<td>455</td>
<td>495</td>
<td>710</td>
<td>885</td>
</tr>
<tr>
<td>16”</td>
<td>195</td>
<td>260</td>
<td>400</td>
<td>505</td>
</tr>
<tr>
<td>19.2”</td>
<td>110</td>
<td>150</td>
<td>190</td>
<td>255</td>
</tr>
<tr>
<td>24”</td>
<td>–</td>
<td>–</td>
<td>100</td>
<td>145</td>
</tr>
</tbody>
</table>

**Face Grain Perpendicular to Supports**

<table>
<thead>
<tr>
<th>Support Spacing</th>
<th>1/2”</th>
<th>5/8”</th>
<th>3/4”</th>
<th>1-1/8”</th>
</tr>
</thead>
<tbody>
<tr>
<td>8”</td>
<td>392</td>
<td>434</td>
<td>747</td>
<td>1175</td>
</tr>
<tr>
<td>12”</td>
<td>145</td>
<td>167</td>
<td>409</td>
<td>596</td>
</tr>
<tr>
<td>16”</td>
<td>–</td>
<td>–</td>
<td>167</td>
<td>273</td>
</tr>
<tr>
<td>19.2”</td>
<td>–</td>
<td>–</td>
<td>121</td>
<td>194</td>
</tr>
<tr>
<td>24”</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>100</td>
</tr>
</tbody>
</table>

**Face Grain Parallel to Supports**

<table>
<thead>
<tr>
<th>Support Spacing</th>
<th>1/2”</th>
<th>5/8”</th>
<th>3/4”</th>
<th>1-1/8”</th>
</tr>
</thead>
<tbody>
<tr>
<td>8”</td>
<td>392</td>
<td>434</td>
<td>747</td>
<td>1175</td>
</tr>
<tr>
<td>12”</td>
<td>145</td>
<td>167</td>
<td>409</td>
<td>596</td>
</tr>
<tr>
<td>16”</td>
<td>–</td>
<td>–</td>
<td>167</td>
<td>273</td>
</tr>
<tr>
<td>19.2”</td>
<td>–</td>
<td>–</td>
<td>121</td>
<td>194</td>
</tr>
<tr>
<td>24”</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>100</td>
</tr>
</tbody>
</table>

* Plywood continuous across two or more spans. These are total loads (weight of panel should be considered in horizontal applications).
Microllam® LVL Concrete Form Beam

Typical Wall Form Assembly

- Plywood sheathing
- Microllam® LVL form beam double wales
- Ties
- Stud o.c. spacing
- Double wale o.c. spacing
- Microllam® LVL form beam studs

Bottom tie should be no more than 9° above the bottom fo the form

Typical Bridge Deck Formwork Systems

2.0E Microllam® Lvl Form Beams

Allowable Design Stresses
(Dry Use, 100% Load Duration)

- Shear modulus of elasticity: $G = 125,000$ k-sq. in.
- Modulus of elasticity: $E = 2.0 \times 10^6$ PSI
- Flexural stress: $F_b = 2750$ PSI
- Compression perpendicular to grain: $F_{Cl} = 750$ PSI
- Compression parallel to grain: $F_{Cl} = 2635$ PSI
- Horizontal shear perpendicular to glue line: $F_v = 285$ PSI

Load

- $V_{allow} = 1746$ lbs.
- $V_{allow} = 1870$ lbs.
- $V_{allow} = 2939$ lbs.
- $M_{allow} = 2178$ ft.-lbs.
- $M_{allow} = 1556$ ft.-lbs.
- $M_{allow} = 3613$ ft.-lbs.
- $E_l = 22509$ k-sq. in.
- $E_l = 16078$ k-sq. in.
- $E_l = 62391$ k-sq. in.
- $b = 3.5\,\text{in.}$
- $b = 2.5\,\text{in.}$
- $b = 2.5\,\text{in.}$
- $d = 3.5\,\text{in.}$
- $d = 5.5\,\text{in.}$

- $V_{allow} = 1746$ lbs.
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- $b = 3.5\,\text{in.}$
- $b = 2.5\,\text{in.}$
- $b = 2.5\,\text{in.}$
- $d = 3.5\,\text{in.}$
- $d = 5.5\,\text{in.}$

(1) For 12" depth. For others, multiply by $[12/d]^{0.136}$
(2) $F_{Cl}$ shall not be increased for duration of load
(3) $F_{Cl} = 880$ PSI for thicknesses greater than 1-3/4”
(4) Values are for new or like-new product
Stay-Form is manufactured from hot-dipped galvanized sheet steel.

26 ga. Standard Grade
25 ga. Heavy Grade
Sheet Size 27" x 97"

- Reduces labor cost in difficult forming applications.
- Joint scrabbling is eliminated in most cases.
- Eighty percent labor savings in stripping.
- Easy rebar and service conduit penetration.
- Continuous placement of rebar.
- Visual inspection of the pour.

- Easy formulation to fit curvatures.
- Reduces grade removal for below-ground use.
- Cut to size in multiples with power saw using abrasive blades.
- Does not require special formulation of concrete.

Forming Blind-Side Walls

Forming Pile Caps

TOLL FREE 800-892-7224
800-821-7735

LOCAL 816-525-3640
FAX 816-525-4533
Concrete Forming

Sonotube Fibre Forms

Sonotube Fibre Form “A” Coated
The original form, made from many layers of tough, high-quality fibre spirally wound and laminated with a water resistant adhesives.

Produces a column with spiral seams.

Seamless Sonotube
A mid grade form with a specially finished inner ply.

Minimizes but does not completely eliminate the spiral seam appearance.

Sonotube Plus
Fitted with a plastic liner that imparts a smoother architectural finish to round columns.

One vertical seam on columns up to 24 inch diameter and only 2 vertical seams or columns over 24 inch diameter.

Premium Sonotube Fibre Forms
This is a new product that is uniquely designed and coated inside.

Virtually eliminates the spiral seams and ridges.

Placing
A tremie pipe should be used in the pouring operation. National average pour rate is 15 feet per hour, but not to exceed 3000 PSF. The concrete can be vibrated as required, but use care to prevent vibrator from damaging tube. A release agent must always be used with Seamless Sonotube forms and will facilitate stripping if used with “A” Coated Forms.

Stripping
Strip form as soon as possible after concrete has set. Recommended time is 24 to 48 hours, and should not exceed 5 days. Use saw or knife to make vertical cuts and remove form.

Bracing
Sonotube forms are easily brought to plumb, and only minimal bracing is required (brace tuve every 8 feet). Use plastic brace plates, scaffolding or lumber.

Sonovoid Fibre Tubes
Sonovoid Fibre Tubes are laminated tubular forms specifically developed to provide an economical means of forming voids in precast or cast-in place concrete slabs. Typical end closures are metal up to 12 inch diameter and wood thereafter.

<table>
<thead>
<tr>
<th>Sonovoid O.D.</th>
<th>Maximum Support Spacing</th>
<th>Maximum Spacing Between Hold Down</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.25 to 18.00</td>
<td>4’ O.C.</td>
<td>18” from end of tube, then every 4’</td>
</tr>
<tr>
<td>18.7 to 22.85</td>
<td>3’ O.C.</td>
<td>18” from end of tube, then every 3’</td>
</tr>
<tr>
<td>24.85 to 36.9</td>
<td>2’ O.C.</td>
<td>12” from end of tube, then every 2’</td>
</tr>
</tbody>
</table>
Concrete Forming

One-Piece Round Column Forms

An economical method for producing beautiful concrete

- Lightweight. Easy handling and placement.
- Produce beautiful, clean, smooth concrete.
- Easy to strip.
- Are designed to be reused repeatedly.
- Available on a sale or rental basis.
- Weatherproof.
- Units nest. Use less storage and shipping space.
- Complete with bracing collar and "fast" bolts.

Sizes

<table>
<thead>
<tr>
<th>Column Diameter</th>
<th>Length Up To</th>
<th>Approx. Wt. Per Lineal Ft.</th>
<th>Approx. Vol. of Concrete Per Lineal Ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>12&quot;</td>
<td>20'</td>
<td>9.9 lbs.</td>
<td>.8 cu. ft.</td>
</tr>
<tr>
<td>14&quot;</td>
<td>20'</td>
<td>10.0 lbs.</td>
<td>1.0 cu. ft.</td>
</tr>
<tr>
<td>16&quot;</td>
<td>20'</td>
<td>11.1 lbs.</td>
<td>1.4 cu. ft.</td>
</tr>
<tr>
<td>18&quot;</td>
<td>20'</td>
<td>12.3 lbs.</td>
<td>1.8 cu. ft.</td>
</tr>
<tr>
<td>20&quot;</td>
<td>20'</td>
<td>13.1 lbs.</td>
<td>2.2 cu. ft.</td>
</tr>
<tr>
<td>22&quot;</td>
<td>20'</td>
<td>14.2 lbs.</td>
<td>2.6 cu. ft.</td>
</tr>
<tr>
<td>24&quot;</td>
<td>20'</td>
<td>15.2 lbs.</td>
<td>3.1 cu. ft.</td>
</tr>
<tr>
<td>26&quot;</td>
<td>20'</td>
<td>16.2 lbs.</td>
<td>3.6 cu. ft.</td>
</tr>
<tr>
<td>28&quot;</td>
<td>20'</td>
<td>17.3 lbs.</td>
<td>4.2 cu. ft.</td>
</tr>
<tr>
<td>30&quot;</td>
<td>20'</td>
<td>18.4 lbs.</td>
<td>4.9 cu. ft.</td>
</tr>
<tr>
<td>32&quot;</td>
<td>20'</td>
<td>19.5 lbs.</td>
<td>5.5 cu. ft.</td>
</tr>
<tr>
<td>34&quot;</td>
<td>20'</td>
<td>20.5 lbs.</td>
<td>6.3 cu. ft.</td>
</tr>
<tr>
<td>36&quot;</td>
<td>20'</td>
<td>21.5 lbs.</td>
<td>7.0 cu. ft.</td>
</tr>
<tr>
<td>38&quot;</td>
<td>20'</td>
<td>22.6 lbs.</td>
<td>7.9 cu. ft.</td>
</tr>
<tr>
<td>40&quot;</td>
<td>20'</td>
<td>23.7 lbs.</td>
<td>8.7 cu. ft.</td>
</tr>
<tr>
<td>42&quot;</td>
<td>20'</td>
<td>24.8 lbs.</td>
<td>9.6 cu. ft.</td>
</tr>
<tr>
<td>44&quot;</td>
<td>20'</td>
<td>25.8 lbs.</td>
<td>10.6 cu. ft.</td>
</tr>
<tr>
<td>46&quot;</td>
<td>20'</td>
<td>26.8 lbs.</td>
<td>11.5 cu. ft.</td>
</tr>
<tr>
<td>48&quot;</td>
<td>20'</td>
<td>27.9 lbs.</td>
<td>12.6 cu. ft.</td>
</tr>
</tbody>
</table>

MAXIMUM LATERAL PRESSURE FOR MFG ROUND COLUMN FORMS:
It is recommended that maximum lateral pressure should not exceed 2,250 psf.

MAXIMUM RATE OF POUR:
Based on Table 6-5, Formwork for Concrete Fifth edition.
Maximum Rate Of Pour would be:

- At 80°F: 18 feet per hour
- At 70°F: 16 feet per hour
- At 60°F: 14 feet per hour
- At 50°F: 11 feet per hour
- At 40°F: 9 feet per hour

Apply only for normal weight concrete made with Type I cement, no admixtures or pozzolans, slump no more than 4 inches, and elevation depth Limited to 4 feet or less.

Unit guy wires or bracing to hold into position. Be careful not to pull out of round.

Plumb Bob for level

DO NOTUMP CONCRETE INTO FORM

Top view

Flange type column

Fits directly over column with flanges bolted secure

Top view

Steel tube type

 binnen

Capitol

Column

IN SIDE VIEW

Top view

Steel tube type

Instal to slip over column form and secure with bolts two sides

TOLL FREE 800-892-7224
LOCAL 816-525-3640
FAX 816-525-4533
Concrete Forming

Heavy-Duty Steel Column Form

Deslauriers heavy-duty steel column forms develop an exceptionally smooth, hard surface remarkably free of voids and with a minimum number of indistinct seams.

• All standard column diameters from 14” to 60”.

• Standard column lengths are 8’ 0”, 4’ 0”, 2’ 0” and 1’ 0”.

• You can eliminate form inventory and keep working capital available by leasing Deslauriers heavy-duty forms when needed.

• FORM DESIGN 3000 PSF ON FORMS THROUGH 36” DIAMETER OR 2000 PSF ON FORMS OVER 36” DIAMETER.

Forms are galvanized constant radius steel half round sections and quarter round sections (for forms over 48” in diameter) bolted into units for crane handling on the jobsite. Each component is framed with flange angles die-cut and punched for accurate flush butt joints without protrusion on the contact surface. Vertical and horizontal seams, opened and closed with each pour, are connected with high-speed bolts to speed setting and stripping. Curing time permitting, one column per form can be produced each working day.

LATERAL PRESSURE SHOULD NOT EXCEED 3000 PSF ON FORMS THROUGH 36” DIAMETER OR 2000 PSF ON FORMS OVER 36” DIAMETER

Maximum rate of pour is based on ACI SP-4 4th edition.

<table>
<thead>
<tr>
<th>Temperature °F</th>
<th>F2000PSF</th>
<th>F3000PSF</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>8</td>
<td>13</td>
</tr>
<tr>
<td>50</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>60</td>
<td>12</td>
<td>20</td>
</tr>
<tr>
<td>70</td>
<td>14</td>
<td>24</td>
</tr>
<tr>
<td>80</td>
<td>16</td>
<td>26</td>
</tr>
<tr>
<td>90</td>
<td>18</td>
<td>30</td>
</tr>
</tbody>
</table>

Deslauriers’ Adapter Bar

Key & Wedge Adapter Bar to Wall Form

½” Elevator Bolt for attaching to Deslauriers’ Column Form

Symons Hand Set or Equal

NOTE: Run flat ties as needed
Concrete Forming

UNI-PLY

Quick Assembly · Lightweight · Easy to Maintain and Reuse

1000 PSF SYSTEM

Exact corner joints eliminate tolerance build-up over large areas.

Available in 100/30 or 120/120 1/2" plywood is riveted to the angle struts. Plywood tolerance is closely maintained to assure long form life. With our premium birch plywood, contractors can expect up to 200 reuses before plywood replacement.

Side and end rails are rolled from 55,000 PSI steel and welded continuously at corners for maximum strength.

Angle struts are spaced on 12" centers to provide strength, uniform concrete and minimize deflection.

Handles are provided on panels for easy handling in setting and stripping forms.

2" wide angle strut provides greatest frame and plywood strength on the market.

Dado slots on face of form allow tie spacing at 12" on center. Rear-side and end-rail dados are located at 6" on center to allow optimum accessory location. Front and rear-side rail contact points prevent grout seepage and permit true form alignment with adjacent panels.

BASIC PANEL AND FILLER SIZES:

Panels: 24" W x 3', 4', 5', 6', 8', 9' or 10' H
Filters 4" to 22" W x 3', 4', 5', 6', 8', 9' or 10' H
Metal Fillers: 1", 1.5" & 2" W x 3', 4', 5', 6', 8', 9' or 10' H
Outside Corner (metal): 6" x 6" & 4" x 4" x 3', 4', 5', 6', 8', 9' or 10' H
Outside Corner: 3', 4', 5', 6', 8', 9' or 10' H
Filler Angles: 3", 4", 5", 6", 8", 9' or 10' H
Pilaster Panels: 3', 4', 5', 6', 8', 9' or 10' H
Culvert Forms: 3', 4', 5', 6', 8', 9' or 10' H
Inside & Outside Bay Corners: 3', 4', 5', 6', 8', 9' or 10' H
Hinge Corners: 3', 4', 5', 6', 8', 9' or 10' H

Filler Panels
**Concrete Forming**

**LOOP TIE – STANDARD & HEAVY DUTY**

![Image of Loop Tie]

**GANG LOOP TIE – STD. & HEAVY DUTY**

![Image of Gang Loop Tie]

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Wire Size</th>
<th>SWL (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>STD.</td>
<td>.225</td>
<td>2550</td>
</tr>
<tr>
<td>HD</td>
<td>.243</td>
<td>3000</td>
</tr>
</tbody>
</table>

Safety Factor 2:1

**SCAFFOLD BRACKETS**

This Scaffold bracket is designed for worker access only and has a rating of 500 lbs. The maximum spacing is 8 ft. on center.

**“Z” TIE HOLDER**

![Image of Z Tie Holder]

**“X” FLAT TIES**

![Image of X Flat Ties]

<table>
<thead>
<tr>
<th>Capacity</th>
<th>SWL (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>STD.</td>
<td>3000</td>
</tr>
<tr>
<td>HD</td>
<td>3375</td>
</tr>
</tbody>
</table>

Safety Factor 2:1

**WEDGE BOLTS**

**GANG FORM BOLT**

**PLY-LAG**

**WALER TIE**
Concrete Forming

SuperTie
Fiberglass Formtie Systems

Light (6000 lbs.) and Medium (15,000 lbs.) Systems

Saves Labor! Cuts Cost in a Snap!
Provides Superior Finishes!

Rod, Gripper and Wedge – The basic components of the Light (6000 lbs.) and Medium (15,000 lbs.) SuperTie Systems.

Setup
1. Cut fiberglass rod to length required, using abrasive blade in a circular saw. Length of rod is width of structure (a) plus width of forms (b + b_2) plus 16 inches (c_1 + c_2). Use 18" for Medium system.

The SuperTie Fiberglass Formtie Systems are used to secure concrete formwork during concrete placement and initial hydrations with a formtie system which would not have the inherent limitations of previously popular steel formtie systems. The SuperTie Systems eliminate the possibility of rust stains and deterioration of the structure that is often caused by failure of patching for steel formtie holes.

The SuperTie Systems are appropriate for use in all forming applications, but are especially beneficial in situations such as architectural finishes, since an aesthetically pleasing finish is attained with tremendously reduced labor expenditures. It also reduces costs in battered wall and "odd sized" tie situations, since the rod is cut to the length required at the job site.

Table 1 – Typical Spacing/Placement Rates

<table>
<thead>
<tr>
<th>Tie Spacing Data</th>
<th>Rate of Placement at Concrete Temp.</th>
<th>Form Pressure</th>
<th>Actual Load On Tie</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horiz. Vert. Area</td>
<td>40°</td>
<td>60°</td>
<td>80° lbs/sq.ft.</td>
</tr>
<tr>
<td>Light – 6,000 Lbs. Ultimate Tensile Strength System</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16” 16” 1.78ft.²</td>
<td>6’9”</td>
<td>10’</td>
<td>10’</td>
</tr>
<tr>
<td>24” 12” 2.00ft.²</td>
<td>6’</td>
<td>10’</td>
<td>10’</td>
</tr>
<tr>
<td>24” 16” 2.67ft.²</td>
<td>4’4”</td>
<td>6’6”</td>
<td>10’</td>
</tr>
<tr>
<td>24” 24” 4.00ft.²</td>
<td>2’8”</td>
<td>4’</td>
<td>6’4”</td>
</tr>
<tr>
<td>Medium – 15,000 Lbs. Ultimate Tensile Strength System</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30” 24” 5.00ft.²</td>
<td>6’</td>
<td>10’</td>
<td>10’</td>
</tr>
<tr>
<td>30” 30” 6.25ft.²</td>
<td>4’8”</td>
<td>7’</td>
<td>10’</td>
</tr>
<tr>
<td>30” 36” 7.50ft.²</td>
<td>3’9”</td>
<td>5’8”</td>
<td>9’</td>
</tr>
<tr>
<td>30” 36” 9.00ft.²</td>
<td>3’</td>
<td>4’6”</td>
<td>6’</td>
</tr>
</tbody>
</table>

Note: It is the responsibility of the contractor to control concrete mix design and concrete placement to assure that the maximum allowable form and form tie design loads are not exceeded.

SuperTie has an ultimate tensile strength of 6000 lbs.; the ACI’s recommended 2:1 safety factor advises safe working load of 3000 lbs. SuperTie XV has an ultimate tensile strength of 15,000 pounds, swl is 750 lbs. at 2:1.
4.5 – Synopsis of Certified Testing

Meets requirements of ACI 303, 347 and 350.

4.5.1 – Tensile, Shear and Elongation

**Testing Agency** – Smith-Emery Company, Los Angeles, California

**Testing Agency** – Twining Laboratories, Long Beach, California

**Testing Criteria** – ACI 347, Formwork for Concrete

**Test Stand** – Insitu tensile testing of the SuperTie 6000 lbs. ultimate strength system was performed utilizing a standard configuration wood form system consisting of 3/4" sheathing with 2" x 4" strongbacks and wales, and SuperTie Grippers and Wedges. The SuperTie 15,000 and 50,000 lbs. ultimate strength systems were tested utilizing steel plates and SuperTie XV and SuperTie 50K Grippers. Both systems were loaded axially utilizing a calibrated universal testing machine. Shear testing was performed utilizing a fixture to develop single shear.

<table>
<thead>
<tr>
<th>Rod Dia. In.</th>
<th>Average Load Lbs.</th>
<th>Elongation %</th>
<th>Failure Mode</th>
<th>Average Load Lbs.</th>
<th>Failure Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>.308</td>
<td>7053</td>
<td>0.06</td>
<td>Tensile</td>
<td>3720</td>
<td>Shear</td>
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<tr>
<td>.500</td>
<td>15,590</td>
<td>0.09</td>
<td>Tensile</td>
<td>6700</td>
<td>Shear</td>
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<tr>
<td>1.0</td>
<td>53,193</td>
<td>0.08</td>
<td>Tensile</td>
<td>28,700</td>
<td>Shear</td>
</tr>
</tbody>
</table>
Gates Cam-Lock Forming System

1" dia. cushion cone.
1" break back, self-centering tapered cone for 13/16" hole.

Uses flexible, inexpensive forming materials.
S4S – 2" x 4"s with 4' x 8' x 3/4" plywood sheets.

All new Gates scaffold brackets factory tested to 3,000 lbs.
Concrete Forming

Gates Anchor-Lock Forming System

Advantages of Gang Forming
- Lower Construction Costs
- No Loose Hardware
- Gang Form Both Sides
- Pass-Thru Form Ties

#3 Forming System

The Gates regular anchor-lock #3 system uses 3/4" plywood with 2 x 6 flat walers on 16" centers, crossed by 4 x 4 stiffbacks on 4'-0" to 8'-0" centers depending on height of gang form. Gates anchor-locks are spaced 24" along the 2 x 6 walers making a tie spacing of 24" x 16" (2-2/3 sq. ft. per tie).

Gates regular anchor-lock #3 tie with plastic cones.

2" x 3" and 2" x 2" x 3/16" angles are bolted with flat-head bolts at each end of the gang form. The angles are then locked together with U-clamps for vertical alignment of the two gang forms.

#5 Forming System

The Gates anchor-lock #5 system uses 3/4" plywood with the 2 x 6 flat walers on 12" centers, crossed by 4 x 4s on 24" centers to minimize the unsupported plywood span. Gates anchor-locks are spaced 24" x 24" (4 sq. ft. per tie.)

Gates anchor-lock #5 tie with cones molded in place.

Gates Pick-Up Loops must always be used with Extension straps (A) and secured with three bolts (B,C,D) as shown at right.

Designed working load not to exceed 2,000 lbs., with a three-to-one safety factor.

Flat Head Bolts

5/16" x 3"  3/8" x 6-1/2"
3/8" x 5-1/2"  3/8" x 8-1/2"

Visit Us on the Web!
www.ConstructionAnchors.com
The standard Gates #9 Anchor-Lock Gang Form is made up of four main parts:
1. 4 x 8 x 3/4” BB grade or plastic-faced plywood panels
2. Horizontal 4 x 4 walers on 12” centers
3. Double 4 x 4 strongbacks 1 ft. from each end and then on approximately 3-ft. centers

By spacing the Anchor-Locks 3-ft. along the vertical strongbacks, a tie pattern of approximately 3 ft. x 3 ft. is obtained. Multiple holes in the face of the Anchor-Lock plate allow for easy lock alignment over the tie holes with lag screws.

**Tie Combinations**

<table>
<thead>
<tr>
<th>Tie Combination</th>
<th>Diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>#9 Saddle-Lock &amp; Perforated Box Tube</td>
<td><img src="image" alt="Diagram" /></td>
</tr>
</tbody>
</table>

One-piece taper tie with slotted ends to be withdrawn for repeated use. Additional slot for two wall sizes.

Stop Pin

Tie ends provide 1 1/2” setback of inner tie from face of concrete wall.

Face of concrete

A’ Ends

1/2” Inner tie, 1” of thread, each end. Flat anchor near center.
Concrete Forming

Gates Steel Frame Gang Form Adapter

Now you can gang form your steel frame panels just as they are with Gates box-tube adapter, with all locks attached.

Isometric of strong-back and steel frame form
Gates Lok-Fast Column Clamp

- Can be job-built
- Gang formed
- Minimum labor costs
- Designed for rapid placement of concrete
- Rapid locking action
- No loose pieces

The diagonal corner, from the locking corner, acts as the hinge point for easy opening and resetting of the GATES Lok-Fast Column Form.

GATES Column Clamps are designed with 1/8" holes spaced 2" on centers in the 2 1/8" down leg of the Column Clamp angle to provide easy attachment to the form by using either a 1/4" x 2" lag screw or a 1/4" flat-head through-bolt.

Squaring corners may be installed in opposite corners of the Column Clamp to help stabilize the Column Form while setting and stripping. Do Not depend on the GATES squaring corner to completely square the Column Form. Check and brace the Column Form, after setting, making sure it is plumb and square.
Gates Retractable Inside Corner

Gates Retractable Aluminum I.S. Corner
For elevator or stair gang form use, provides 5/8” clearance on each side at all four corners. To retract, loosen all bolts on vertical cross bars spaced on 24” centers using a speed wrench. Rotate turnbuckles in unison, drawing forms away from concrete walls. Lift gang forms and reset.

NEW – Pin’N Lock Outside Corner
You can have leakproof corners using Gates adjustable Pin’N Lock heavy duty, outside steel corners with no loose parts.

- Tight Outside Corners
- No Loose Parts
- Adjustable Locking Pin
- Fast, Easy to Use
LIFT’N LOCK SAFETY BRACKET

Scaffold Brackets

Bolt to gang form with two 4"x6½" or 7" machine bolts or 4"x6" lag screws.

Fits between the Anchor-Loads

3'-0" Scaffold Bracket
Concrete Forming

Gates

Suggested Cam-Lock Radius Forming Details

24" X 16" TIE SPACING

Suggested #5 Anchor-Lock Forming Details

16" X 32" TIE SPACING

Radius Wall Forming

Suggested #9 Anchor-Lock Forming Details

36" X 36" TIE SPACING

Educated Radius Walers

Plywood Bending

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Pieces</th>
<th>Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>20'-0&quot; Dim.</td>
<td>3</td>
<td>1/4&quot;</td>
</tr>
<tr>
<td>30'-0&quot; Dim.</td>
<td>2</td>
<td>3/8&quot;</td>
</tr>
<tr>
<td>40'-0&quot; Dim.</td>
<td>2</td>
<td>3/8&quot;</td>
</tr>
<tr>
<td>50'-0&quot; Dim.</td>
<td>1</td>
<td>5/8&quot;</td>
</tr>
<tr>
<td>60'-0&quot; Dim.</td>
<td>1</td>
<td>3/4&quot;</td>
</tr>
<tr>
<td>And Larger</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Prebending Plywood Panels

3 to 4 sheets to each layer

4x4's
1 x plate

Visit Us on the Web!
www.ConstructionAnchors.com

Contact Information:
13900 E. 350 Highway
Kansas City, MO 64138
Concrete Forming

Basic Pressure Formulas

Wall Pours

CONCRETE PRESSURE
GENERAL NOMENCLATURE

P = Lateral Pressure (PSF)
R = Rate of Placement (feet per hour)
T = Ambient Temperature, unless controlled (degrees F). See note 2.
h = Height of Fresh Concrete above specified point of interest (feet).

General Formula:

\[ P = 150 \frac{9,000R}{T} \]

(Maximum "P" value 2,000 PSF, minimum 600 PSF, in no case greater than 150h). See note 2.

Modified Formula:

\[ P = 150 + \frac{43,400 + 2,800R}{T} \]

(Maximum "P" value 2,000 PSF, minimum 600 PSF, in no case greater than 150h). See note 2.

Notes:

1. The background and reference for these equations and restrictions may be found in “Recommended Practice for Concrete Formwork”, American Concrete Institute (ACI), Standard 347R-88.
2. The 150 used in the formulas is pounds per cubic foot, the recognized concrete weight for formwork design.
3. All uncontrolled placements faster than 7'-0" per hour and controlled wall pours exceeding 10'-0" per hour with 4'-0" or less layered placements should be analyzed per full liquid head, 150h.

Snap Ties

Standard Snap Tie
2,250 Lbs.
Safe Working Load

Heavy Snap Tie
3,350 Lbs.
Safe Working Load

Washer Type

Standard End Dimensions
4-3/4" Short Ends
8-1/4" Long Ends

Special End Dimensions
Available.

Cone Type

Plastic Cones

A-2 Plastic Cone Selection Chart

<table>
<thead>
<tr>
<th>Diameter</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4&quot;</td>
<td>1&quot;, 1-1/2&quot;</td>
</tr>
<tr>
<td>1&quot;</td>
<td>1&quot;, 1-1/2&quot;</td>
</tr>
<tr>
<td>1-1/4&quot;</td>
<td>1-1/2&quot;, 2&quot;</td>
</tr>
</tbody>
</table>

Omni Wedge
Concrete Forming

Coil Ties

B-3 Screw-On Coil Tie Selection Chart

<table>
<thead>
<tr>
<th>Type</th>
<th>Bolt Diameter</th>
<th>Number of Strut Wires</th>
<th>Safe Working Load Tension Lbs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>B-3 Standard</td>
<td>1/2”</td>
<td>2</td>
<td>4,500</td>
</tr>
<tr>
<td>B-3 Heavy</td>
<td>1/2”</td>
<td>2</td>
<td>6,750</td>
</tr>
<tr>
<td>B-3 Standard</td>
<td>3/4”</td>
<td>2</td>
<td>6,750</td>
</tr>
<tr>
<td>B-3 Heavy</td>
<td>3/4”</td>
<td>2</td>
<td>9,000</td>
</tr>
<tr>
<td>B-3 Standard</td>
<td>1”</td>
<td>2</td>
<td>13,500</td>
</tr>
<tr>
<td>B-3 Standard</td>
<td>1”</td>
<td>4</td>
<td>18,000</td>
</tr>
<tr>
<td>B-3 Standard</td>
<td>1-1/4”</td>
<td>4</td>
<td>27,000</td>
</tr>
</tbody>
</table>

SWL provides a factor of safety of approximately 2 to 1.

B-3 Screw-On Coil Tie

B-6 Welding Coil Tie

B-30 Screw-On Plastic Cones

B-14-A Adjustable Coil Bolts

Visit Us on the Web!
www.ConstructionAnchors.com
D-2 and D-30 She-Bolts

Safe Working Load | She-Bolt External Thread | Inside Tie Rod Thread | Hardware Required
---|---|---|---
D-2 | 9,000 | 3/4” Acme | 1/2” | 20” | 3/4” Dia. D-6
D-30 | 9,000 | 7/8” Coil | 1/2” | 20” | 7/8” Dia. B-27 or B-39
D-30 | 12,000 | 7/8” Coil | 1” | 20”, 24” | 7/8” Dia. B-39
D-30 | 18,000 | 1-1/4” Coil | 3/4” | 20”, 24”, 30”, 35” | 1-1/4” Dia. B-39
D-30 | 37,500 | 1-1/2” Coil | 1” | 20”, 24”, 30”, 35” | 1-1/4” Dia. B-39
D-30 HS | 56,000 | 1-1/2” Coil | 1-1/4” | 34”, 43”, 52” | 1-1/2” Dia. B-39

D-9 Taper Ties

Safe Working Load | Large End of Tie | Small End of Tie | Standard Tie Lengths | Tapered Body Dia.
---|---|---|---|---
7,500 | 3/4” | 1/2” | 34”, 43”, 52” | .670” to .500”
18,000 | 1” | 3/4” | 30”, 36”, 42”, 48”, 54”, 60”, 72” | .884” to .750”
34,000 | 1-1/4” | 1” | 1-1/2” to 1-1/4” | 1-1/2” to 1-1/4”
50,000 | 1-1/2” | 1-1/4” | 6” | 36”, 48”, 60”, 72” | 1-3/4” to 1-1/2”
75,000 | 1-3/4” | 1-1/2” | 6” | 1-3/4” to 1-1/2” | 1-3/4” to 1-1/2”

D-1 and D-18 Inside Tie Rods

D-33 Waterseal Washer

B-32 Handle Coil Nut
B-27 Nut Washer
B-39 Wing Nut

SWL provides a factor of safety of approximately 2 to 1.
B-12 Coil Rod

B-12 Coil Rod Selection Chart

<table>
<thead>
<tr>
<th>Coil Rod Dia.</th>
<th>Safe Working Loads Lbs.</th>
<th>Minimum Root Area Sq. In.</th>
<th>Tensile Strength PSI</th>
<th>Yield Strength PSI</th>
<th>Minimum Coil Penetration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2&quot;</td>
<td>9,000</td>
<td>.1385</td>
<td>130,000</td>
<td>110,000</td>
<td>2&quot;</td>
</tr>
<tr>
<td>5/8&quot;</td>
<td>12,000</td>
<td>.2124</td>
<td>113,000</td>
<td>96,000</td>
<td>2-1/4&quot;</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>18,000</td>
<td>.3079</td>
<td>117,000</td>
<td>100,000</td>
<td>2-1/4&quot;</td>
</tr>
<tr>
<td>7/8&quot;</td>
<td>31,000</td>
<td>.4477</td>
<td>117,000</td>
<td>100,000</td>
<td>2-1/2&quot;</td>
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<tr>
<td>1&quot;</td>
<td>38,000</td>
<td>.5410</td>
<td>140,000</td>
<td>120,000</td>
<td>2-1/2&quot;</td>
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<tr>
<td>1-1/8&quot;</td>
<td>45,000</td>
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<td>126,600</td>
<td>105,000</td>
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<tr>
<td>1-1/4&quot;</td>
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<td>123,000</td>
<td>105,000</td>
<td>2-1/2&quot;</td>
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<tr>
<td>1-1/2&quot;</td>
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<td>1.3892</td>
<td>98,000</td>
<td>85,000</td>
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SWL provides a factor of safety of approximately 2 to 1.

B-11 Flat Washers

B-11 Flat Washer Selection Chart

<table>
<thead>
<tr>
<th>Bolt Diameter</th>
<th>Type</th>
<th>Safe Working Load Lbs.</th>
<th>Size</th>
</tr>
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<tbody>
<tr>
<td>1/2&quot;</td>
<td>Standard</td>
<td>4,500</td>
<td>3&quot; x 4&quot; x 1/4&quot;</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>Heavy</td>
<td>6,750</td>
<td>4&quot; x 5&quot; x 1/4&quot;</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>Standard</td>
<td>6,750</td>
<td>4&quot; x 5&quot; x 1/4&quot;</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>Heavy</td>
<td>9,000</td>
<td>5&quot; x 5&quot; x 3/8&quot;</td>
</tr>
<tr>
<td>1&quot;</td>
<td>Standard</td>
<td>18,000</td>
<td>5&quot; x 5&quot; x 7/16&quot;</td>
</tr>
<tr>
<td>1&quot;</td>
<td>Heavy</td>
<td>37,500</td>
<td>7&quot; x 7&quot; x 3/4&quot;</td>
</tr>
<tr>
<td>1-1/4&quot;</td>
<td>Standard</td>
<td>27,000</td>
<td>5&quot; x 5&quot; x 7/16&quot;</td>
</tr>
<tr>
<td>1-1/4&quot;</td>
<td>Heavy</td>
<td>37,500</td>
<td>7&quot; x 7&quot; x 3/4&quot;</td>
</tr>
<tr>
<td>1-1/2&quot;</td>
<td>Standard</td>
<td>37,500</td>
<td>5&quot; x 5&quot; x 3/4&quot;</td>
</tr>
<tr>
<td>1-1/2&quot;</td>
<td>Heavy</td>
<td>37,500</td>
<td>7&quot; x 7&quot; x 3/4&quot;</td>
</tr>
</tbody>
</table>

SWL provides a factor of safety of approximately 2 to 1.

B-13 Coil Nut & B-25 Heavy Coil Nut

B-13 Standard Coil Nut
B-25 Heavy Coil Nut

B-13 Coil Nut and B-25 Heavy Coil Nut Selection Chart

<table>
<thead>
<tr>
<th>Bolt Diameter</th>
<th>Type</th>
<th>Safe Working Load Tension Lbs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2&quot;</td>
<td>Standard</td>
<td>4,500</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>Heavy</td>
<td>6,750</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>Standard</td>
<td>6,750</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>Heavy</td>
<td>9,000</td>
</tr>
<tr>
<td>1&quot;</td>
<td>Standard</td>
<td>18,000</td>
</tr>
<tr>
<td>1&quot;</td>
<td>Heavy</td>
<td>37,500</td>
</tr>
<tr>
<td>1-1/4&quot;</td>
<td>Standard</td>
<td>27,000</td>
</tr>
<tr>
<td>1-1/4&quot;</td>
<td>Heavy</td>
<td>37,500</td>
</tr>
<tr>
<td>1-1/2&quot;</td>
<td>Standard</td>
<td>37,500</td>
</tr>
<tr>
<td>1-1/2&quot;</td>
<td>Heavy</td>
<td>37,500</td>
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</tbody>
</table>

B-42 and D-22 Batter Washers

B-42 and D-22 Batter Washer Selection Chart

<table>
<thead>
<tr>
<th>Bolt Diameter</th>
<th>Type</th>
<th>Hole Diameter</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2&quot;</td>
<td>B-42</td>
<td>9/16&quot;</td>
<td>3&quot;</td>
<td>1&quot;</td>
<td></td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>B-42</td>
<td>7/8&quot;</td>
<td>4-3/4&quot;</td>
<td>1-1/2&quot;</td>
<td></td>
</tr>
<tr>
<td>1&quot;</td>
<td>B-42</td>
<td>11/16&quot;</td>
<td>5-1/4&quot;</td>
<td>1-3/4&quot;</td>
<td></td>
</tr>
<tr>
<td>D-22</td>
<td>1-1/4&quot; - 1-3/8&quot;</td>
<td>6&quot;</td>
<td>7&quot;</td>
<td>1-7/8&quot;</td>
<td></td>
</tr>
<tr>
<td>D-22</td>
<td>1-1/2&quot; - 1-5/8&quot;</td>
<td>6-1/2&quot;</td>
<td>7-3/4&quot;</td>
<td>2&quot;</td>
<td></td>
</tr>
</tbody>
</table>

SWL provides a factor of safety of approximately 2 to 1.
Concrete Forming

B-16 Coil Loop Insert Straight
Selection Chart

<table>
<thead>
<tr>
<th>Bolt Diameter</th>
<th>Insert Length</th>
<th>Wire Strut Diameter</th>
<th>Safe Working Load Tension Lbs.</th>
<th>Minimum Concrete Strength PSI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2&quot;</td>
<td>3&quot;</td>
<td>.223</td>
<td>4,500</td>
<td>2,000</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>4&quot;</td>
<td>.223</td>
<td>4,500</td>
<td>2,000</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>6&quot;</td>
<td>.306</td>
<td>7,500</td>
<td>2,000</td>
</tr>
<tr>
<td>3/4&quot;</td>
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<tr>
<td>3/4&quot;</td>
<td>6&quot;</td>
<td>.306</td>
<td>7,500</td>
<td>2,000</td>
</tr>
<tr>
<td>1&quot;</td>
<td>6&quot;</td>
<td>.306</td>
<td>7,500</td>
<td>2,000</td>
</tr>
<tr>
<td>1&quot;</td>
<td>8&quot;</td>
<td>.306</td>
<td>7,500</td>
<td>2,000</td>
</tr>
</tbody>
</table>

SWL provides a factor of safety of approximately 2 to 1.

Coil Loop Protectors

- Install Coil Inserts
- Provide Setback

B-17 Rock Anchor

- For 1/2", 3/4", 1" Dia. Inserts

B-16 Coil Loop Insert

B-33 Double Flared Criss Cross Coil Loop Insert

F-56 Expanded Coil Insert for Coil Threaded Bolts

Coil Rod

<table>
<thead>
<tr>
<th>Bolt Diameter</th>
<th>Insert Length</th>
<th>Wire Strut Diameter</th>
<th>Safe Working Load Tension Lbs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2&quot;</td>
<td>3&quot;</td>
<td>.223</td>
<td>4,500</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>4&quot;</td>
<td>.223</td>
<td>4,500</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>6&quot;</td>
<td>.306</td>
<td>7,500</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>4&quot;</td>
<td>.223</td>
<td>4,500</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>6&quot;</td>
<td>.306</td>
<td>7,500</td>
</tr>
<tr>
<td>1&quot;</td>
<td>6&quot;</td>
<td>.306</td>
<td>7,500</td>
</tr>
<tr>
<td>1&quot;</td>
<td>8&quot;</td>
<td>.306</td>
<td>7,500</td>
</tr>
</tbody>
</table>

SWL may vary with concrete weight and strength, as well as with insert setback and edge distance. Contact the Dayton/Richmond Technical Service Department for variables.
Concrete Forming

D-12 and D-12-S Rod Clamps

D-12 and D-12-S Rod Clamp Selection Chart

<table>
<thead>
<tr>
<th>Type</th>
<th>Rod Diameter</th>
<th>Safe Working Load</th>
<th>Approx. Safe Working Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>D-12</td>
<td>1/4&quot;</td>
<td>1,125</td>
<td></td>
</tr>
<tr>
<td>D-12-S</td>
<td>1/4&quot;</td>
<td>1,125</td>
<td></td>
</tr>
<tr>
<td>D-12</td>
<td>3/8&quot;</td>
<td>2,250</td>
<td></td>
</tr>
<tr>
<td>D-12-S</td>
<td>3/8&quot;</td>
<td>2,250</td>
<td></td>
</tr>
<tr>
<td>D-12</td>
<td>1/2&quot;</td>
<td>3,750</td>
<td></td>
</tr>
</tbody>
</table>

D-12 Form Clamp

D-14 Tightening Wrench

A-27 and A-27-M Turnbuckle Form Aligners

A-90 Scaffold Bracket Jack