

# The AR TYSCRU

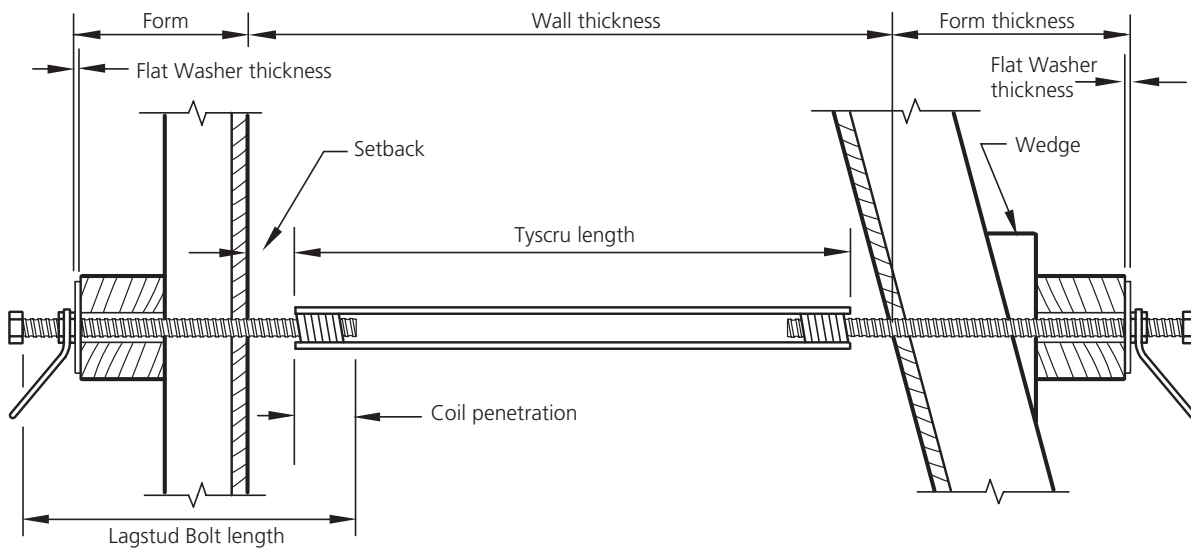


The **AR Tyscru** is an extra strong, resistance welded Ty designed to take the abuse encountered in medium and heavy concrete construction. An extremely simple Ty, capable of many combinations and uses in the field, it may be used with or without Tycones or combined with Continuous Threaded Lagstud to form an Adjustable Tyscru.

### Determining your Tyscru Requirement

**Tyscru:** The Tyscru length is determined by subtracting each set back requirement from the wall thickness at the tie location. Lagstud or lagstud bolt length is determined by adding the form thickness to the set back on one side plus the Tyscru coil length plus 13 mm (½"). Lagstud or Lagstud Bolt are furnished standard in even 50 mm (2") lengths. Select the next higher full unit over actual length determined. For extreme adjustment requirements, 25 mm to 50 mm (1" to 2") may be added.

### Battered Wall Form



SWL is based on an approximate  
**2:1 Safety Factor**

**Wall thickness:** Distance between the form facings at the Tyscru location.

**Set Back:** Required distance of Ty metal from the finished concrete face with or without the use of Tycones. Set back may be required at one or both faces, usually both. Total set back is the sum of set backs from both wall faces. When Tycones are used, their length is equal to the required set back.

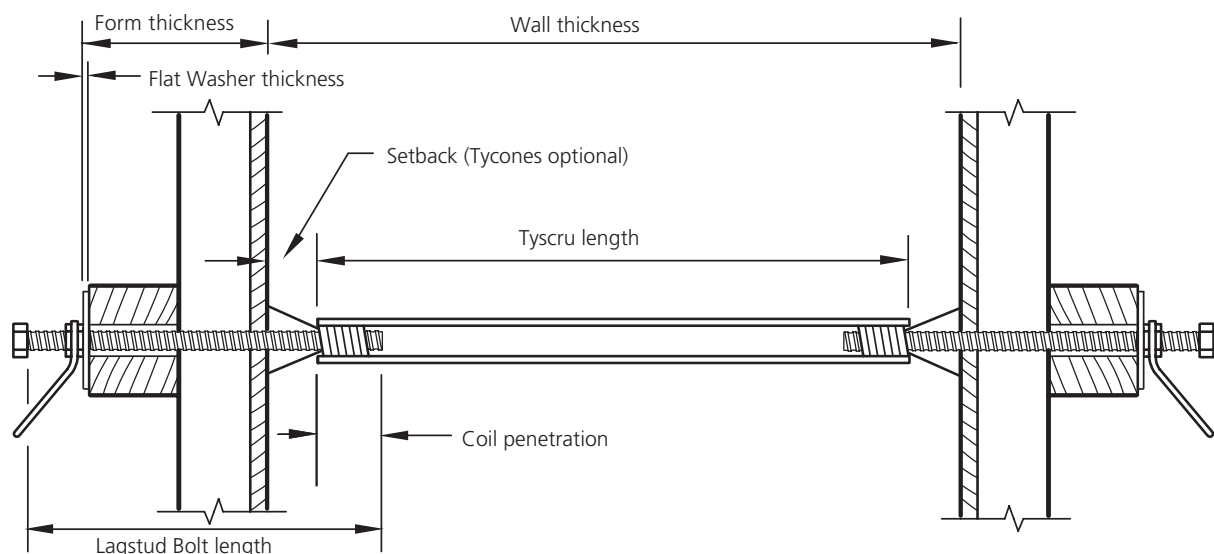
**Form Thickness:** Distance measured between the finished concrete surface to the outside face of the flat washer — includes plywood sheeting material, studs, wales and washer.

**Coil Penetration:** Distance the Lagstud should penetrate the Tyscru coil length plus 13 mm (½").

**General instructions:** For extreme penetration or extended concrete curing requirements, the Lagstud or Lagstud Bolt is normally greased to facilitate removal. To break the bond and permit easy removal, it is a good practice to turn the lagstud or lagstud bolt a quarter to one-half turn, in and out, eight to twelve hours after the concrete has been poured.

The minimum Lagstud Bolt length required is equal to the sum of the flat washer, waler studs, form ply, set back and the coil length plus 13 mm (½").

### Plumb Wall Form



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**SAFE WORKING LOADS**

2-Strut Nominal Diameter			Safe Load		PLASTIC TYCONE SET BACK	
mm	(in)	Tyscru Type	kN	(lbs)		
13 mm	(½")	4.5M	20 kN	(4,500 lbs)	25 mm or 38 mm or 50 mm	(1" or 1½" or 2")
13 mm	(½")	6.75M	30 kN	(6,750 lbs)	25 mm or 38 mm or 50 mm	(1" or 1½" or 2")
13 mm	(½")	9.0M	40 kN	(9,000 lbs)	25 mm or 38 mm or 50 mm	(1" or 1½" or 2")
20 mm	(¾")	9M	40 kN	(9,000 lbs)	25 mm or 50 mm	(1" or 2")
25 mm	(1")	13.5M	60 kN	(13,500 lbs)	25 mm or 50 mm	(1" or 2")

SWL is based on an approximate 2:1 Factor of Safety

**SAFE WORKING LOADS**

4-Strut Nominal Diameter			Safe Load		PLASTIC TYCONE SET BACK	
mm	(in)	Tyscru Type	kN	(lbs)		
*13 mm	(½")	9M	40 kN	(9,000 lbs)	25 mm or 38 mm or 50 mm	(1" or 1½" or 2")
20 mm	(¾")	18M	80 kN	(18,000 lbs)	25 mm or 50 mm	(1" or 2")
25 mm	(1")	18M	80 kN	(18,000 lbs)	25 mm or 50 mm	(1" or 2")
25 mm	(1")	27M	120 kN	(27,000 lbs)	25 mm or 50 mm	(1" or 2")
25 mm	(1")	37M	165 kN	(37,000 lbs)	25 mm or 50 mm	(1" or 2")
32 mm	(1¼")	27M	120 kN	(27,000 lbs)	25 mm or 50 mm	(1" or 2")
32 mm	(1¼")	37M	165 kN	(37,000 lbs)	25 mm or 50 mm	(1" or 2")

**6-Strut Refer to page 81 for details about the 6-Strut Tyscru**

\*Available as a special order.

SWL is based on an approximate 2:1 Factor of Safety

**Minimum Sizes of Tyscru**

Description Tyscru Diameter	Standard		Cone-Tight		Standard Waterseal		Cone-Tight Waterseal	
	mm	(in)	mm	(in)	mm	(in)	mm	(in)
13 mm (½")	100 mm	(4")	100 mm	(4")	150 mm	(6")	150 mm	(6")
13 mm (½")	100 mm	(4")	100 mm	(4")	150 mm	(6")	150 mm	(6")
20 mm (¾")	100 mm	(4")	150 mm	(6")	150 mm	(6")	200 mm	(8")
20 mm (¾")	100 mm	(4")	150 mm	(6")	150 mm	(6")	200 mm	(8")
25 mm (1")	150 mm	(6")	150 mm	(6")	200 mm	(8")	200 mm	(8")
25 mm (1")	150 mm	(6")	150 mm	(6")	200 mm	(8")	200 mm	(8")
20 mm (¾")	150 mm	(6")	150 mm	(6")	200 mm	(8")	200 mm	(8")
25 mm (1")	150 mm	(6")	150 mm	(6")	250 mm	(10")	300 mm	(12")
25 mm (1")	200 mm	(8")	150 mm	(6")	250 mm	(10")	300 mm	(12")
32 mm (1¼")	150 mm	(6")	150 mm	(6")	250 mm	(10")	300 mm	(12")
32 mm (1¼")	200 mm	(8")	200 mm	(8")	250 mm	(10")	300 mm	(12")

## Standard Tyscru

The **AR Standard 2-Strut Tyscru** is available in 13 mm, 20 mm and 25 mm ( $\frac{1}{2}$ ",  $\frac{3}{4}$ " and 1") nominal diameters and may be fabricated to required length to the nearest 3 mm ( $\frac{1}{8}$ ").

The **AR Standard 4-Strut Tyscru** is available in 20 mm, 25mm and 32 mm ( $\frac{3}{4}$ ", 1" and  $1\frac{1}{4}$ ") nominal diameters and may be fabricated to required length to the nearest 3 mm ( $\frac{1}{8}$ ").

### To order, please specify the following information

#### EXAMPLE

Name ..... Standard Tyscru  
 Type ..... 2-strut 4.5M  
 Nominal Diameter .. 13 mm ( $\frac{1}{2}$ " )  
 Tyscru length ..... 560 mm ( $22$ " )  
 Strength ..... 20 kN (4,500 lbs.)  
 Quantity ..... 100  
 SWL is based on an approximate 2:1 Factor of Safety

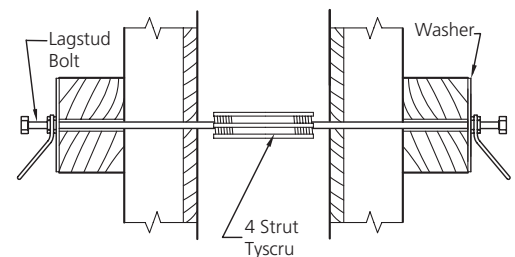
**SAFE WORKING LOAD**  
 see table on page 42  
**2:1 Safety Factor**



2-strut



4-strut



## Cone-Tight Tyscru

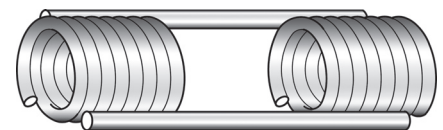
The **AR Cone-Tight Tyscru** has the same capacities as the Standard 2-Strut and 4-Strut Tyscru and is available in 13 mm, 20 mm, 25 mm and 32 mm ( $\frac{1}{2}$ ",  $\frac{3}{4}$ ", 1" and  $1\frac{1}{4}$ ") nominal diameters in a minimum length of 100 mm (4"). Cone-Tight Tycones are readily attached to the protruding coils. For coil protrusion lengths see table below.

### To order, please specify the following information

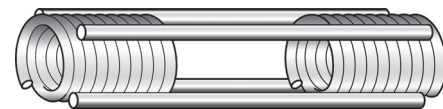
#### EXAMPLE

Name ..... Cone-Tight Tyscru  
 Type ..... 4-strut 18M  
 Nominal diameter .. 20 mm ( $\frac{3}{4}$ " )  
 Tyscru length ..... 300 mm ( $12$ " )  
 Strength ..... 40 kN (9,000 lbs.)  
 Quantity ..... 100  
 SWL is based on an approximate 2:1 Factor of Safety

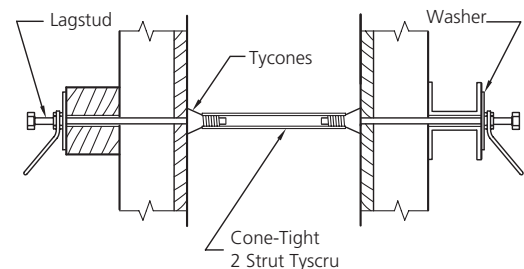
**SAFE WORKING LOAD**  
 see table on page 42  
**2:1 Safety Factor**



2-strut



4-strut

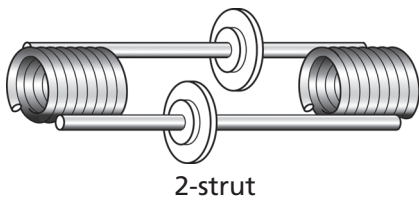


Diameter		Coil Protrusion	
13 mm	( $\frac{1}{2}$ " )	10 mm	( $\frac{3}{8}$ " )
20 mm	( $\frac{3}{4}$ " )	13 mm	( $\frac{1}{2}$ " )
25 mm	(1" )	13 mm	( $\frac{1}{2}$ " )
32 mm	( $1\frac{1}{4}$ " )	13 mm	( $\frac{1}{2}$ " )

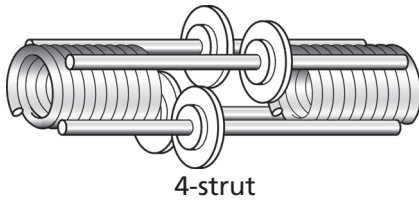
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## Waterseal Tyscru



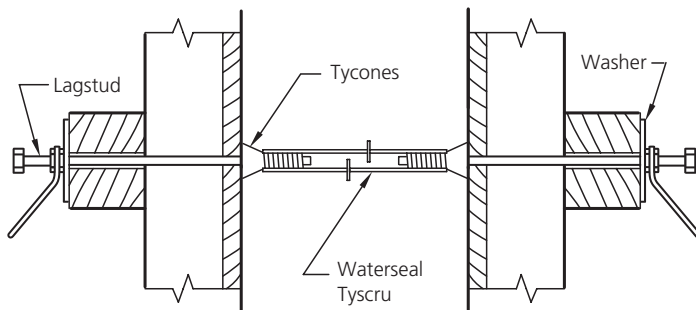
2-strut



4-strut

The **AR Waterseal Tyscru** has the same capacity as the standard 2-Strut and 4-Strut Tyscru. The Waterseal Tyscru is available as standard or cone tight in 13 mm, 20 mm, 25 mm and 32 mm (½", ¾", 1" and 1¼") nominal diameters in a minimum length of 100 mm (4") for a Cone-Tight Tyscru and 150 mm (6") for a Waterseal Tyscru. AR uses a unique manufacturing process to fuse a water stop plastic washer to each wire strut. The plastic washer will break the surface continuity and prevent seepage of water along the struts.

**SAFE WORKING LOAD**  
**See table on page 42**  
**2:1 Safety Factor**



**To order, please specify the following information**

EXAMPLE

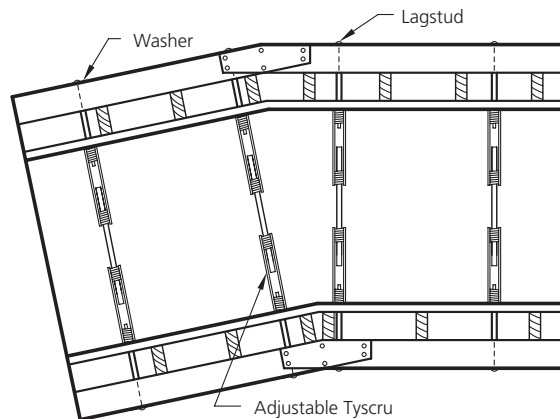
Name	Waterseal Tyscru
Type	2-strut 6.75M
Nominal diameter	13 mm (½")
Tyscru length	250 mm (10")
Strength	20 kN (4,500 lbs)
Quantity	200

SWL is based on an approximate 2:1 Factor of Safety

## Adjustable Tyscru



The **AR Adjustable Tyscru**, consisting of two Tyscru (cone tight one end) and one Continuous Threaded Lagstud, is available in 13 mm, 20 mm, 25 mm and 32 mm diameters (½", ¾", 1" and 1¼") diameters.



**SAFE WORKING LOAD**  
**See table on page 42**  
**2:1 Safety Factor**

**To order, please specify the following information**

EXAMPLE

Name	Adjustable Tyscru
Type	2-strut 4.5M
Nominal diameter	13 mm (½")
Length	225 mm (9")
Strength	30 kN (6,750 lbs)
Quantity	200

SWL is based on an approximate 2:1 Factor of Safety

## SAFE WORKING LOAD

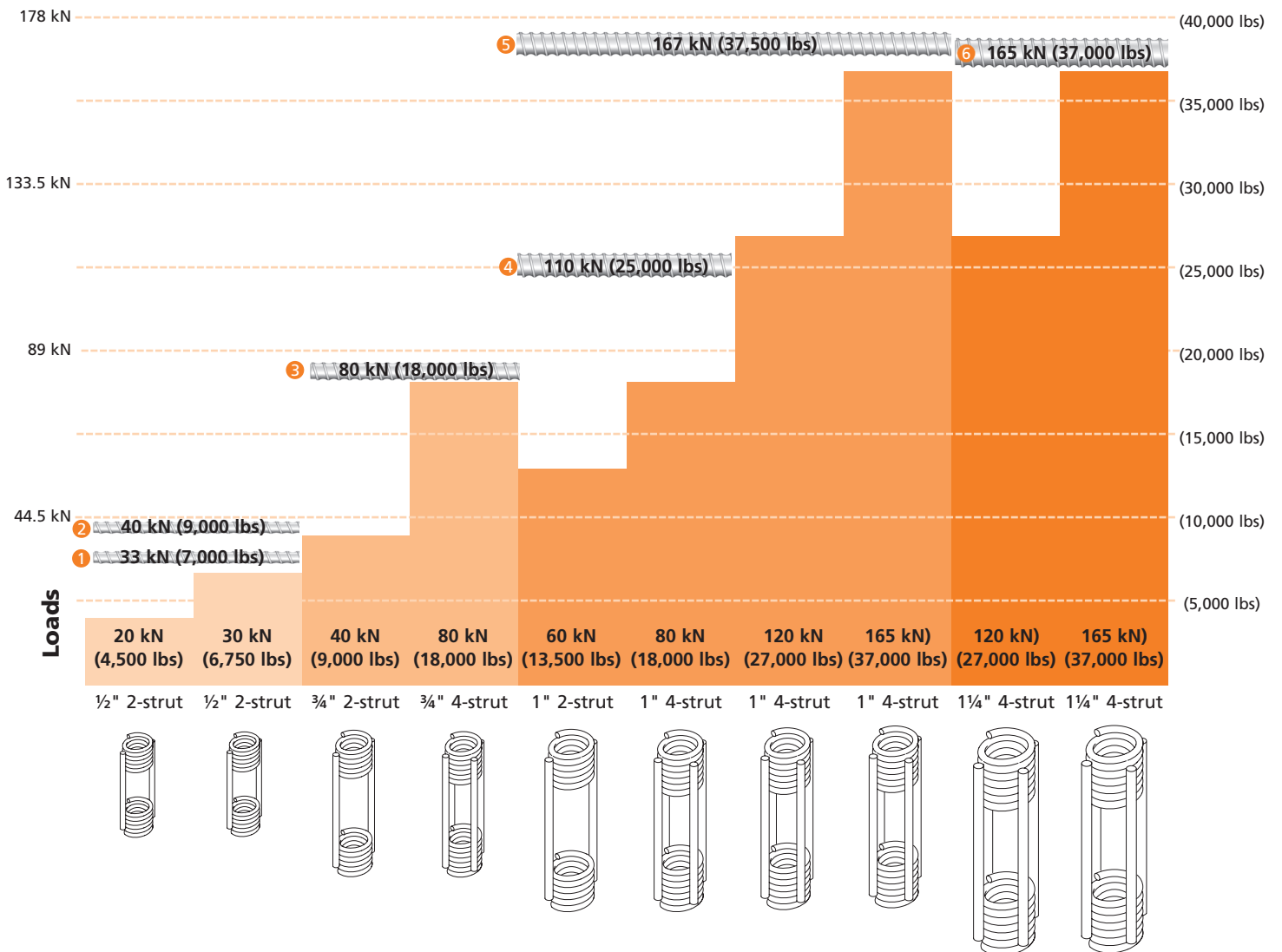
### Strength of Lagstud

½" mild steel    ½" high tensile    ¾" high tensile    ¾" high tensile    1" mild steel    1" mild steel    1" high tensile    1" high tensile    1¼" mild steel    1¼" high tensile\*

Lag Stud	Safe Working Load
<b>1</b> ½" mild steel	33 kN (7,000 lbs)
<b>2</b> ½" high tensile	40 kN (9,000 lbs)
<b>3</b> ¾" high tensile	80 kN (18,000 lbs)
<b>4</b> 1" mild steel	110 kN (25,000 lbs)
<b>5</b> 1" high tensile	167 kN (37,500 lbs)
<b>6</b> 1¼" mild steel	165 kN (37,000 lbs)
<b>7</b> 1¼" high tensile*	265 kN (60,000 lbs)*

SWL is based on an approximate 2:1 Factor of Safety

\*Use double nuts to obtain full capacity of Rod.

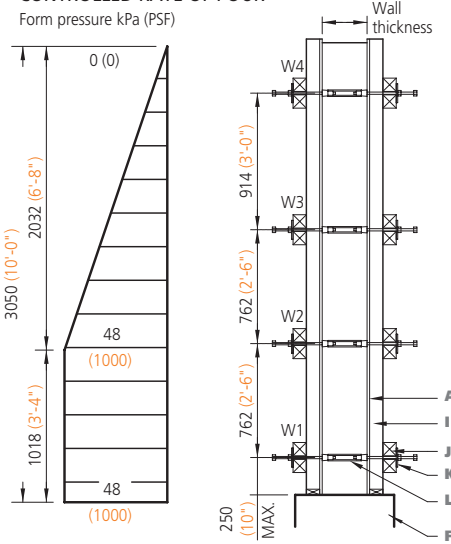


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# Medium Formwork

Typical 3050 mm (10'-0") High Wall Formwork, CONTROLLED RATE OF POUR  
Form pressure kPa (PSF)



**TY and WALER OPTIONS**

Waler Options	Tyscru spacing			
	T2	T2	T2	T2
	4.5 M	4.5 M	9 M	18 M

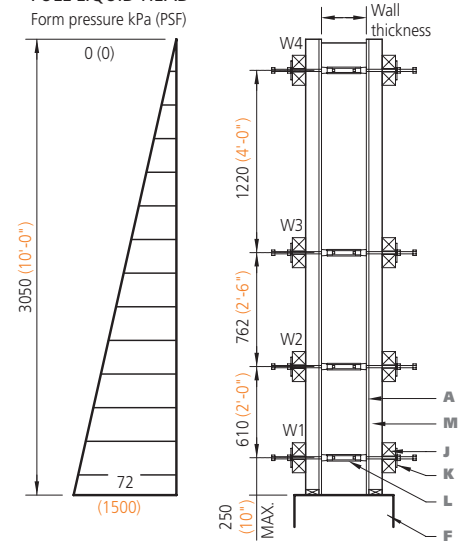
**3050 mm (10'-0") High Wall Controlled Rate of Pour**

Two 89x89 (4x4)	610 (2'-0")	-	-	-
Two Aluminum Channel Beams	-	762 (30")	-	-
Two C4 x 5.4 lb/ft	-	-	914 (36")	1220 (48")

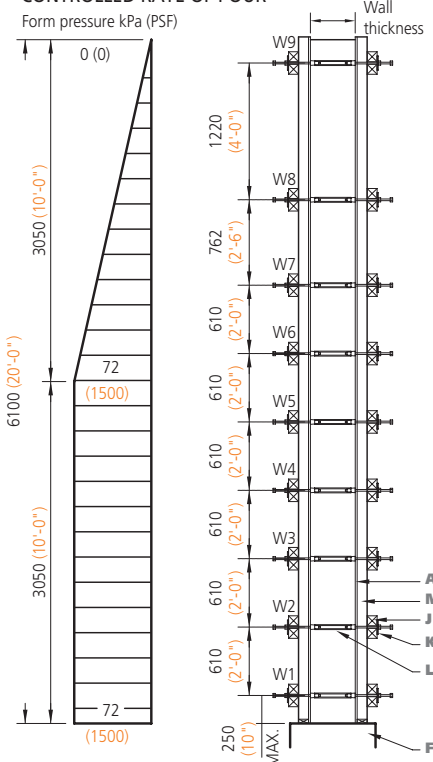
**3050 (10'-0") mm High Wall Full Liquid Head**

Two 89x89 (4x4)	508 (1'-8")	610 (2'-0")	-	-
Two Aluminum Channel Beams	-	762 (2'-6")	-	-
Two C4 x 5.4 lb/ft	-	-	914 (3'-0")	1220 (4'-0")

Typical 3050 mm (10'-0") High Wall Formwork, FULL LIQUID HEAD  
Form pressure kPa (PSF)



Typical 6100 mm (20'-0") High Wall Formwork, CONTROLLED RATE OF POUR  
Form pressure kPa (PSF)



**6100 (20'-0") mm High Wall Controlled Rate of Pour**

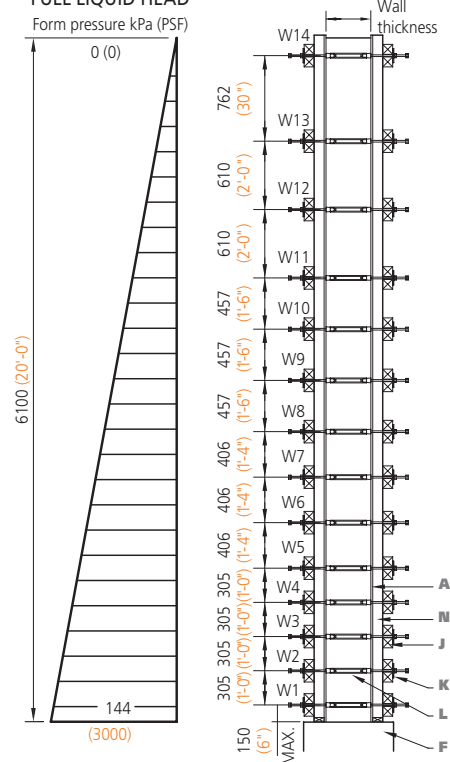
Two 89x89 (4x4)	457 (1'-6")	610 (2'-0")	-	-
Two Aluminum Channel Beams	-	762 (2'-6")	-	-
Two C4 x 5.4 lb/ft	-	-	914 (3'-0")	1220 (4'-0")

**6100 (20'-0") mm High Wall Full Liquid Head**

Two 89x89 (4x4)	457 (1'-6")	610 (2'-0")	-	-
Two Aluminum Channel Beams	-	762 (2'-6")	-	-
Two C4 x 5.4 lb/ft	-	-	914 (3'-0")	1220 (4'-0")

**SEE LEGEND ON PAGE 115**  
**SEE GENERAL NOTES ON PAGE 115**

Typical 6100 mm (20'-0") High Wall Formwork, FULL LIQUID HEAD  
Form pressure kPa (PSF)



**CHART — MAXIMUM RISE OF CONCRETE IN FORMS IN METRES (FEET) PER HOUR**

Liquid Head	5° C (40° F)		10° C (50° F)		15° C (60° F)		20° C (70° F)		25° C (80° F)	
3050 mm (10'-0") High Wall, Controlled Rate of Pour	N/A	N/A	N/A	N/A	1	(3)	2	(6)	3.5	(8)
3050 mm (10'-0") High Wall, Full Liquid Head	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6100 mm (20'-0") High Wall, Controlled Rate of Pour	N/A	N/A	N/A	N/A	2.5	(6)	3.5	(8)	4.5	(10)
6100 mm (20'-0") High Wall, Full Liquid Head	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A