

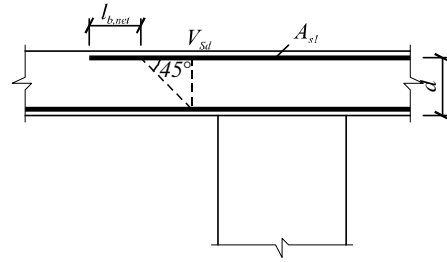
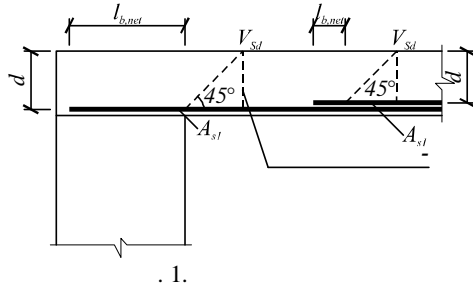
(μk)_T (2), - 25 75, - 100 300;
 $\psi_1 \psi_2$ 8
 12.
 $R = 200$, $L =$
 μk , - = 400 , -
 $(\mu k)_T$ (- $6,87 \cdot 10^4$, $\nu = 0,3$, $\sigma_T = 1,47 \cdot 10^2$, -
), (- $P = 55$ -
) $\gamma = 1,96 \cdot 10^5$ / ,
 $k_\sigma \leq 1$ (3). -
 μk ,
 $(\mu k)_T = 2,212$,
 $\varphi_1 = 0,336$, $\varphi_2 = 6,1$, $\rho_1 = 46,7$, $\rho_2 = 176$, $\psi_1 = \psi_2 = 10$,
 $h = 0,231$
 $1,89 \times 2,08 \times 0,19$ 116
 $1,57 \times 1,73 \times 0,16$ 9
 1. , 1980. - 368 . -
 : 5- ; .2).
 2. /
 φ_1 , 1980. - 23 . -
 $0,2$ 1,2;
 $(2 \div 9)$ (φ_2); 12.01.81, 135-81.

624.012.45

5.03.01698

98, 5.03.016
 (2) (3)
 [1]
 $V_{Sd} \leq V_{Rd,1}$ (1)
 $V_{Sd} \leq V_{Rd,2}$ (2)
 $V_{Sd} \leq V_{Rd,3}$ (3)
 $V_{Rd,1} = [\tau_{Rd} k (1.2 + 40 \cdot \rho_l) + 0.15 \cdot \sigma_{cp}] b_w d$ (4)
 $1 < k = 1.6 \text{ ó } 1.35$, 50 %
 b_w ó
 (d) ;
 $\sigma_{cp} = \frac{N_{Sd}}{A_c}$ ó
 (1) « »; $\rho_l = \frac{A_{s1}}{b_w \cdot d} \leq 0.02$ ó

(), , , , , 267.

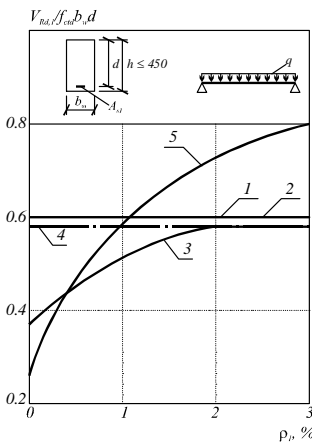


. 1.

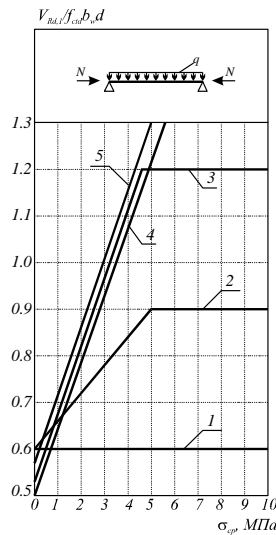
3.

/			
1	II621675, . 3.30	R	$Q \leq 0.35R \cdot b \cdot h_0$ (10)
2	2.03.01684 . 3.30	$\varphi_{b1} = 1 \text{ ó } 0.01 R_b (R_b)$	$Q \leq 0.3 \cdot \varphi_{b1} \cdot R_b \cdot b \cdot h_0$ (11)
3	5.03.01698		$V_{Sd} \leq V_{Rd,2} = 0.5 \cdot v \cdot f_{cd} \cdot d \cdot b_w$ (12)
		$v = 0.7 - \frac{f_{ck}}{200} \geq 0.5$ ó	$(f_{ck} / ^2)$
4	Pr PN6 603264 . 5.4.2.		$V_{Sd} \leq V_{Rd,2} = 0.5 \cdot v \cdot f_{cd} \cdot d \cdot b_w$ (13)
		$v = 0.7 - \frac{f_{ck}}{200} \geq 0.5$ ≤ 50	
		$v \geq 0.4$ > 60	
5	DIN 104561 . 7.2.5. (4)		$V_{Sd} \leq V_{Rd,2} = 0.5 \cdot v \cdot f_{cd} \cdot d \cdot b_w$ (14)
		$v = 0.7 - \frac{f_{ck}}{200} \geq 0.5$ $f_{ck} \leq 50 / ^2$	
		$v = 0.45$ $^{56}/_{67}$	
		$v = 0.4$ $^{60}/_{75}$	

2.



. 2.



	S240	S400, W400	S500, W500
$\frac{12}{15} \text{ ó } \frac{20}{25}$	0.18	0.11	0.09
$\frac{25}{30} \text{ ó } \frac{30}{37}$	0.26	0.16	0.13
$\frac{40}{45} \text{ ó } \frac{50}{60}$	0.31	0.19	0.15
12			

$$\tau_{Rd} = \frac{0.25 f_{ctk,0.05}}{\gamma_c}; \quad (5)$$

$f_{ctk,0.05}$ ó () -
; $\gamma = 1.5$ ó -
($\gamma = 1.35$).

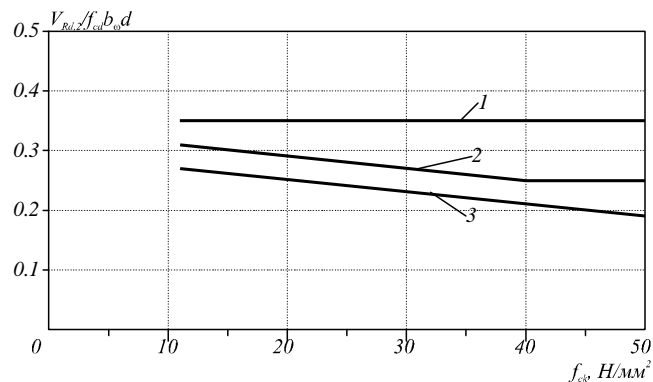
$\rho_l () \quad \sigma ()$
1 ó II621675; 2 ó 2.03.01684;
3 ó 5.03.01698; 4 ó Pr6PN 603264;
5 ó DIN 104561.

$A_{s,l} ()$ -
(. . 1); $\frac{d + l_{b,net}}{l_{b,net}}$ ó -
11 5.03.016 (a/d > 3)

98; τ_{Rd} ó

1	И621675, . 3.31	$k_I = 0.6$	$Q \leq k_I R_p b h_0$ (6)
2	2.03.01684, . 3.31	$\varphi_{b3} = 0.6$ $(1 + \varphi_f + \varphi_n) \leq 1.5$	$Q \leq \varphi_{b3} (1 + \varphi_f + \varphi_n) R_{bt} b h_0$ (7)
3	Pr PN6 603264 . 5.4.2	$1 \leq k \leq 1.6$ ó $d \leq 1.35$; $\tau_{Rd} = \frac{0.25 f_{ctk}}{\gamma_c}$ ó $(\gamma = 1.5)$; f_{ctk} ó $\sigma_{cp} = \frac{N_{sd}}{A_c}$ ó	$V_{Rd,1} = (2.0 k \cdot \tau_{Rd} + 0.15 \cdot \sigma_{cp}) b_w d$ (8)
4	DIN 104561 . 7.2.5	$k = 1 + \sqrt{200/d}$ ó $d \geq 200$; f_{ck} ó	$V_{Rd,1} = [0.12 \cdot k (100 \cdot \rho_1 \cdot f_{ck})^{1/3} - 0.15 \sigma_{cp}] b_w \cdot d$ (9)

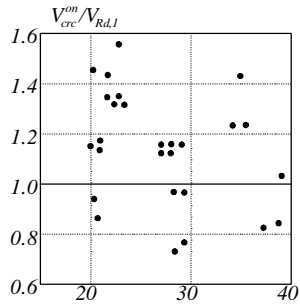
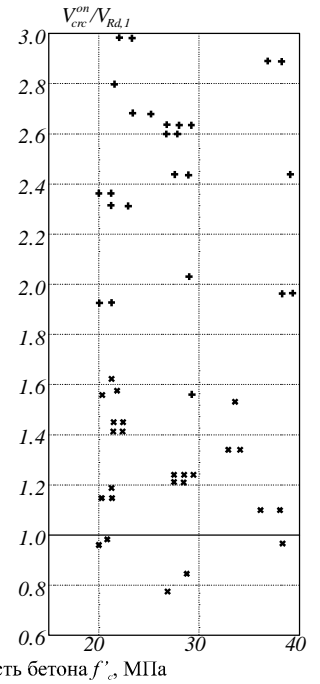
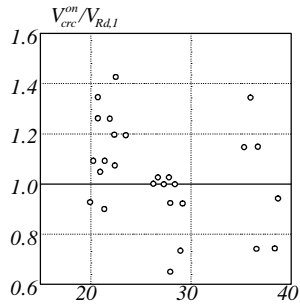
(4)
(),
(),
1
И621675, 2.03.01694, Pr PN6 603264
DIN 104561,
(6), (7), (8) (9)



2
(ρ_1)
(3)
1 ó И621675; 2 ó 2.03.01684;
3 ó 5.03.01698, Pr6PN 603264, DIN 104561

(1)
2.
:
0.25
ó
0.25
ó $h \leq 450$ ó $h/2 \leq 150$;
ó $h > 450$ ó $h/3 \leq 300$;
ó $3/4 h \leq 500$.
15 %
(1) (12) 300
150
($\theta = 45^\circ$),
 $f_c = v f_{cd}$ v ó
0.5 $\leq v \leq 1.0$.
[6].

Pr PN6B603254, DIN 104561 5.03.01698



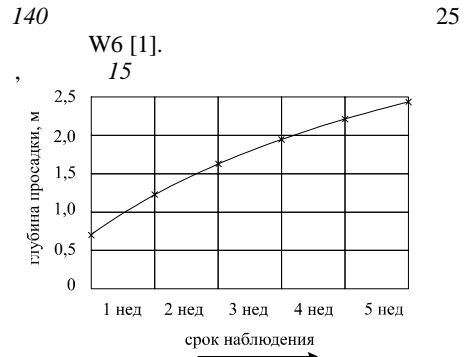
Призмная прочность бетона f'_c , МПа

- 1. 5.03.01698.
- 2. 2.03.01684. „, 1999 6 197 .
- 3. П621675. „, 1985 6 79 .
- 4. Pr PN6B603264. Konstrukcje betonowe, elbetowe i spr one. Obliczenia statyczne i projektowanie. Polska norma/ Komitet normalizacyjny.6 Warszawa, 1998 6 162 s.
- 5. DIN 1045. Beton und Stahlbeton. Bemessung und Austuhung.6 Dezember.6 1997 6 143 s.
- 6. „, 1976 6 89 .
- 7. „, 1980 6 134 .

(
 $\rho_l = (1.14 \pm 1.19)\%$, $a/d = 1.0 \pm 1.57$)
2.03.01684 (•), 5.03.016
98 (x), PN603264 () , DIN 1045 (+)

628.214

8..9



. 1.

0,7