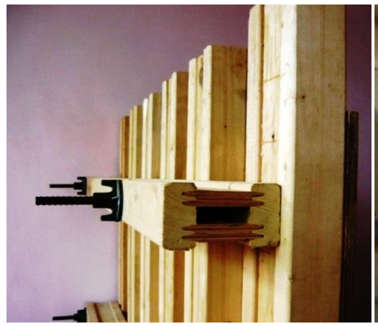
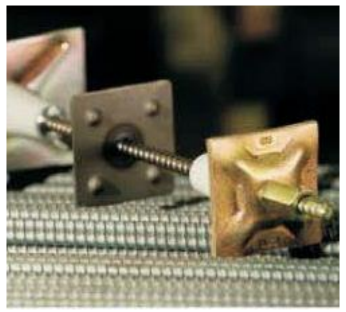
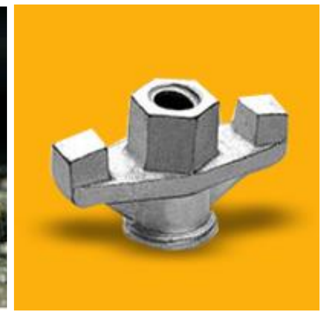
ALTINAY FORMWORK STROY SERVICE

DESIGN BASICS

GREEN CHOICE
WOOD





https://www.youtube.com/watch?v=gtSlF6tuz6c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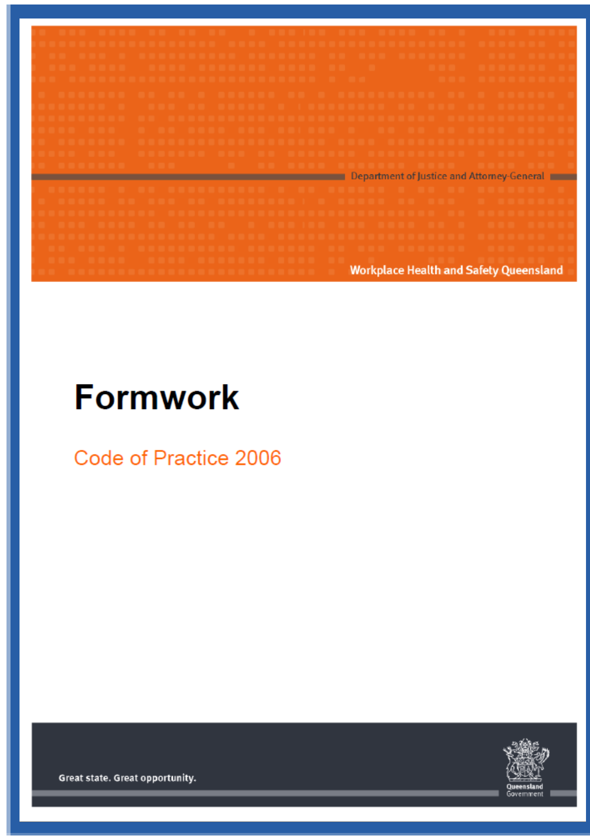
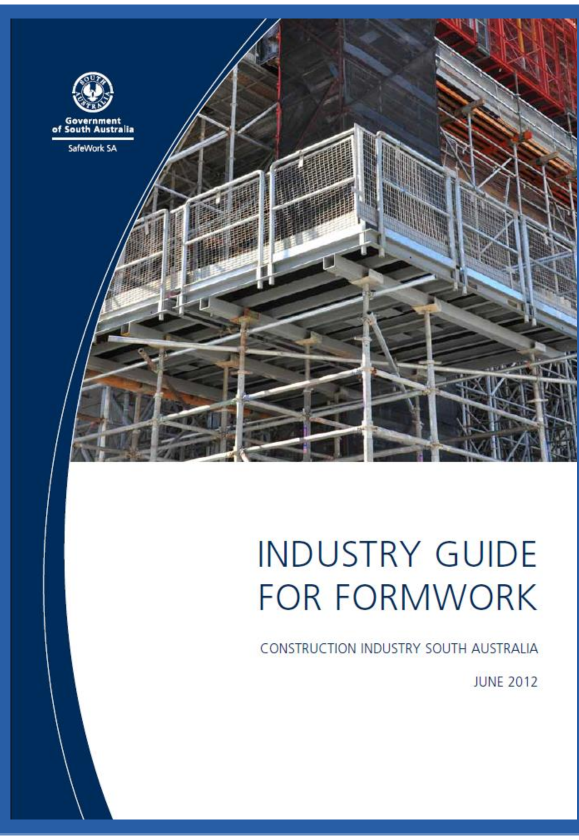
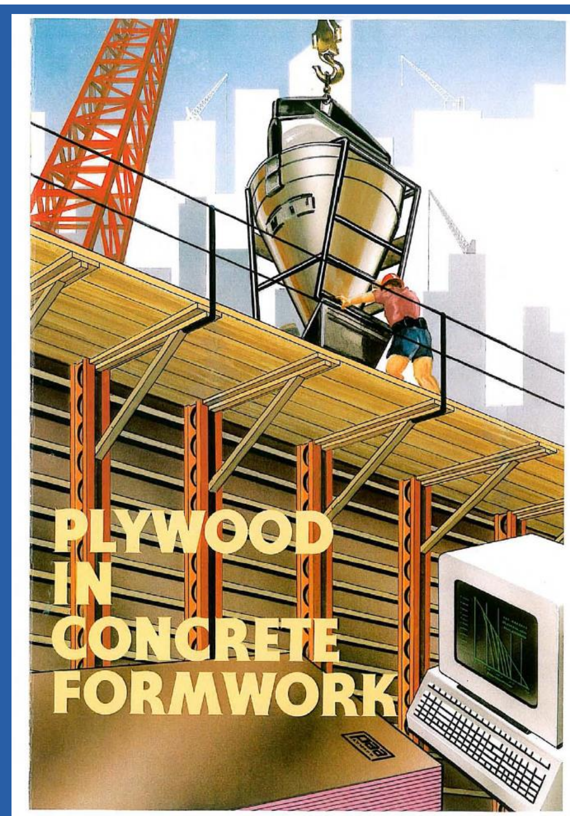
RELATED STANDARDS

GENERAL STANDARDS	
Concrete Structures	DIN 1045
Timber Structures	DIN 1052
Aluminium Structures	DIN 4113
Steel Structures	DIN 18800
LOAD ASSUMPTIONS	
Load Assumptions (Bldg)	DIN 1055
Concrete Pressure	DIN 18218
Tolerances (Bldg)	DIN 18202
SPECIAL STANDARDS	
Working Platforms	DIN 4420
Shoring Systems	DIN 4420
Mobile Scaffolds	DIN 4422
Light Scaffolds Spindels	DIN 4425
Tie Rods	DIN 18216
Scaffold Couplers	DIN EN 74
Steel Probs with Extension	DIN EN 1065







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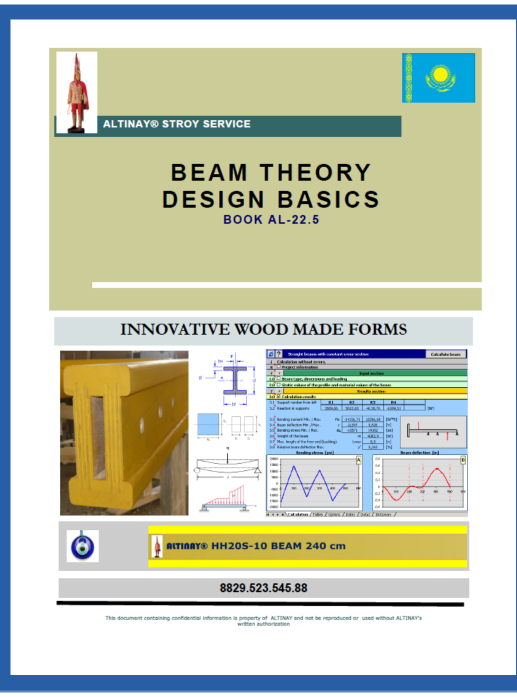
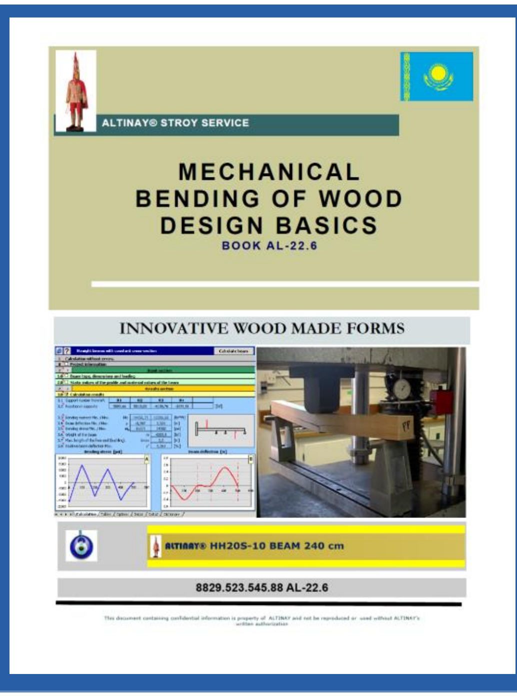
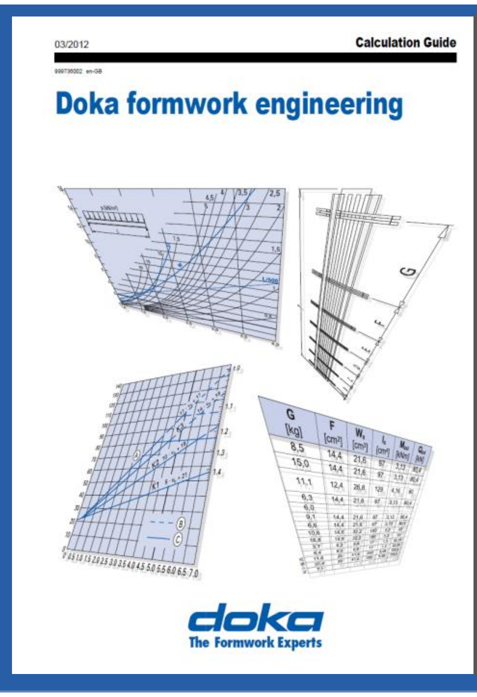
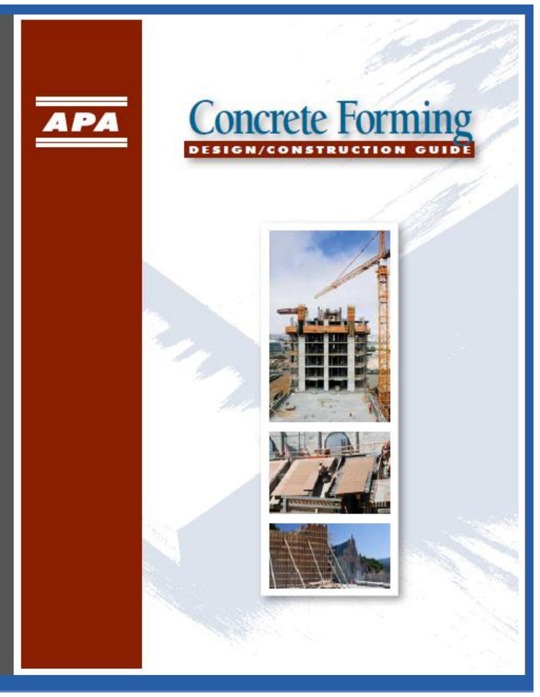
GREEN CHOICE WOOD

Indian	
IS 14687-1999	Falsework for concrete structure guidelines
IRC 87-1984	Guidelines for the design and erection of falsework for road bridges
IS 2750-1964 (1995)	Specification for steel scaffoldings
International	
ACI 347-04	Guide to formwork for concrete
ACI 347.2 R-05	Guide for shoring / reshoring of concrete multi-story buildings
ACI SP-4	Formwork for concrete
BS 5975-2008	British standard code for practice for temporary works procedures and the permissible stress design of falsework
DIN 4420 & 4421	German standard for formwork
DIN 18218	Pressure of fresh concrete on vertical formwork
CIRIA Report 108	Concrete pressure on formwork









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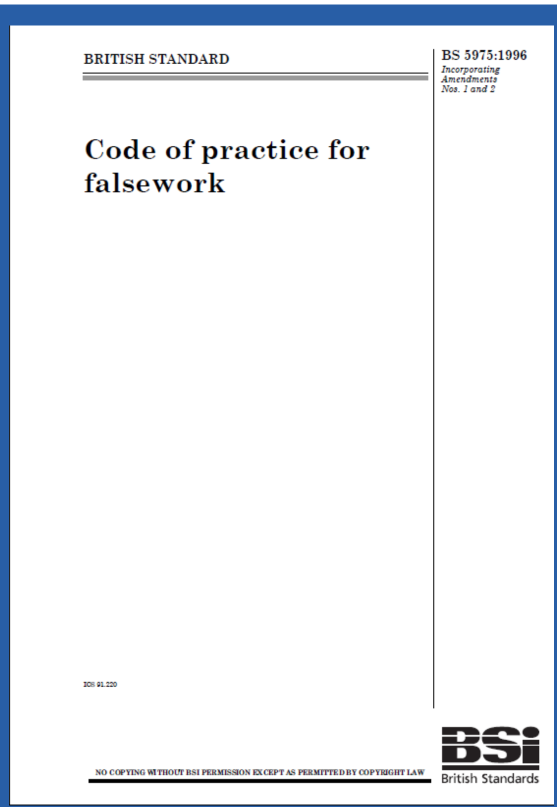

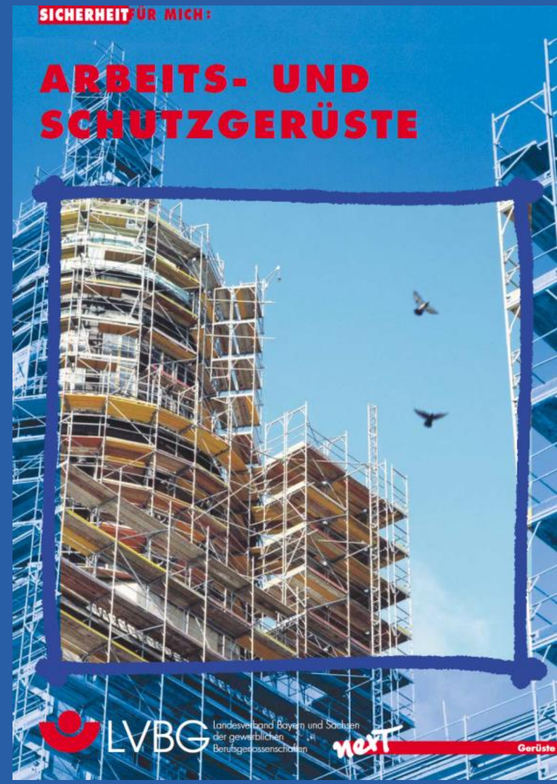

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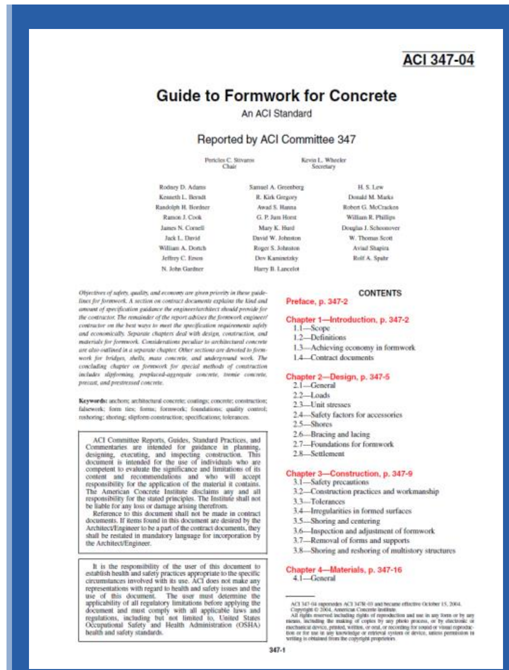

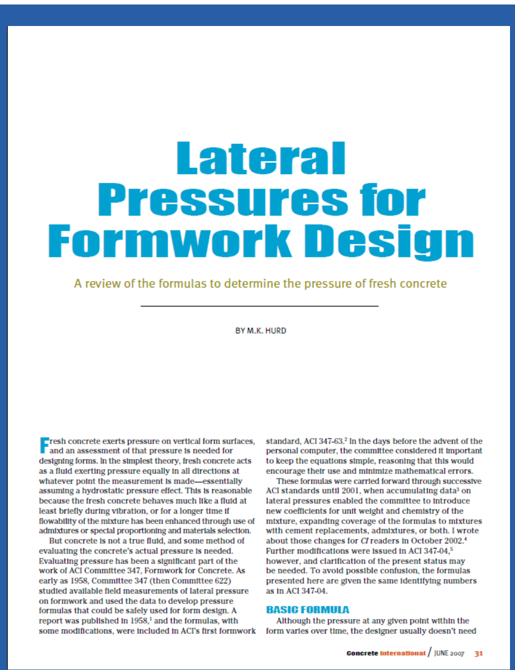

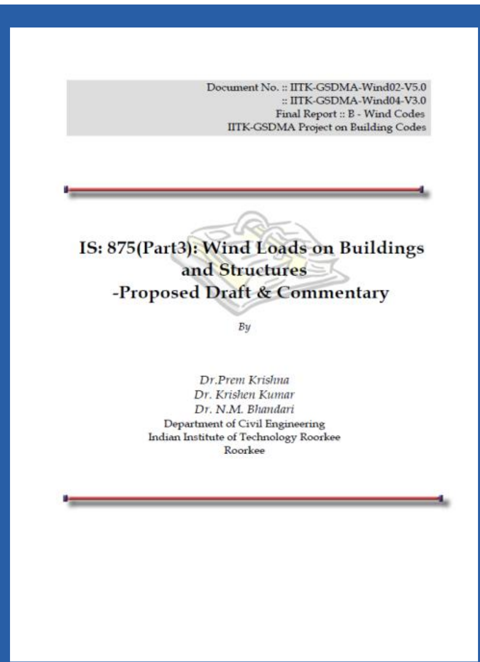

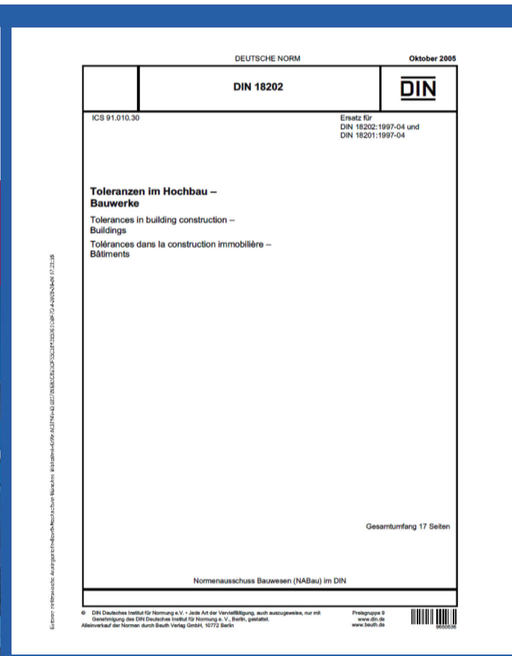

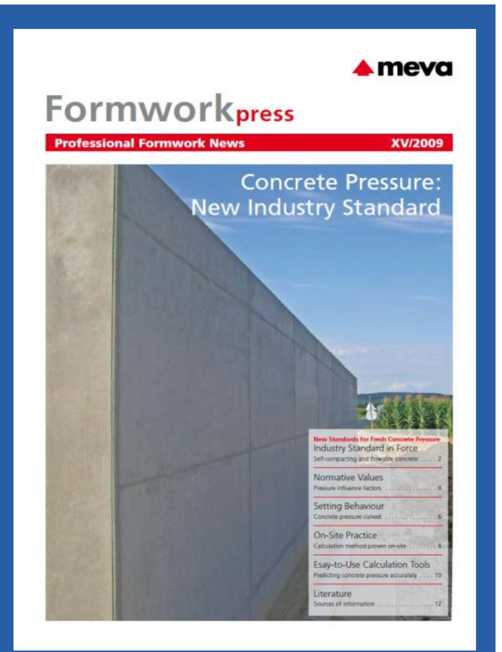

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UNIT CONVERSION

Metric System

Length/Uzunluk

	Yard	Foot	Inch	Meter/cm
1 Mile	1760	5280	6280	1609.3
1 Yard		3	36	0.9144
1 Foot	0.3333		12	0.3048
1 Inch	0.0278	0.083		2.54
1 Meter	1.0936	3.281	39.37	

	Yard²	Foot²	Inch²	Meter/cm²
1 Mile²	3097600	27878400	4014489600	2588881
1 Yard²		9	1296	0.8361
1 Foot²	0.1111		144	0.0929
1 Inch²	0.0008	0.0069		6.4516
1 Meter²	1.1960	10.76	1550	
1 Acre²	4840	43546	6272850	4047

in		1"	2"	3"	4"	5"	6"
	mm	25.40	50.80	76.20	101.60	127.00	152.40
1/16"	1.587	26.99	52.39	77.79	103.19	128.59	153.99
1/8"	3.175	28.58	53.98	79.38	104.78	130.18	155.58
3/16"	4.761	30.16	55.56	80.96	106.36	131.76	157.16
1/4"	6.350	31.75	57.15	82.56	107.95	133.35	158.77
3/8"	9.525	34.93	60.33	85.73	111.13	136.53	161.93
1/2"	12.700	38.10	63.50	88.90	114.30	139.70	165.10
5/8"	15.875	41.28	66.68	92.08	117.48	142.88	168.29
3/4"	19.050	44.45	69.85	95.25	120.65	146.05	171.45
7/8"	22.225	47.63	73.03	98.43	123.83	149.23	174.63

Shape	Formula	Shape	Formula
Triangle	Area = ½b × h b = base h = height	Square	Area = a^2 a = length of side
Rectangle	Area = w × h w = width h = height	Parallelogram	Area = b × h b = base h = vertical height
Trapezoid	Area = ½(a+b) × h h = vertical height a, b are the parallel sides	Circle	Area = πr^2 r = radius
Ellipse	Area = πab a= half of minor axis b= half of major axis	Sector	Area = $\frac{1}{2} r^2 \theta$ r = radius θ = angle in radians

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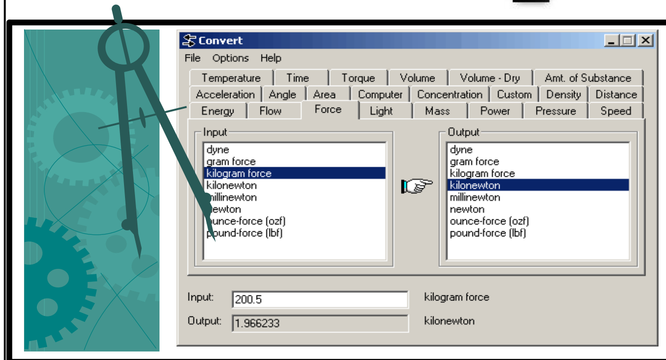

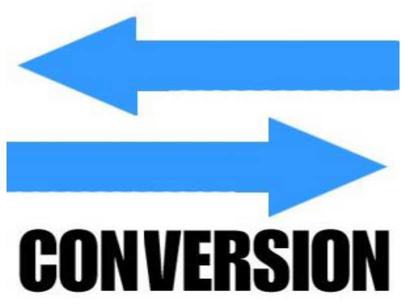

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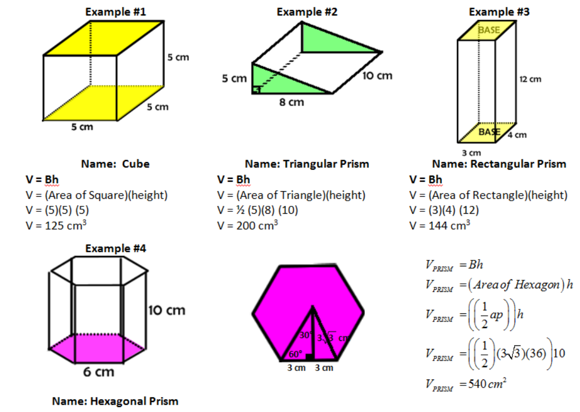
UNIT CONVERSION

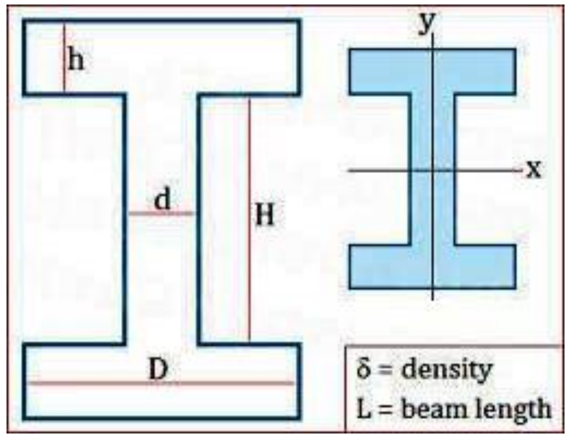
Instant Capacity and Volume Conversion

convert units easily

http://www.convert-me.com/en/convert/volume/

	Yard3	Foot3	Inch3	Meter3/Liter
1 Yard3		27 ft3	46656 in3	0.7646 m3
1 Foot3	0.0037 yd3		1728 in3	0.02832 m3
1 Inch3	0.0000215 yd3	0.0006 ft3		0.0000164 m3
1 Meter3	1.307 yd3	35.32 ft3	61023 in3	
1 Gallone (UK)	0.00595 yd3	0.1605 ft3	277.4 in3	4.546Lt
1 Gallone (US)	0.00495 yd3	0.1337 ft3	231 in3	3.785 Liter





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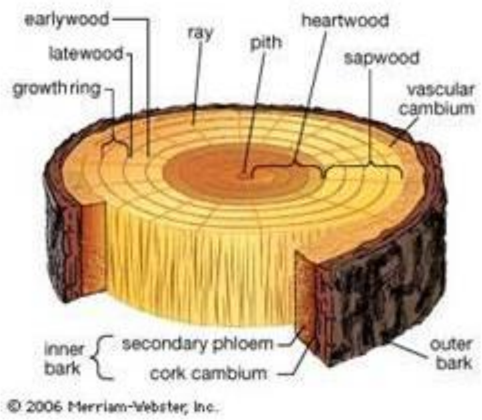
http://www.had2know.com/technology/conversion-calculator-length-area-volume.html

http://www.fao.org/docrep/w5796e/w5796e06.htm



http://www.onlineconversion.com/density_common.htm

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Instant Area Conversion

convert units easily

http://www.convert-me.com/en/convert/weight/

	Pounds	Kilogram
1 Pound		0.4536 kg
1 Kilogram	2.2046 Lbs	
1 US Tone	2000.00 Lbs	907.20 kg
1 UK Ton	2240.00 Lbs	1016.00 kg
1 Mton	2204.60 Lbs	1000.00 kg
1 Ounce	0.0624 Lbs	0.0283 kg

Units of Force Instant Conversion

convert units easily

http://www.convert-me.com/en/convert/force/

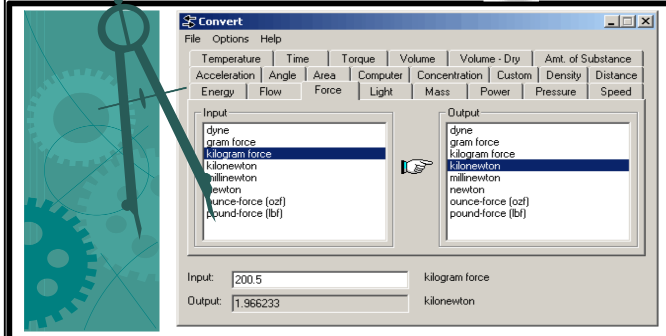
	Newton	Pounds
1 Lbs	4.4482 N	
1 Kip	4448	1000 Lbs
1 N		0.2248 Lbs
1 kN		224.8 Lbs
1 lLbs/ft	0.0146 kN/m	
1 kN/m		68.6 kN/ft
1 ksi (kips/in2)	6.89 MN/m2	1000 psi
1 psi (Lbs/in2)	6.89 kN/m2	
1 psf (Lbs/ft2)	0.0479 kN/m2	
1 kN/m2		20.9 Lbs/ft2

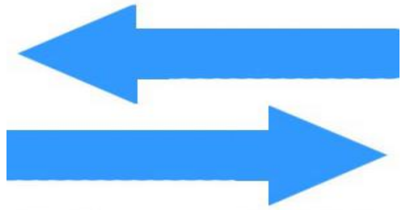
http://en.wikipedia.org/wiki/Kilogram-force

The SI base unit for mass is the kilogram.
1 kilogram is equal to 9.80665002864 Newton.

Wikipedia
The Free Encyclopedia

http://www.appmeas.co.uk/free-engineering-unit-conversion-program.html





CONVERSION

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UNIT CONVERSION

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Instant Temperature Conversion
convert units easily

http://www.convert-me.com/en/convert/temperature/

http://www.world-climates.com/city-climate-almaty-kazakhstan-asia/

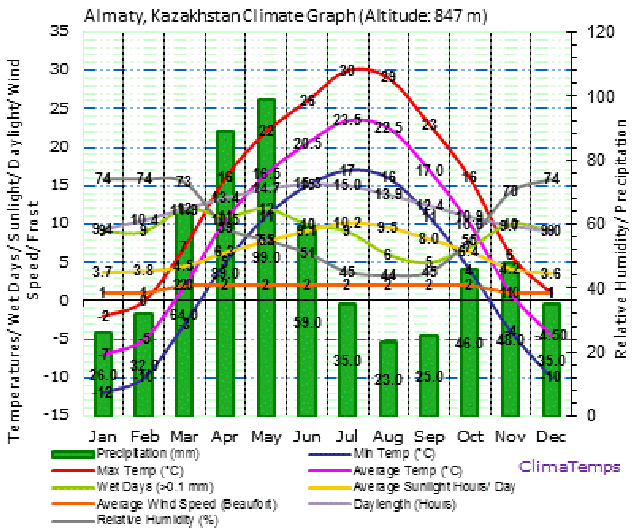
	Celcius	Fahrenheit
Celcius		9/5+32
	(x-32)5/9	

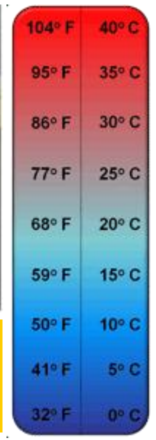
HORIZONTAL LOADS-WIND LOADS (DIN 1055)

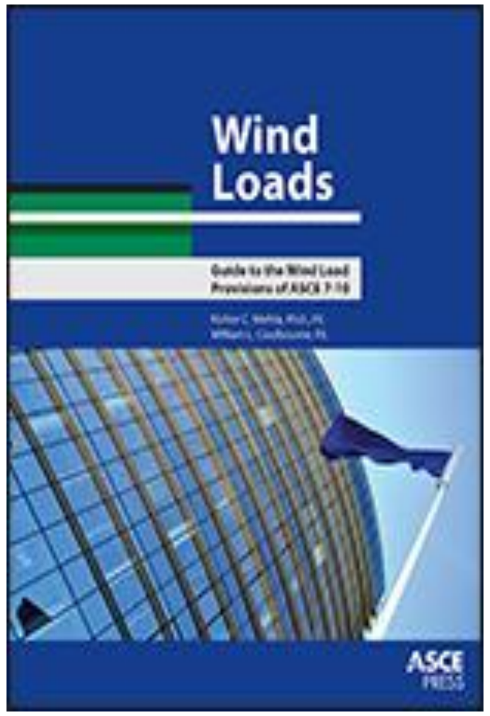
	m/s	km/hr	q (kN/m2)	cp=1.3 kN/m2
	WIND VELOCITY		DYNAMIC WIND PRESSURE	WIND PRESSURE w FOR WALL FORMWORK
0 to 8 m above grade	28.3	102	0.5	0.65
8 to 20m above grade	35.8	129	0.8	1.04
20 to 100m above grade	42	151	1.1	1.43
Over 100m	45.6	164	1.3	1.69

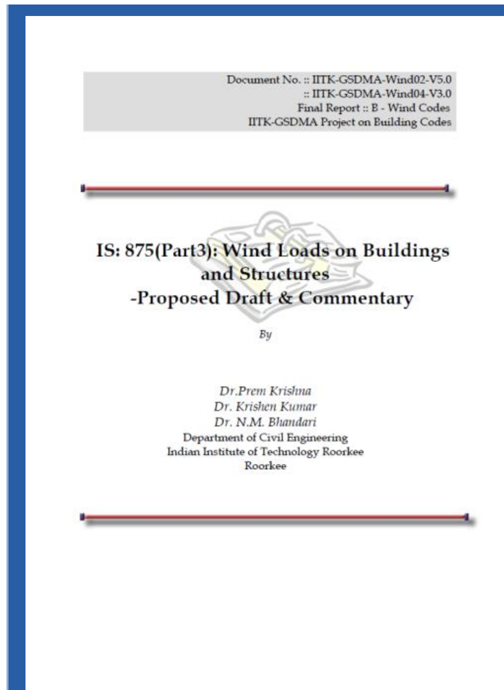
Wind pressure **w** is obtained by multiplying the dynamic wind pressure **p** with the coefficient **cp**

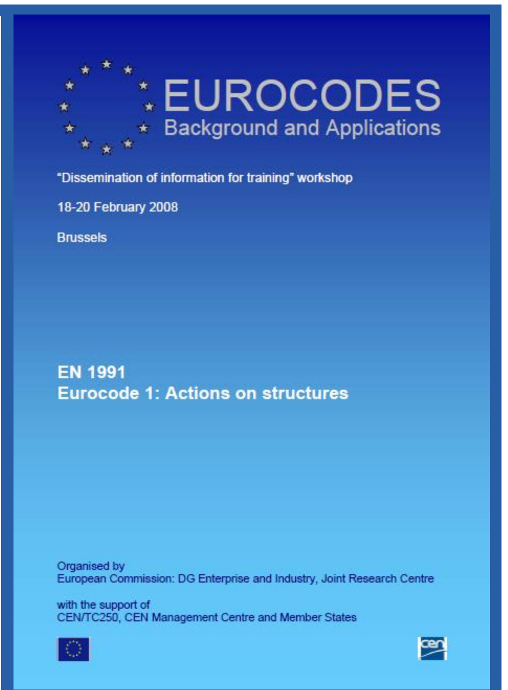
Generally for wall form work cp=1.3







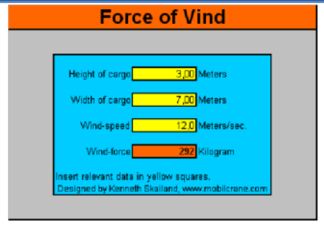




$$W_e = q_p(z_e)\cdot c_p$$

w_e	Wind pressure on surface in kN/m²
$q_p(z_e)$	Peak velocity pressure in kN/m² (old term: impact pressure)
z_e	Reference height, height above ground
c_p	Aerodynamic coefficient

Force of Vind



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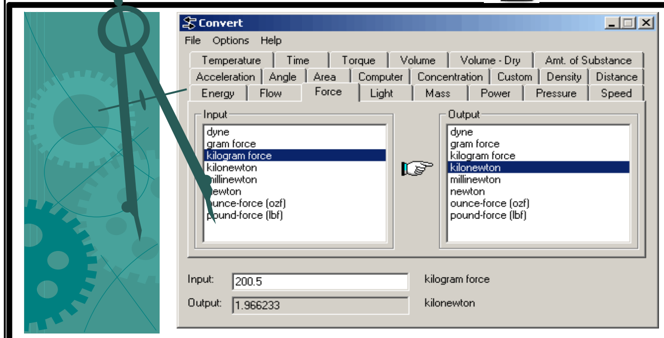
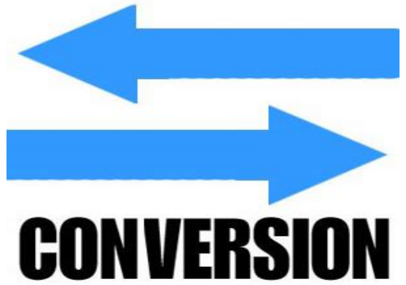
http://www.steelconstruction.info/Design_software_and_tools





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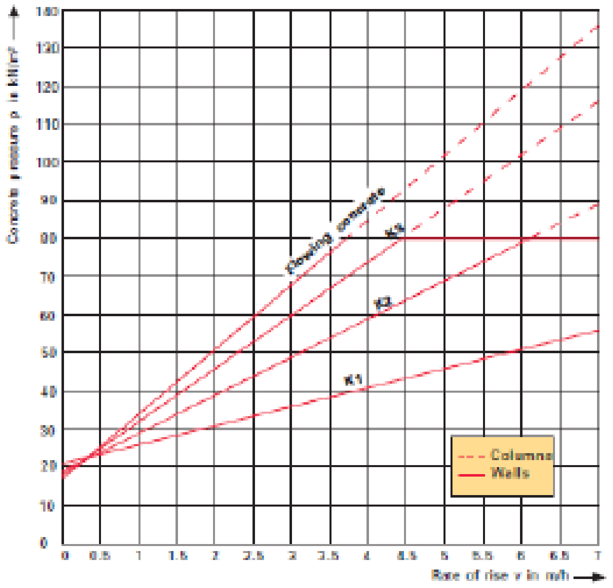
FRESH CONCRETE PRESSURE ON VERTICAL FORMWORK

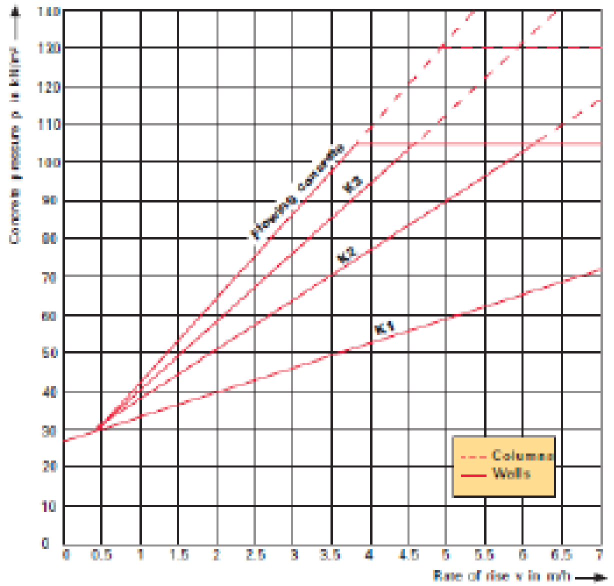
A

Examples for concrete pressures with differing concrete temperatures, with and without retarding agent.

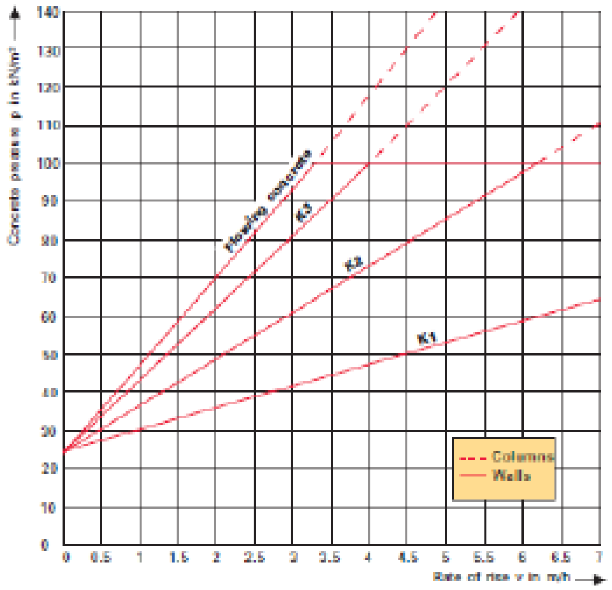
1. Concrete temperature 15 °C without retarding agent



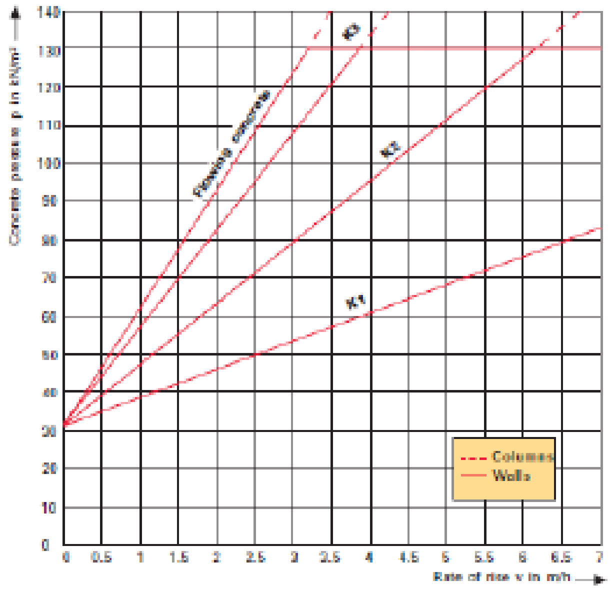
2. Concrete temperature 5 °C without retarding agent



3. Concrete temperature 15 °C with 5 h retarding agent



4. Concrete temperature 5 °C with 5 h retarding agent



X Gün sonra ulaşılabilecek beton mukavemeti tahmini

Santigrad cinsinden Sertleşme sıcaklığı	Portland 45 Betonun X gün sonra ulaşabilecegi beton mukavemeti yüzdesi							
	1	2	3	5	7	10	14	28
0°C			20%	29%	35%	41%	45%	50%
5°C			30%	41%	49%	56%	60%	66%
10 °C	16%	32%	44%	59%	70%	80%	88%	96%
20 °C	29%	46%	58%	70%	80%	88%	94%	100%
30 °C	45%	64%	73%	83%	90%	96%	99%	101%

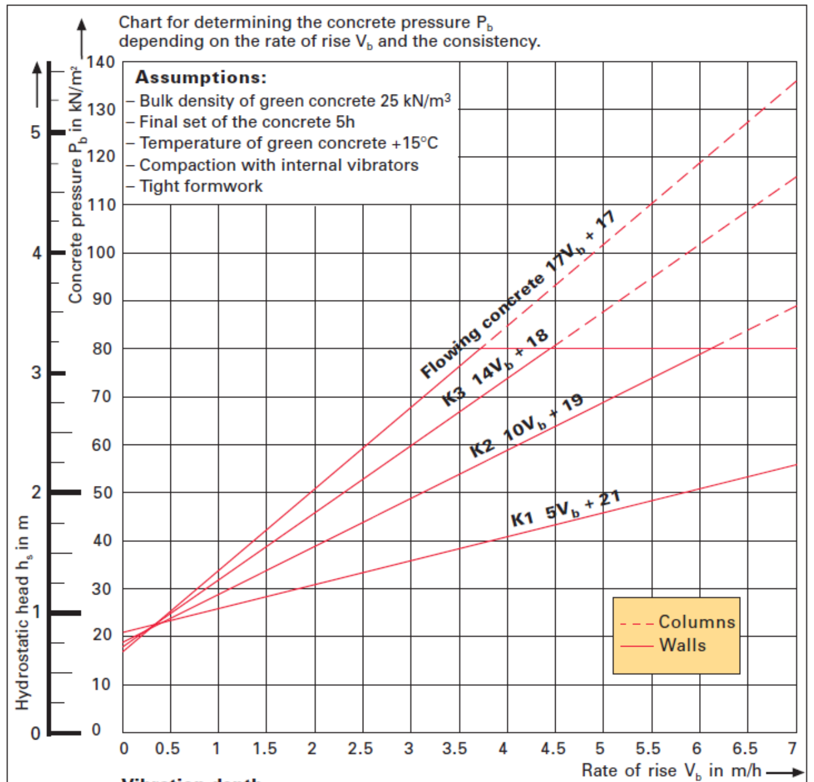
X Gün sonra ulaşılabilecek beton mukavemeti tahmini

Santigrad cinsinden	Portland 35 Betonun X gün sonra ulaşabilecegi beton mukavemeti yüzdesi							
	Number of Days							
	1	2	3	5	7	10	14	28
0°C			16%	26%	34%	42%	49%	58%
5°C			30%	41%	49%	56%	62%	71%
10°C		35%	42%	55%	65%	75%	85%	99%
20 °C	35%	45%	52%	63%	71%	80%	88%	100%
30 °C	42%	53%	61%	72%	80%	88%	95%	106%

http://www.peri.de/ww/en/knowledge/formwork_load_monitor/formwork_load_monitorapp.cfm

DIN 18218

Concrete pressure



Vibration depth

The concrete pressure obtained from the chart of Figure 1 applies for a vibration depth h_r up to the hydrostatic head h_s. If the vibration depth is intended to be greater than h_s, and the other assumptions specified on the chart remain the same, the fresh concrete pressure is to be increased to $P_b = 25h_r$.

Consistency range

old		new	
K1	v = 1.45 – 1.26	KS (stiff)	v ≥ 1.20
K2	a ≤ 40 cm	KP (plastic)	a = 35 – 41 cm
K3	a = 41 – 50 cm	KR (high slump)	a = 42 – 48 cm
Flow. concr.	a = 51 – 60 cm	KF (flowing)	a = 49 – 60 cm

V = compaction according to Walz   a = slump

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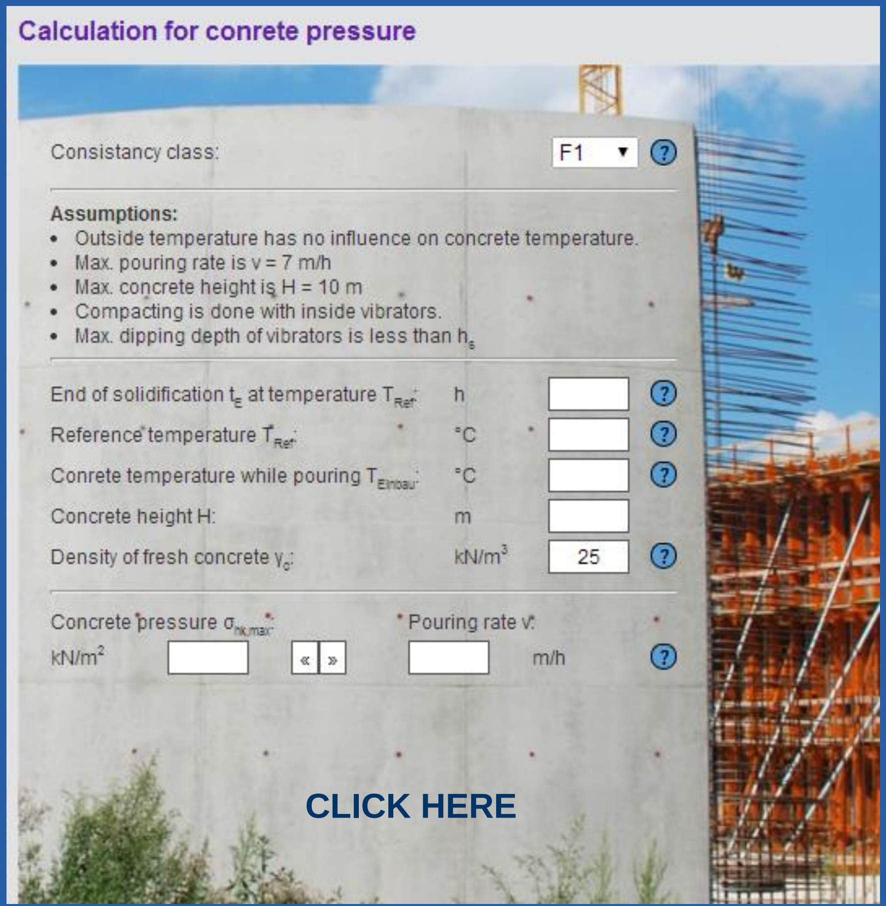
FRESH CONCRETE PRESSURE ON VERTICAL FORMWORK

Concrete consistency acc. to DIN 18218 (1980) or DIN 1045 (1978)	Slump [a] acc. to DIN 1045 (1978) Diameter in mm	Concrete consistency acc. to DIN 1045-2 / DIN EN 206-1 (2001)	Slump [a] acc. to DIN 1045-2 (2001) Diameter in mm
K1	–	F1	≤ 340
K2	≤ 400	F2	350 to 410
K3	410 to 500	F3	420 to 480
Flowable concrete [a]	500 to 600 [a]	F4	490 to 550
– [b]		F5	560 to 620
		F6	≥ 630
		SCC	≥ 700 [c]

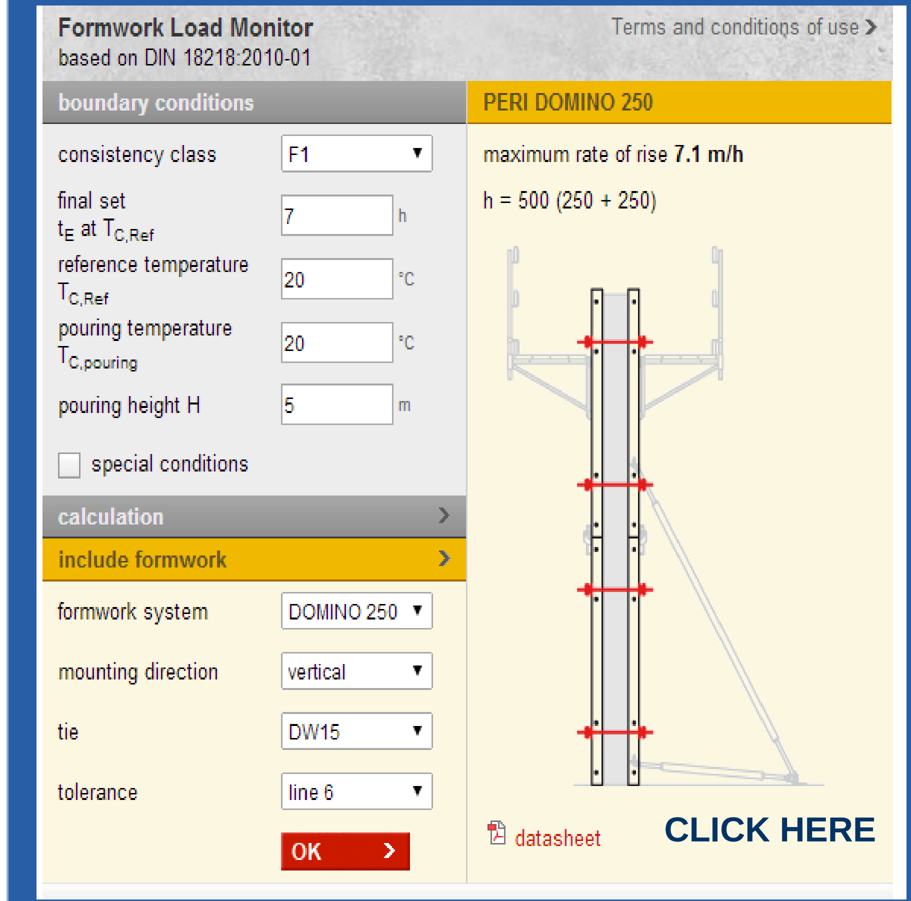
[a] Flowable concrete is defined acc. to the DAfStb-guideline for flowable concrete (1995).
[b] The concrete consistencies F5, F6 and SCC are not covered by the DIN standard 18218 (1980).
[c] For a slump [a] ≥ 700 mm the DAfStb-guideline "Self-compacting concrete" has to be considered.

ONLINE CALCULATION
DIN 18218 (1980)



www.paschal.de

ONLINE CALCULATION
DIN 18218 (1980)



ONLINE CALCULATION
DIN 18218 (1980)

www.doka.com

http://www.paschal.de/english/service/concretepressurecalculation.php

http://www.peri.co.za/en/knowledge/formwork_load_monitor/formwork_load_monitorapp.cfm

http://www.doka.com/web/tools/apps/doka-apps.me.php

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CONCRETE TYPES AND CONSISTENCY

A

Cement Basics-Types of Cement

» Types of Portland Cement

Portland cements are hydraulic cements composed primarily of hydraulic calcium silicates. ASTM C 150, *Standard Specification for Portland Cement*, recognizes eight types of Portland cement:

Type I and Type IA*
General purpose cements suitable for all uses where the special properties of other types are not required.

Type II and Type IIA*
Type II cements contain no more than 8% tricalcium aluminate (C_3A) for moderate sulfate resistance. Some Type II cements meet the moderate heat of hydration option of ASTM C 150.

What's a Type I/II cement?
Portland cements that meet Type II requirements also must meet all of the requirements of Type I cements, except those for compressive strength. Type I/II cements meet both the C_3A requirements of Type II cement and the compressive strength requirements of Type I cements.

Type III and Type IIIA*
Chemically and physically similar to Type I cements except they are ground finer to produce higher early strengths.

Type IV
Used in massive concrete structures where the rate and amount of heat generated from hydration must be minimized. It develops strength slower than other cement types.

Type V
Contains no more than 5% C_3A for high sulfate resistance.

*Air-entraining cements

» Types of Blended Cements

Blended hydraulic cements are produced by intimately and uniformly intergrinding or blending two or more types of fine materials. The primary materials are portland cement, ground granulated blast furnace slag, fly ash, silica fume, calcined clay, other pozzolans, hydrated lime, and pre-blended combinations of these materials.
ASTM C 595, *Specification for Blended Hydraulic Cements*, recognizes five primary classes of blended cement:
Type IS-Portland blast furnace slag cement
Type IP and Type P-Portland-pozzolan cement
Type I(PM)-Pozzolan-modified portland cement
Type S-Slag cement
Type I(SM)-Slag-modified portland cement

This information was excerpted from PCA's *Portland, Blended, and Other Hydraulic Cements*, a 32-page publication covering numerous cement types and their physical properties.

» Types of Hydraulic Cements

All portland and blended cements are hydraulic cements. "Hydraulic cement" is merely a broader term. ASTM C 1157, *Performance Specification for Hydraulic Cements*, is a performance specification that includes portland cement, modified portland cement, and blended cements. ASTM C 1157 recognizes six types of hydraulic cements:
Type GU-general use
Type HE-high early strength
Type MS-moderate sulfate resistance
Type HS-high sulfate resistance
Type MH-moderate heat of hydration
Type LH-low heat of hydration

This information was excerpted from PCA's *Portland, Blended, and Other Hydraulic Cements*, a 32-page publication covering numerous cement types and their physical properties.

Other resources for information on Portland cement production and technology:

Cement Specification Emphasizes Performance
ASTM C 1157, which now includes both blended and Portland cements, moves away from requirements on chemical composition

Portland Cement Characteristics-1998
Results of a survey of cement manufacturers compiles information on currently available cements

Prescriptive vs. Performance Specifications for Cements
A description of the differences and some of the potential benefits and drawbacks of each

Concrete consistency acc. to DIN 18218 (1980) or DIN 1045 (1978)	Slump [a] acc. to DIN 1045 (1978) Diameter in mm	Concrete consistency acc. to DIN 1045-2 / DIN EN 206-1 (2001)	Slump [a] acc. to DIN 1045-2 (2001) Diameter in mm
K1	–	F1	≤ 340
K2	≤ 400	F2	350 to 410
K3	410 to 500	F3	420 to 480
Flowable concrete [a]	500 to 600 [a]	F4	490 to 550
– [b]		F5	560 to 620
		F6	≥ 630
		SCC	≥ 700 [c]

[a] Flowable concrete is defined acc. to the DAfStb-guideline for flowable concrete (1995).
[b] The concrete consistencies F5, F6 and SCC are not covered by the DIN standard 18218 (1980).
[c] For a slump [a] ≥ 700 mm the DAfStb-guideline "Self-compacting concrete" has to be considered.

Consistency means amount of water needed to prepare a plastic mix.Consistency test is done using Vicat's appartus.Consistency of cement should be less than 30%consistency test is used to find the amount of water to be mixed with cement.It is necessary to find the consistency because amount of water present in the cement paste may affect the setting time.standard consistency is indicated by the vicat plunger reading (5 to 7) from the bottom of mould(IS 4031 (part 4)1988)

*The **concrete slump test** is an empirical test that measures the workability of fresh concrete.*

More specifically, it measures the consistency of the concrete in that specific batch. This test is performed to check the consistency of freshly made concrete. Consistency is a term very closely related to workability. It is a term which describes the state of fresh concrete. It refers to the ease with which the concrete flows. It is used to indicate the degree of wetness. Workability of concrete is mainly affected by consistency i.e. wetter mixes will be more workable than drier mixes, but concrete of the same consistency may vary in workability. It is also used to determine consistency between individual batches.

The test is popular due to the simplicity of apparatus used and simple procedure. Unfortunately, the simplicity of the test often allows a wide variability in the manner that the test is performed. The slump test is used to ensure uniformity for different batches of similar concrete under field conditions,[1]:127,128 and to ascertain the effects of plasticizers on their introduction.[1]:134 In India this test is conducted as per IS specification.

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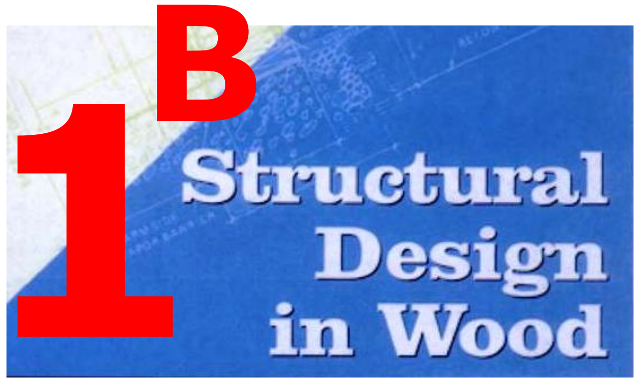


FORMWORK LINING MATERIAL

Formwork and concrete form types[edit]
Formwork comes in several types:
Traditional timber formwork. The formwork is built on site out of timber and plywood or moisture-resistant particleboard. It is easy to produce but time-consuming for larger structures, and the plywood facing has a relatively short lifespan. It is still used extensively where the labour costs are lower than the costs for procuring reusable formwork. It is also the most flexible type of formwork, so even where other systems are in use, complicated sections may use it.

http://en.wikipedia.org/wiki/Formwork

E
ELACTICITY MODULE

see: AL-22.4

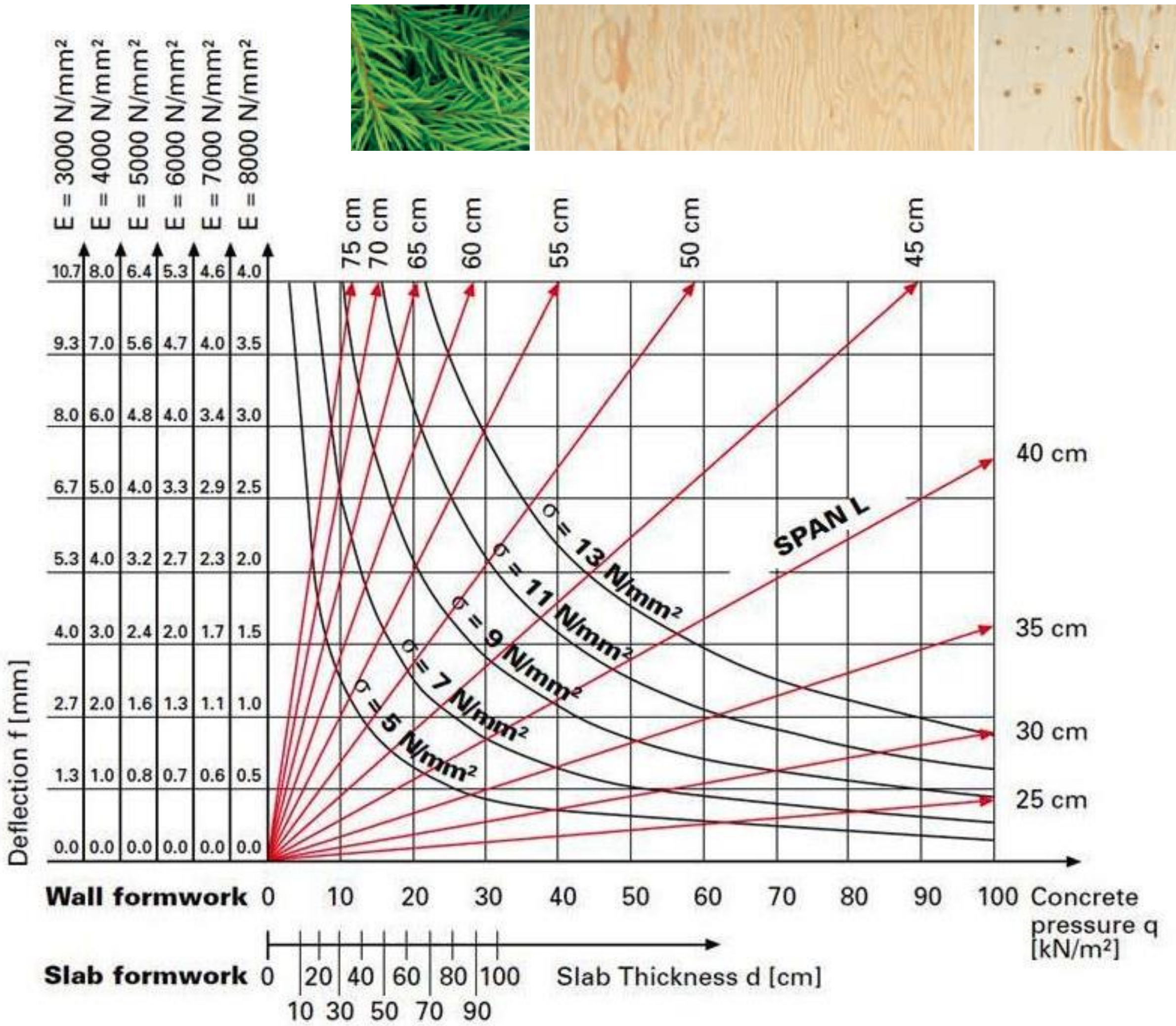


TABLE 3.1: BASIC WORKING STRESSES AND ELASTIC MODULI OF FORMWORK PLYWOOD (MPa)

Stress Grade	Stress Value MPa					
	Bending F_b	Tension F_t	Shear F_s	Compression F_c	Modulus of Elasticity E	Modulus of Rigidity G
F11	11.0	6.6	1.80	8.3	10500	525
F14	14.0	8.4	2.05	10.5	12000	625
F17	17.0	10.2	2.30	12.8	14000	700
F22	22.0	13.2	2.30	16.5	16000	800
F27	27.5	16.5	2.30	20.6	18500	925

The above basic working stresses must be modified with the appropriate factors from AS 1720 for the concrete formwork application to establish actual design stresses. The duration of load factor K_1 has been taken as 1.65 from AS 1720.

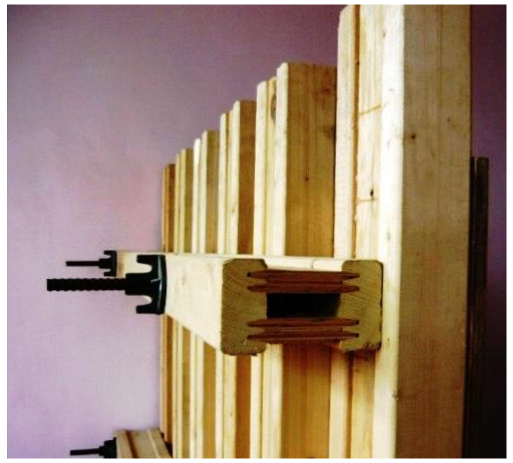
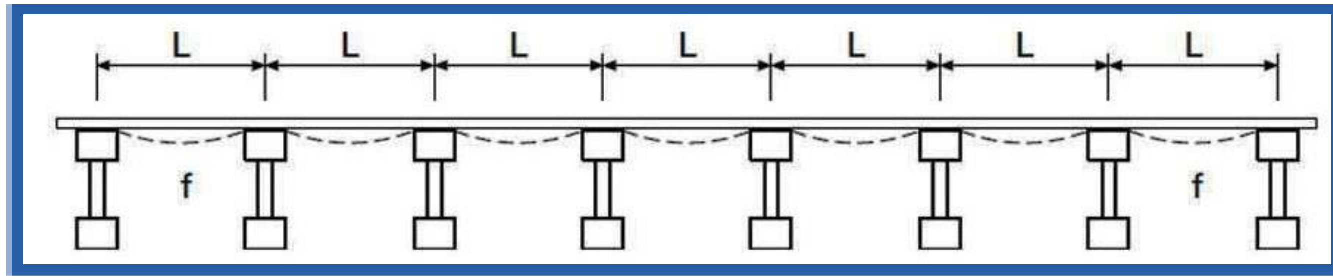


TABLE 3.2: SECTION PROPERTIES, MOMENT OF INERTIA (I) AND SECTION MODULUS (Z) FOR STANDARD PLYWOOD FORMWORK CONSTRUCTIONS PER 1mm WIDTH

Identification Code	Nominal Plywood Thickness (mm)	Plywood Face Grain Parallel to Span		Plywood Face Grain Perpendicular to Span	
		Moment of Inertia (I) mm⁴ / mm	Section Modulus (Z) mm³ / mm	Moment of Inertia (I) mm⁴ / mm	Section Modulus (Z) mm³ / mm
12-10-5	12	70	11.0	80	15.5



The modulus of elasticity and the permissible tension is based on the grade and moisture content of the plywood.

Maximum deflection $f=0.0068 \times q \times L^4/E \times I$

Maximum Moment $M=0.1071 \times q \times L^2$

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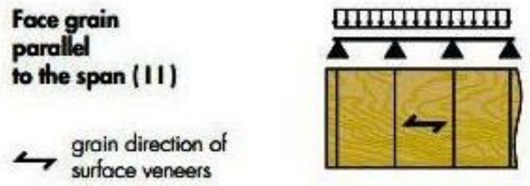
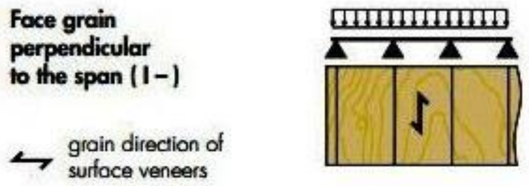
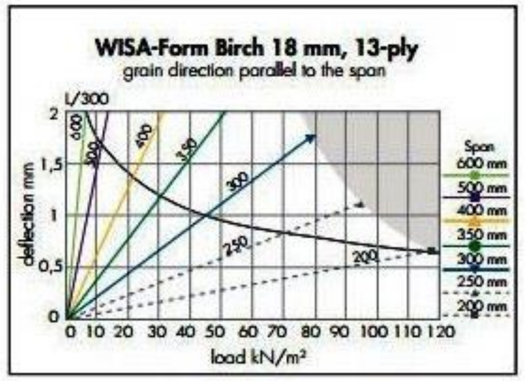
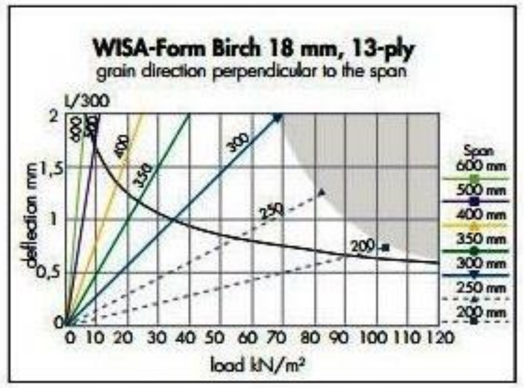
B2

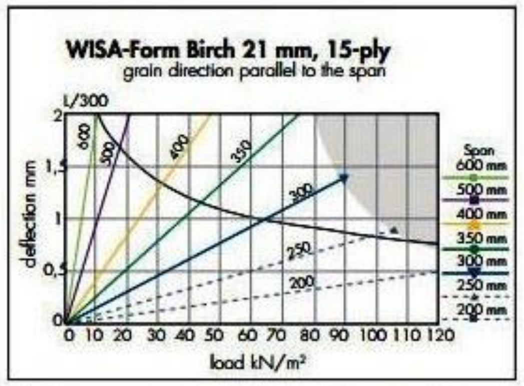
FORMWORK LINING MATERIAL

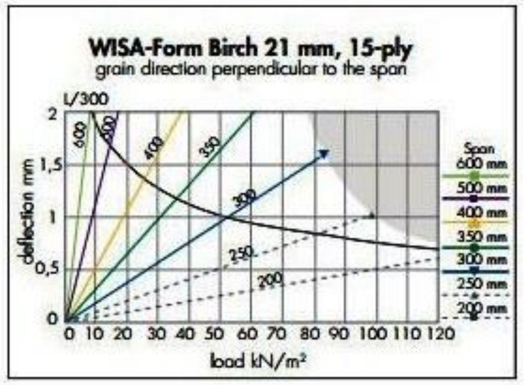












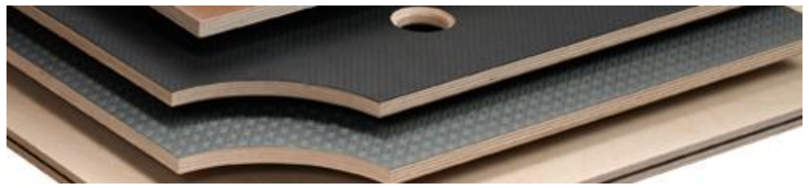
Moisture content 27 %, short time loading

Partial safety factor for the material is 1.3. Partial safety factor for the loads is 1.2 (according to the Handbook of Finnish Plywood, 2004).

Deflection limit L/300 of the span

Support width is not taken into account in calculations

UPM Plywood Properties



Plywood is a wooden panel composed of thin cross-bonded veneers glued together. For greater strength properties the veneers are laid crosswise, i.e. the grain directions of two consecutive layers form a 90º angle.

http://www.wisaplywood.com/en/plywood-and-veneer/plywood/plywood-properties/Pages/default.aspx

Table 2-3. Standard plywood products

Plywood					Birch		Combi, Combi mirror		Conifer (thin veneers)		Conifer (thick veneers)	
Face					Birch		Birch		Conifer		Conifer	
Core					Birch		Birch&Conifer		Conifer		Conifer	
Nominal thickness* mm	EN 315 thickness tolerance mm		Finnish plywood thickness tolerance** mm		No of plies	Weight*** kg/m²	No of plies	Weight*** kg/m²	No of plies	Weight*** kg/m²	No of plies	Weight*** kg/m²
	min	max	min	max								
4	3.5	4.3	3.5	4.1	3	2.7			3	2.1		
6.5	5.9	6.9	6.1	6.9	5	4.4	5	4.0	5	3.4		
9	8.3	9.5	8.8	9.5	7	6.1	7	5.6	7	4.7	3	4.1
12	11.2	12.6	11.5	12.5	9	8.2	9	7.4	9	6.2	5/4	5.5
15	14.2	15.7	14.3	15.3	11	10.2	11	9.3	11	7.8	5	6.9
18	17.1	18.7	17.1	18.1	13	12.2	13	11.2	13	9.4	7/6	8.3
21	20.0	21.8	20.0	20.9	15	14.3	15	13.0	15	10.9	7	9.7
24	22.9	24.9	22.9	23.7	17	16.3	17	14.9	17	12.5	9/8	11.0
27	25.2	28.4	25.2	26.8	19	18.4	19	16.7	19	14.0	11/9	12.4
30	28.1	31.5	28.1	29.9	21	20.4	21	18.6	21	15.6	13/10	13.8
35	33.5	36.1	33.5	35.5	25	23.8						
40	38.4	41.2	38.8	41.2	29	27.2						
45	43.3	46.4	43.6	46.4	32	30.6						
50	48.1	51.5	48.5	51.5	35	34.0						

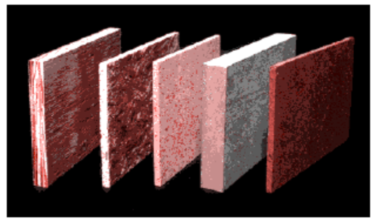
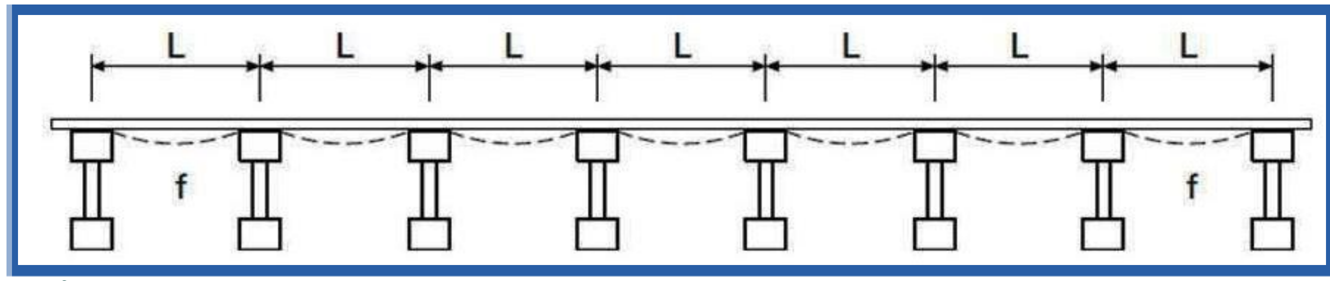


Figure 10-3. Examples of various composite products. From left to right: plywood, OSB, particleboard, MDF, and hardboard.



The modulus of elasticity and the permissible tension is based on the grade and moisture content of the plywood.

Maximum deflection $f=0.0068xqxL^4/ExI$

Maximum Moment $M=0.1071qL^2$

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Moments and Bending Moments of Inertia, Area, Mass

B3

I-Beam Calculator

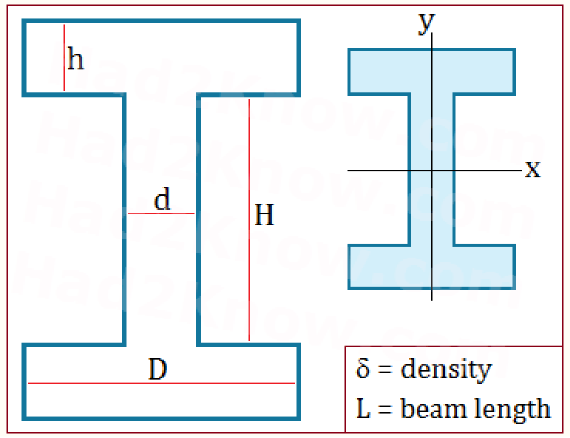
Moments and Bending Moments of Inertia, Area, Mass

http://www.had2know.com/technology/I-beam-calculator-moments-engineering.html

I-beams, also called "wide flange" or W-beams, are preferred in construction because their I-shape allows them to withstand strong shearing and bending forces. See also Hollow Rectangular Beams. To calculate loads and forces on an I-beam, you need to know the cross-sectional area, the moments of inertia in the x- and y-directions, as well as the bending moments of inertia (aka area moments of inertia) in the x- and y-directions.

Using the image above as a guide, enter the dimensions of the I-beam into the calculator. D is the width of the flange, d is the width of the web (center support column), H is the height of the web, and h is thickness of the flange. In the calculator, L is the total length of the beam and δ is the density of the material.

For the calculator, enter distances in centimeters and the density in kg/cm3. Remember 100 cm = 1 meter and 1000 grams = 1 kg. Use the Had2Know conversion calculator if needed.



I-Beam Engineering Calculator

D =	8	cm
d =	2.7	cm
H =	12	cm
h =	4	cm
L =	100	cm
δ =	0.55	kg/cm^3

Compute I-Beam Properties   Clear

Cross-Sectional Area =
96.4 cm^2

Beam Volume =
9640 cm^3

Beam Mass =
5302 kg

Moment of Inertia I_X =
4463184 kg·cm^2

Moment of Inertia I_Y =
4438189.23167 kg·cm^2

http://www.engineersedge.com/calculators.htm   http://www.onlinestructuraldesign.com/calculations

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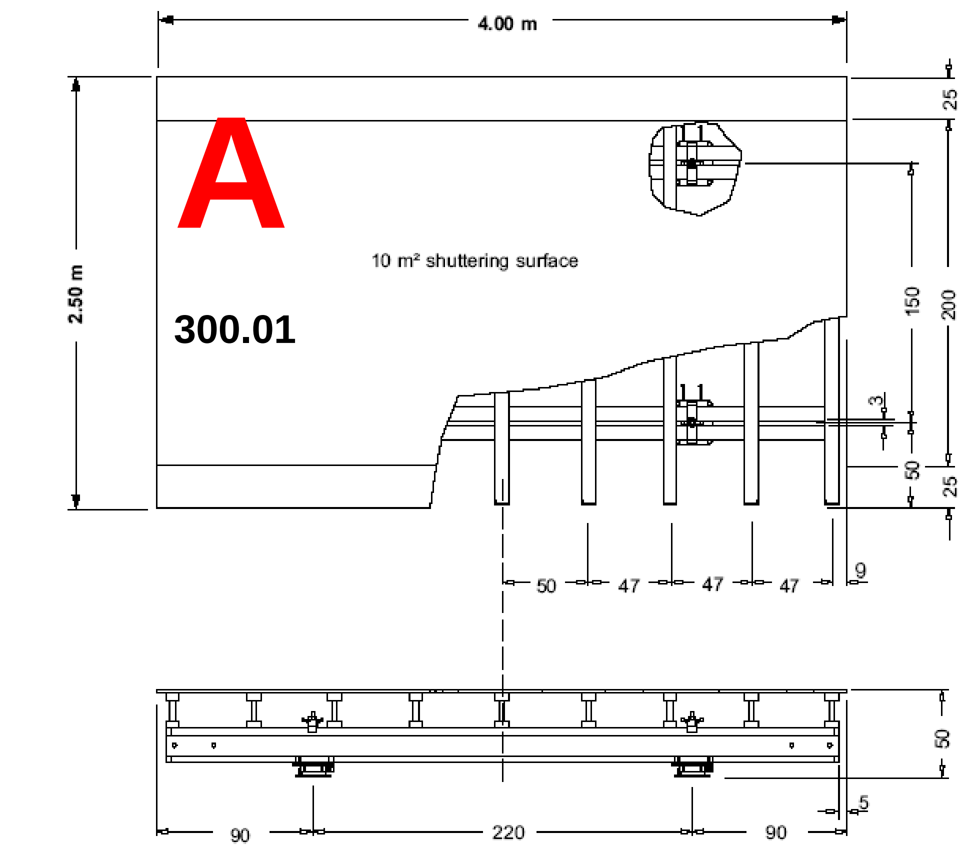
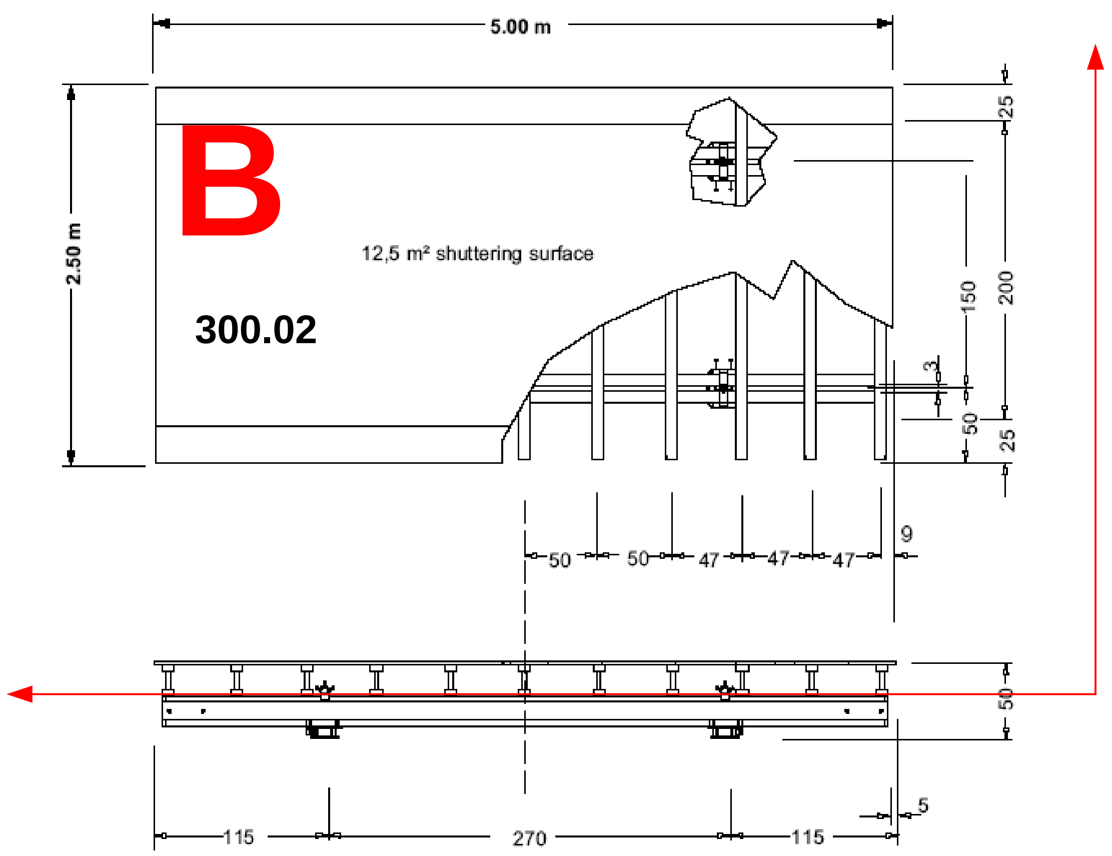
Балка Деревянная для монолитного строительства от производителя

Для системы перекрытий разборно-переставной опалубки

H 20 Floor Table 2.5 x 4.0 m



H 20 Floor Table 2.5 x 5.0 m



WEIGHT=5.00 kg/m

H20-Mechanical Characteristics:

Elastic Module:	E=105,000 kg/cm2
Resistance Module:	W=460 cm3
Inertia Module:	J=4600 cm4
Fir wood bending R:	Z=1,20 kN/cm2
Bending Moment:	M=5,00 kNm
Shearing Force:	T=11 kN
Weight:	Pm=5,0 Kg/m

LOAD ASSUMPTIONS:

Weight of concrete:	26.00 kN/m2
Dead load table:	0.40 kN/m2
Live Load:	

Slab Thickness: T (cm)	Probe Load A (kN) Slab=2.50X4.00	Probe Load A (kN) Slab=2.50X5.00
10	10.90	13.60
15	14.10	17.70
20	17.40	21.70
25	20.60	25.80
30	24.00	30.00
35	27.90	34.90
40	31.80	
45	35.70	

RAEDY SLAB FORMS

READY SLAB PERIMETER PANELS

NOTES

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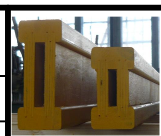

SLAB 2.50X4.00 mt
SLAB 2.50X5.00 mt

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SLAB FORM WORKS

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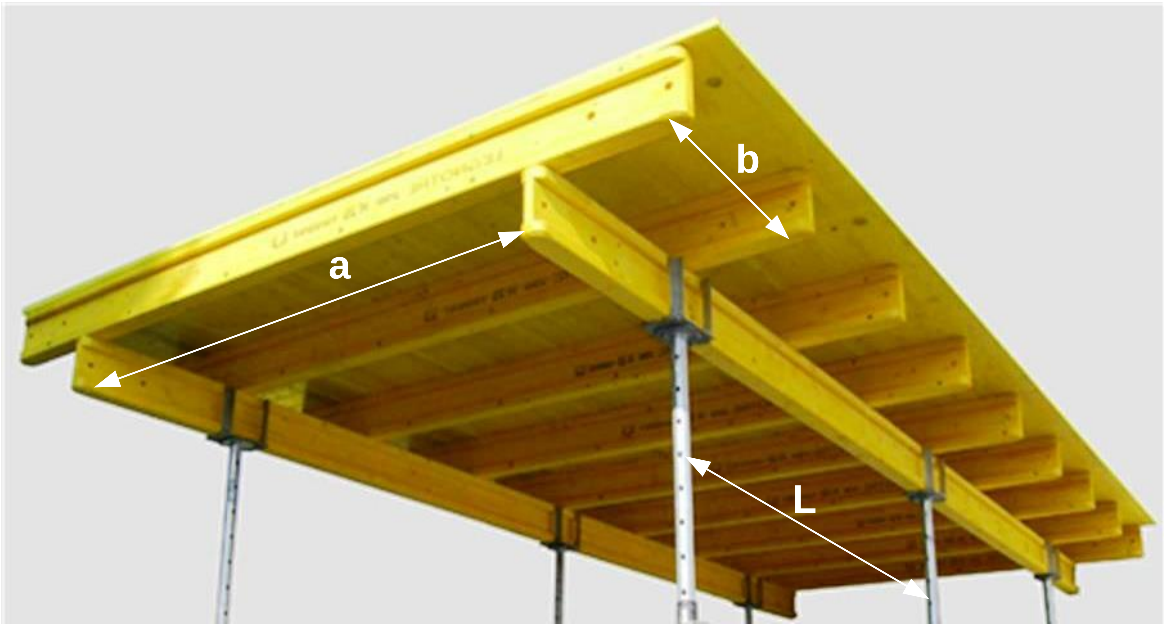
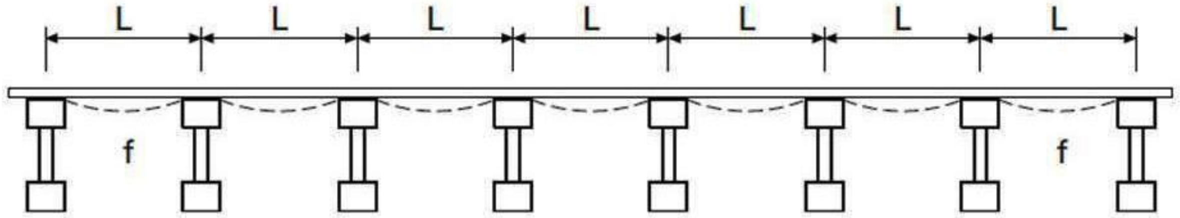
Балка Деревянная для монолитного строительства от производителя

Для системы перекрытий разборно-переставной опалубки

READY SLABS FOR ANY SIZE





The modulus of elasticity and the permissible tension is based on the grade and moisture content of the plywood (see page 8).

Maximum deflection $\mathbf{f} = \dfrac{0.0068 \cdot q \cdot L^4}{E \cdot I}$

Maximum Moment $\mathbf{M} = 0.1071 \cdot q \cdot L^2$
(valid for at least 3 bays)

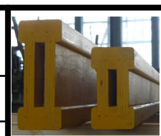
SLAB FORM WORK						SPAN BETWEEN LOWER BEAMS (m)								
Slab	Load	Upper grid distances b=(m)				Span between probes								
cm	kN/m2	0.5	0.625	0.675	0.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50	3.00	3.50
		Lower grid distances a=(m)												
10	4.35	3.67	3.40	3.33	3.20	2.91	2.70	2.48	2.29	2.14	2.02	1.92	1.69	1.44
12	4.87	3.47	3.22	3.15	3.03	2.75	2.55	2.34	2.17	2.03	1.91	1.81	1.51	1.29
14	5.39	3.30	3.07	3.00	2.89	2.62	2.43	2.22	2.06	1.93	1.81	1.63	1.36	1.17
16	5.91	3.17	2.94	2.88	2.77	2.52	2.33	2.12	1.97	1.84	1.65	1.49	1.24	1.06
18	6.43	3.05	2.83	2.77	2.67	2.42	2.23	2.04	1.89	1.71	1.52	1.37	1.14	0.98
20	6.95	2.95	2.74	2.68	2.58	2.34	2.15	1.96	1.81	1.58	1.41	1.27	1.06	0.90
22	7.47	2.86	2.66	2.60	2.50	2.27	2.07	1.89	1.68	1.47	1.31	1.18	0.98	0.84
24	7.99	2.79	2.59	2.53	2.43	2.21	2.00	1.83	1.57	1.38	1.22	1.10	0.92	0.79
26	8.51	2.72	2.52	2.47	2.37	2.16	1.94	1.72	1.48	1.29	1.15	1.03	0.86	0.74
28	9.03	2.65	2.46	2.41	2.32	2.10	1.88	1.62	1.39	1.22	1.08	0.97	0.81	0.70
30	9.61	2.59	2.41	2.36	2.27	2.04	1.82	1.53	1.31	1.14	1.02	0.92	0.76	0.65
35	11.17	2.47	2.29	2.24	2.16	1.89	1.58	1.31	1.13	0.98	0.88	0.79	0.66	0.56
40	12.73	2.36	2.19	2.15	2.05	1.73	1.38	1.15	0.99	0.86	0.77	0.69	0.58	0.49
45	14.29	2.27	2.11	2.05	1.93	1.54	1.23	1.03	0.88	0.77	0.68	0.62	0.51	0.44
50	15.85	2.20	2.01	1.95	1.83	1.39	1.11	0.93	0.79	0.69	0.62	0.56	0.46	0.40
55	17.41	2.13	1.92	1.86	1.68	1.26	1.01	0.84	0.72	0.63	0.56	0.51	0.42	0.36
60	18.97	2.05	1.84	1.74	1.55	1.16	0.93	0.77	0.66	0.58	0.52	0.46	0.39	0.33
65	20.53	1.97	1.71	1.61	1.43	1.07	0.86	0.71	0.61	0.54	0.48	0.43	0.36	0.31
70	22.09	1.90	1.59	1.49	1.33	1.00	0.80	0.66	0.57	0.50	0.44	0.40	0.33	0.28

Dead weight of formwork weight:	a=0.35 kN/m2
Weight of concrete:	b=25 kN/m3xd(m)
Changing Load:	p=0.20xb (1.50 ≤ p ≤ 4,24 kN/
Total load:	g=a+b+c
Maximal deflection moment	5.00 kN
Moment of Inertia Ix:	4613 cm4
Maximal deflection:	f=1/500

NOTES

Rev-3				
Rev-2				
Rev-1				
Rev	Description	Date	Name	Check

Date	Drawn	Check	Appr.	Scale
26 Dec 2011	A.Bicanova	F.Yasar	F.Yasar	J.Dusembaeva



FORM WORK SYSTEMS

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SLAB SIZING

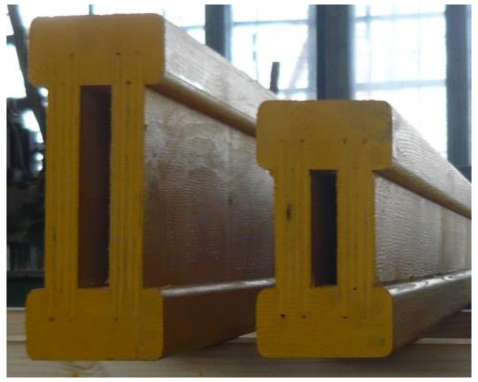
TOMORROW WORLD TODAY

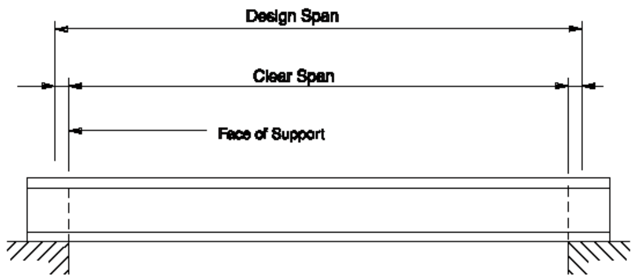
Job No	Page	Symbol	Unit No	Cat	Type+Format	Serial No	Rev
8829	1/1	DWG	00	A	UD	0100.3	00

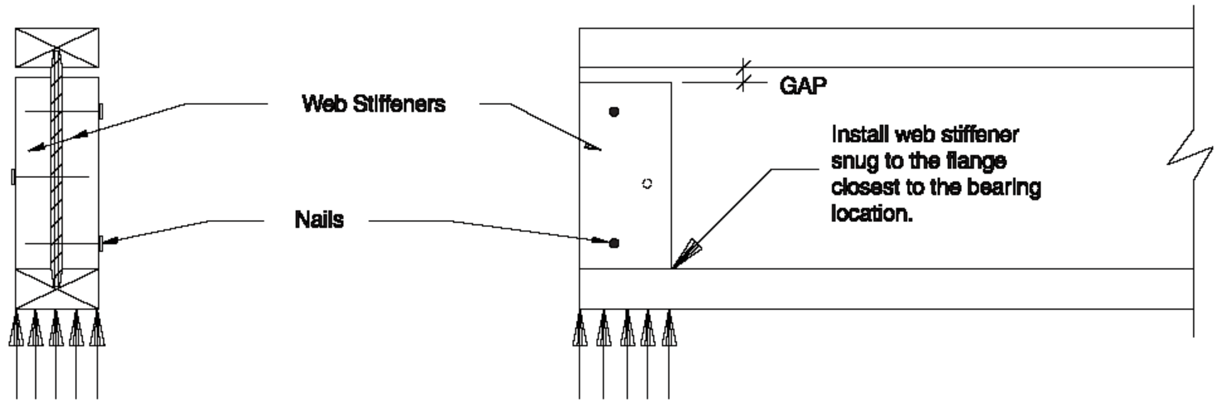
HH20S **HH16S** **HH12S**

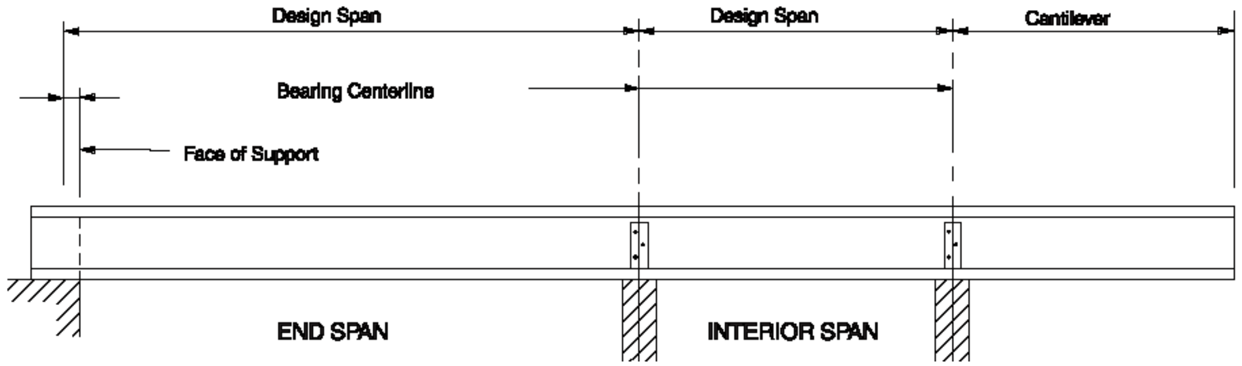
FORM WORK GIRDERS
STANDARD FLANGE, DOUBLE WEB, LONG LIFE,SELF WEDGING

	H20S	HH16S	HH12S
Permitted shear force-Q (kNewton)	13.00	11.00	8.50
Permitted bending moment (kNm)	7.00	5.00	4.00
Moment of Inertia (Iv=cm4)			
Weight (kg)	5.90		



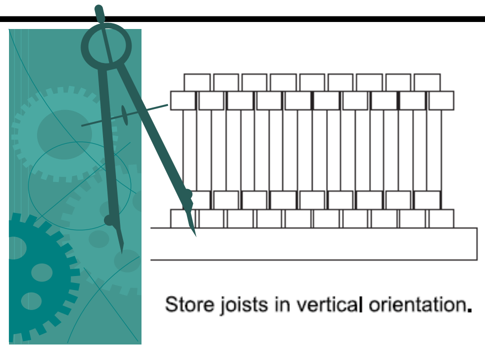




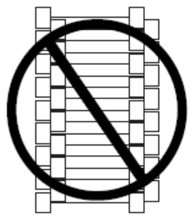


TOMORROW NEW FORMWORK TODAY

NOTES



Store joists in vertical orientation.



Do not stack or handle joists flat.

Rev	Description	Date	Name	Check
Rev-3				
Rev-2				
Rev-1				

Date	Drawn	Check	Appr.	Scale
26 Dec 2011	A.Bicanova	F.Yasar	F.Yasar	J.Dusembaeva

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FORM WORK SYSTEMS

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TOMORROW WORLD TODAY

Job No	Page	Symbol	Unit No	Cat	Type+Format	Serial No	Rev
8829	1/1	DWG	00	A	UD	0100.3	00