

## Promjene dimenzije kanala

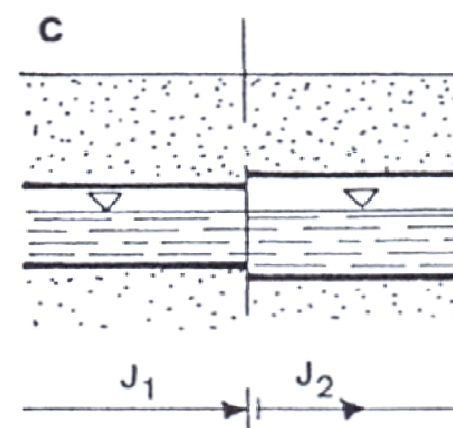
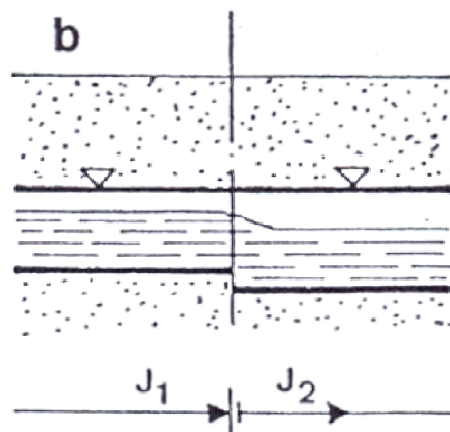
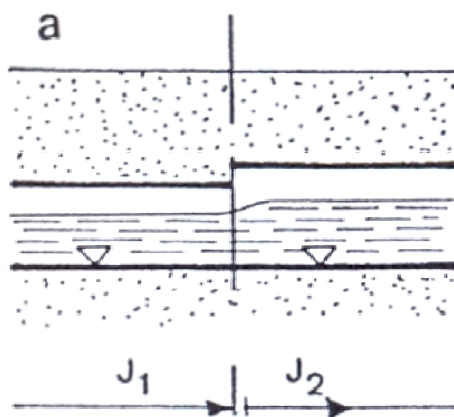
- a) uz izravnanje dna kanala
- b) uz izravnanje tjemena kanala
- c) uz izravnanje razine vode u kanalu

padovi ispred i iza spoja mogu biti:

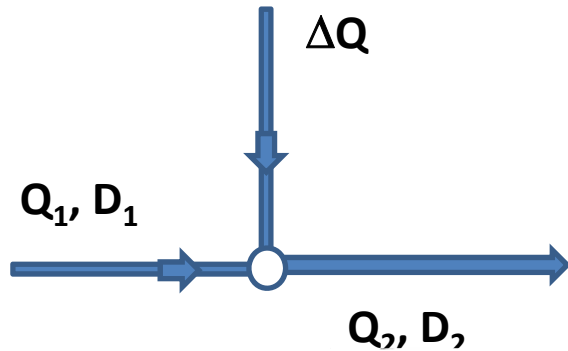
$$l_1 = l_2$$

$$l_1 > l_2$$

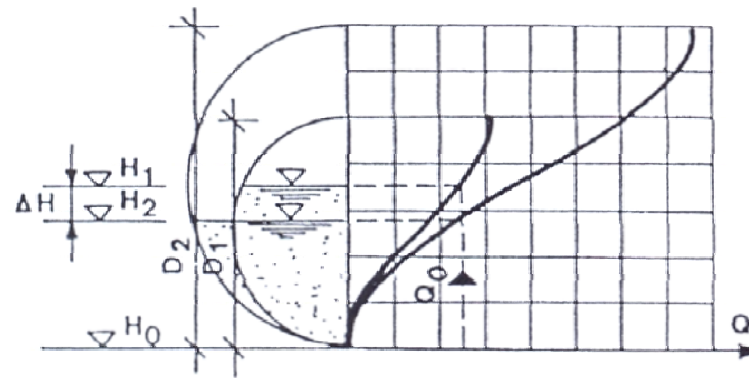
$$l_1 < l_2$$



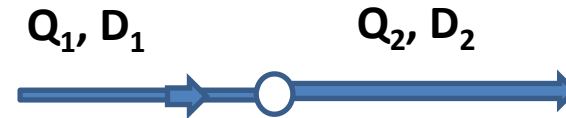
## Spajanje u tjemenu



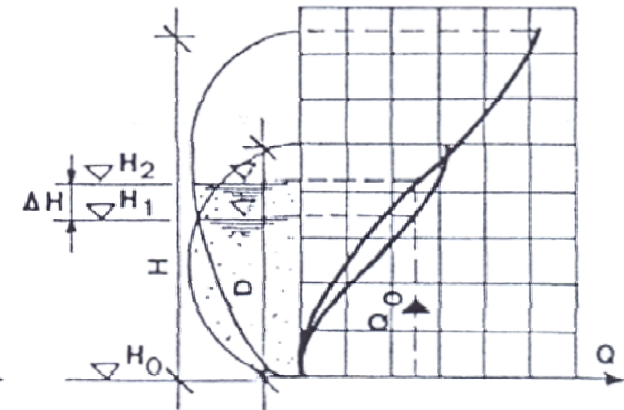
$$Q_1 < Q_2$$



## Spajanje u dnu

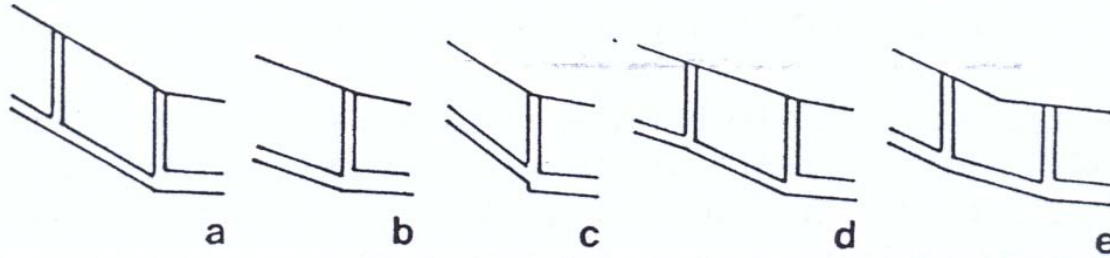


$$Q_1 = Q_2$$



- Prijelaz iz manjeg u veći poprečni presjek  
za isti protok i približno isti pad kanala za:
- a) kružni poprečni presjek
  - b) jajoliki poprečni presjek

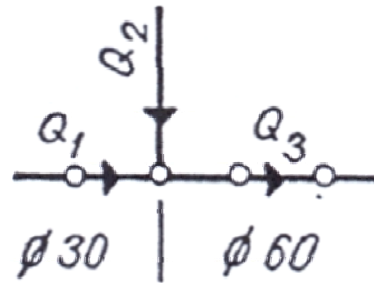
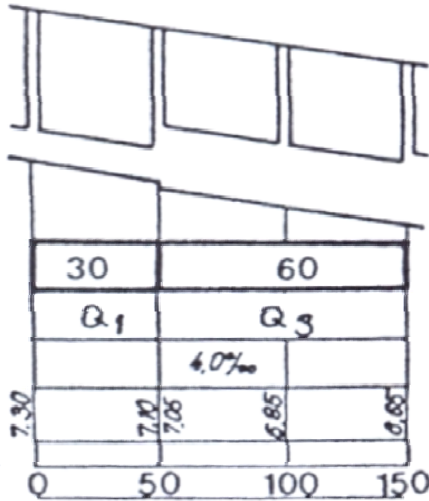
## Povećanje dimenzije kanala uslijed smanjenja uzdužnog pada



- a) bez prekida nivelete s malim usporom
- b) bez prekida nivelete s dugim usporom
- c) s prekidom nivelete, bez uspora
- d) bez prekida nivelete s naglašenim prelaznim uzdužnim padom i kratkim usporom
- e) s ublaženim prelaznim padom

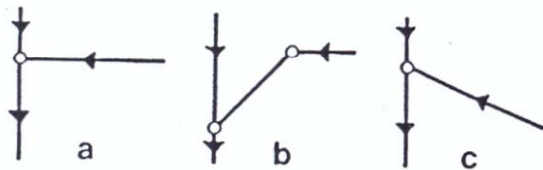
**Ako je moguće, potrebno je izbjegavati naglo smanjenje pada kanala !**

## Priključni kanali sa ili bez promjene profila

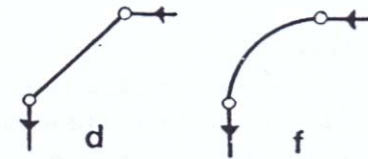


Do potrebe denivelacije  
izlaznog kanala može doći i  
bez promjene profila  
(naročito kod razdjelnog  
sustava odvodnje)

## Promjena smjera toka



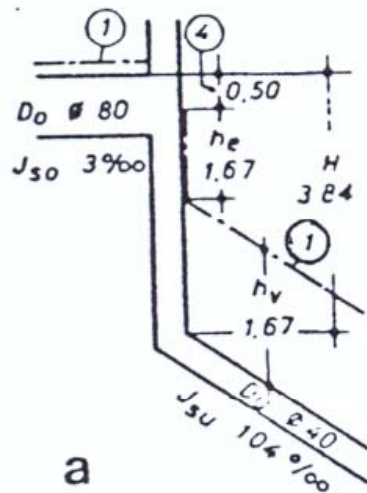
a) i c) izbjegavati



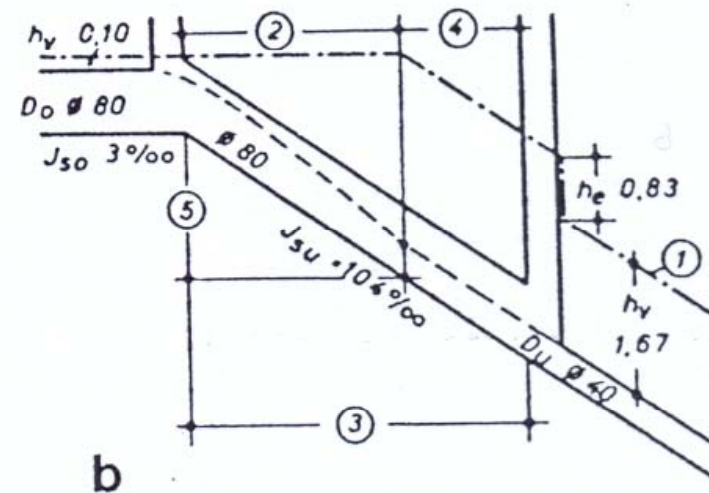
f) samo kod  
prohodnih profila

# Smanjenje dimenzije kanala

Ne prakticira se na kratkim potezima i kod promjene na mali profil (do  $\Phi 500\text{mm}$ ).



- a) rješenje s prekidnim oknom
- b) rješenje s prijelaznom dionicom s većim profilom



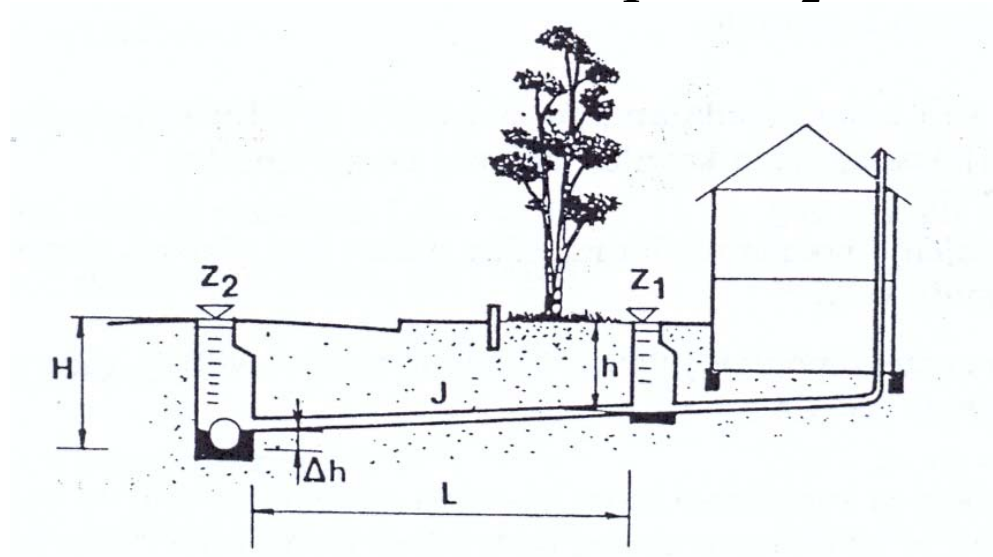
- 1 linija energije
- 2 min. računska dužina prijelazne dionice
- 3 odabrana dužina prelazne dionice
- 4 sigurnosna visina
- 5 razlika visine dna cijevi za min. dužinu prelazne dionice

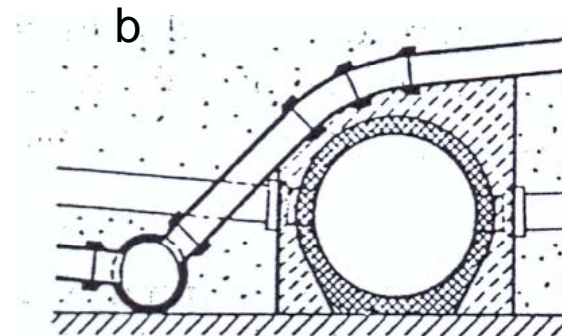
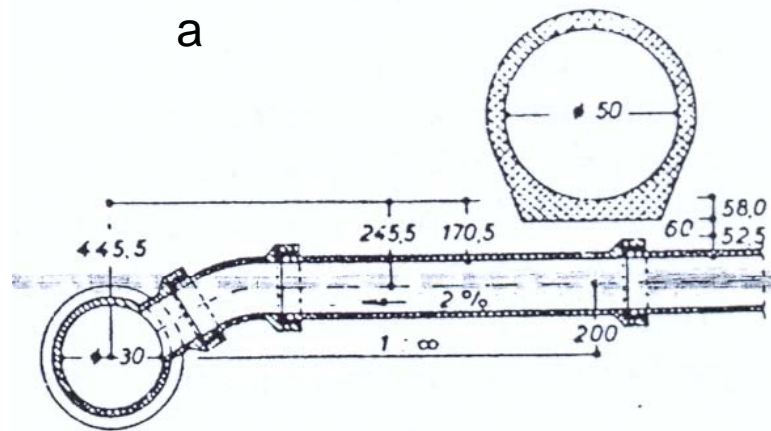
## Dubina polaganja cijevi

Zaštititi cijev od mehaničkog oštećenja i smrzavanja i osigurati mogućnost priključka svih objekata.

Minimalna dubina 0,7 m od tjemena cijevi kod prosječnog prometnog opterećenja.

$$H = h + I \cdot L + (Z_1 - Z_2)$$

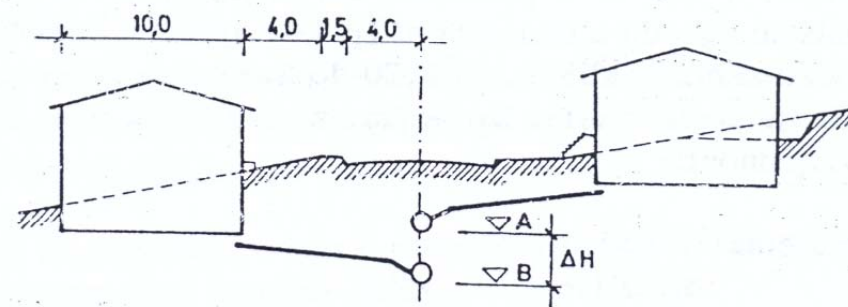
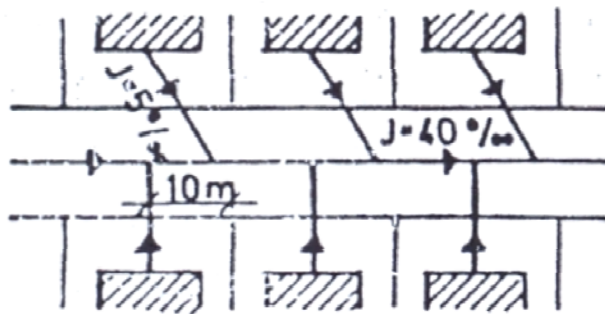




**Položaj kanala kod razdjelnog sustava:**

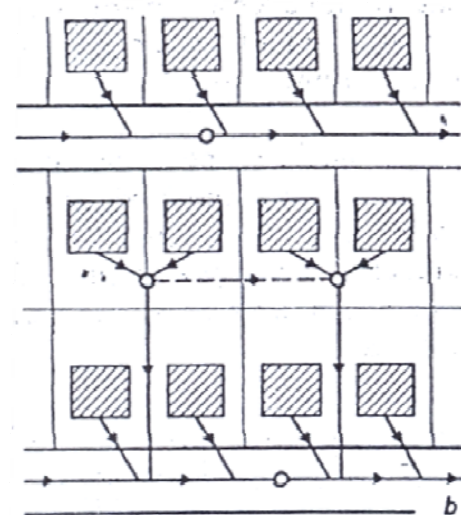
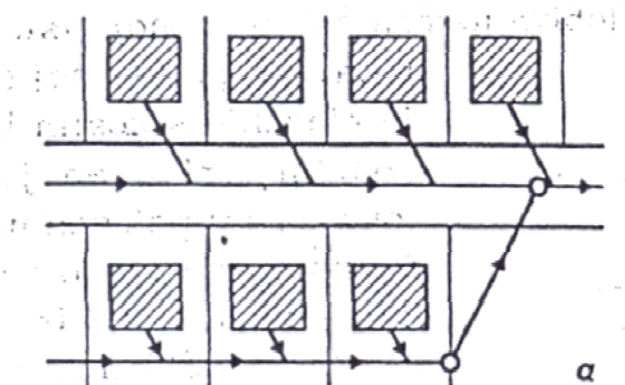
**a) oborinski kanal iznad kanala za otpadnu vodu**

**b) oba kanala u istom rovu**



**Kosi priključci kod strmog kanala  
(ušteta na dubini ukapanja)**

**Slučaj s nagnutim  
poprečnim presjekom**



**Moguća rješenja prethodnog slučaja s nagnutim poprečnim presjekom:**

- a) s posebnim kanalom smještenim na nižoj strani**
- b) s priključkom niže položenih zgrada na slijedeću nižu ulicu**

**Najveće dubine iskopa rovova su:**

u kamenu	5 – 6 m
u zemlji (u suhom)	7 – 8 m



# Objekti na kanalskoj mreži

Silazna okna (revizijska, kontrolna)

**Omogućuju pristup kanalima u svrhu kontrole i održavanja**

Postavljaju se na:

- početku kanala
- mjestima promjene profila
- kod promjene uzdužnog pada kanala
- na mjestima skretanja kanala
- na mjestima priključka sekundarnih kanala
- na kanalima koji su u pravcu na određenim razmacima:

$\Phi 250 - 600\text{mm}$

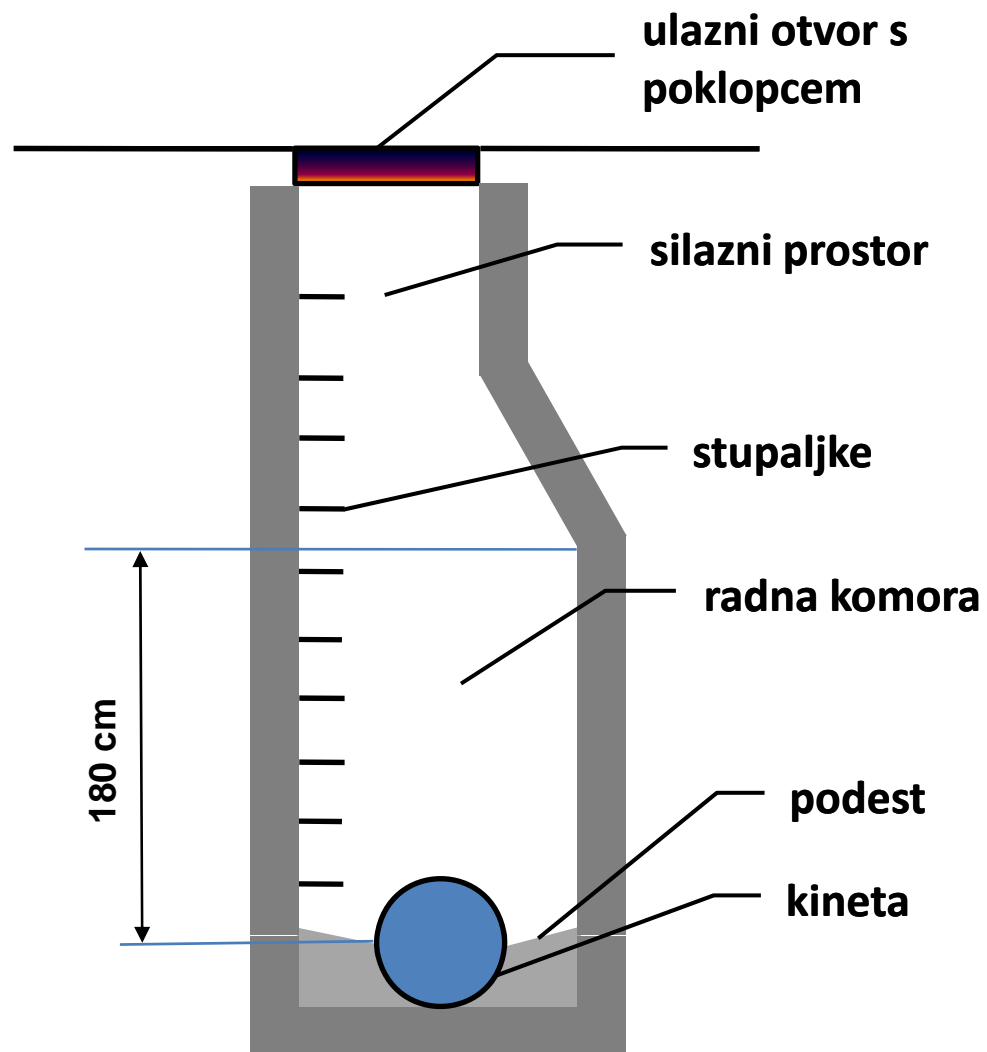
$L = 50\text{m}$

$\Phi 700 - 1400\text{mm}$

$L = 75\text{m}$

$\geq \Phi 1400\text{mm}$

$L = 150\text{m}$



**tlocrt okna min. 80/80 cm, ili  
Φ80cm, (bolje 100cm)**

**poklopac min. 600/600mm,  
ili Φ600mm**

**Dijelovi silaznog okna**

**Prema obliku silazna okna mogu biti:**

- kružnog oblika
- pravokutnog oblika
- složenog (kod većih profila)

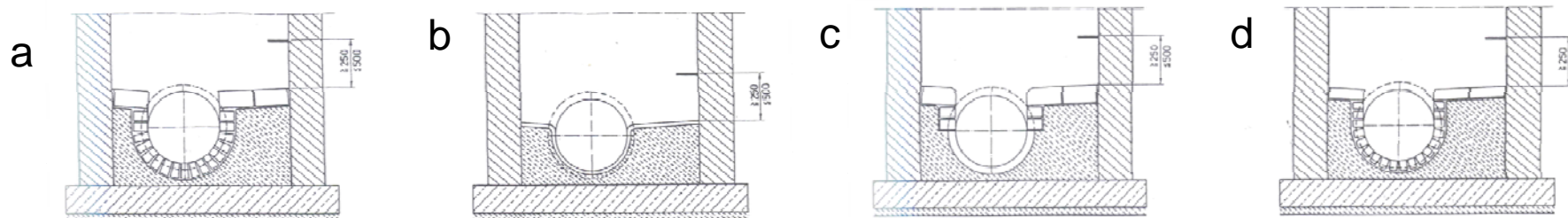
**Obzirom na način izvedbe, silazna okna mogu biti:**

- monolitna
- montažna
- polumontažna

**Obzirom na materijal izvedbe, silazna okna mogu biti od:**

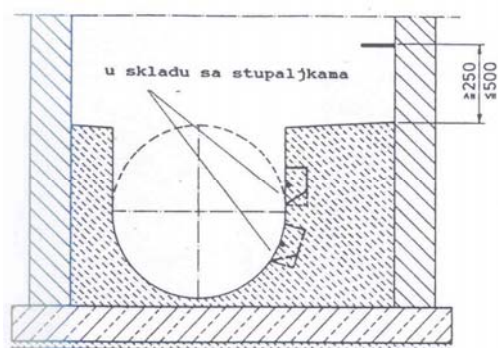
- od opeke i kamena (stara rješenja)
- betona i armiranog betona
- betonskih i armirano-betonskih blokova
- plastičnih materijala (PE, PP, Poliester)

**Kinete se izvode obično do polovine poprečnog presjeka cijevi, a bolje je više, naročito kod cijevi za otpadnu vodu u RSU**

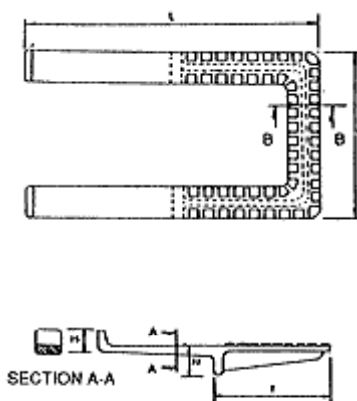


**Kinete izvedene od:**

- a) klinker opeke**
- b) plastične obloge ili premaza**
- c) polucijevi i klinkera**
- d) oblutaka i klinkera**



**a**

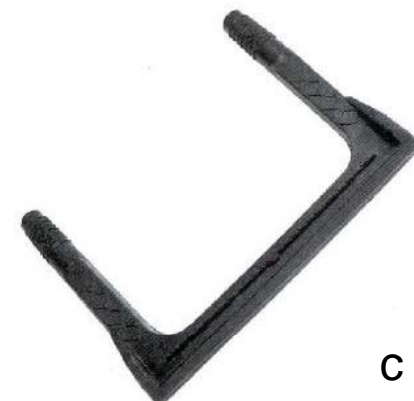


SECTION A-A



SECTION B-B

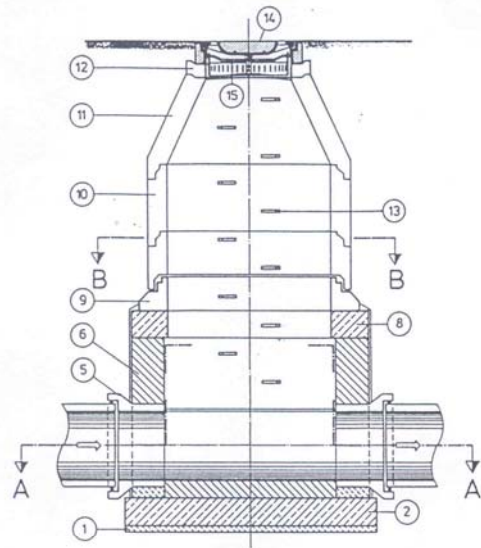
**b**



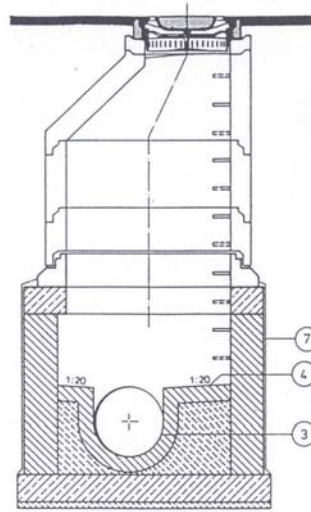
**c**

**Stupaljke: a) u kineti velikog promjera, b) od lijevanog željeza i c) od polipropilena**

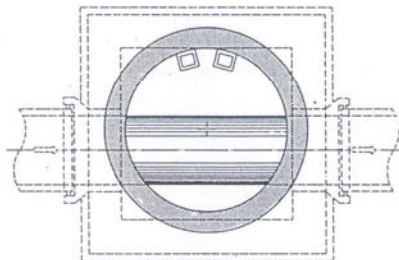
## Montažno okno do profila DN500 mm



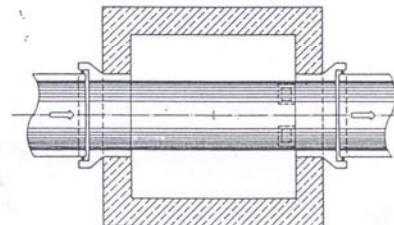
presjek C-C



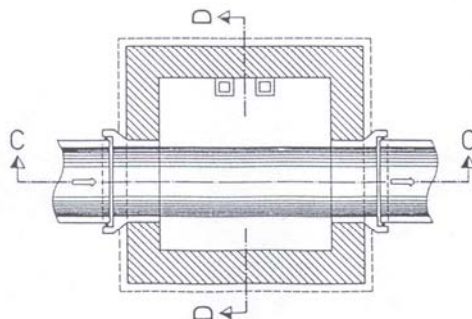
presjek D-D



presjek B-B

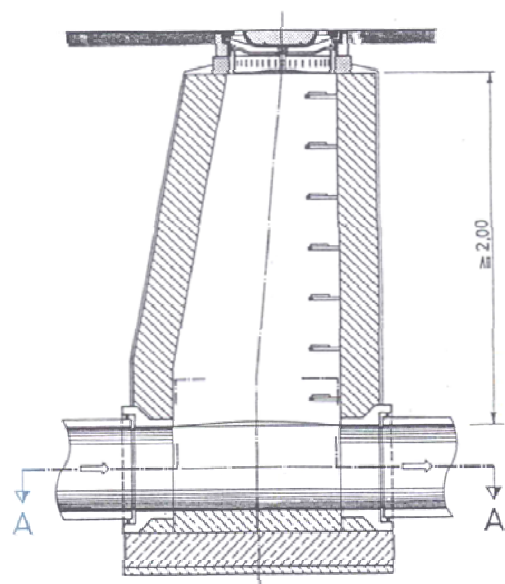


varijanta

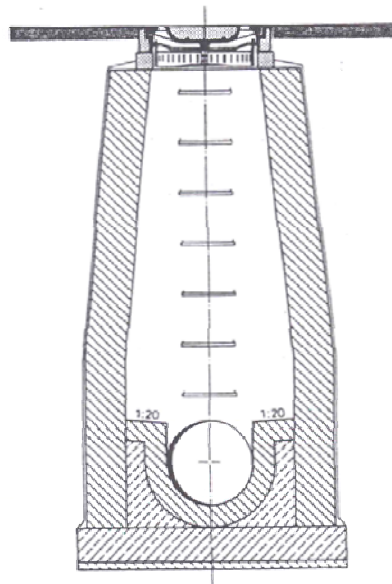


presjek A-A

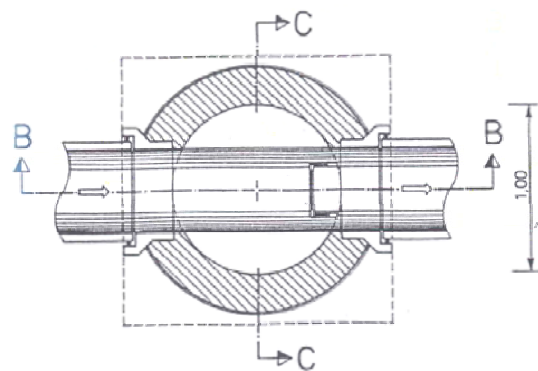
- 1 posteljica
- 2 temeljna ploča
- 3 kineta
- 4 podest
- 5 priključni komad
- 6 zidovi
- 7 vanjski premaz
- 8 prelazna ploča
- 9 podnožni prsten
- 10 prsten okna
- 11 vrat okna
- 12 podložni prsten
- 13 stupaljke
- 14 poklopac okna
- 15 hvatač nečistoća



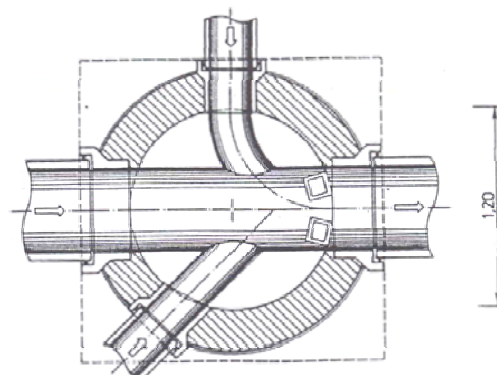
presjek B-B



presjek C-C

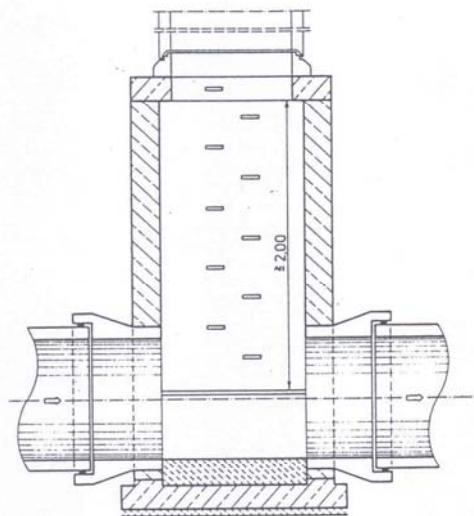


presjek A-A

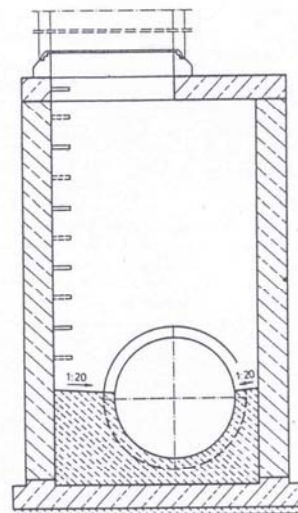


varijanta

**Monolitno okno do  
profila DN500mm**

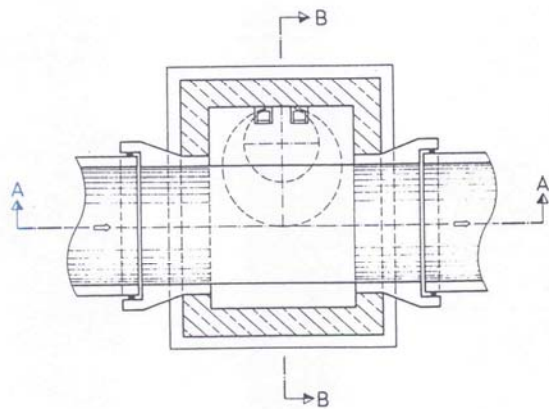


presjek A-A

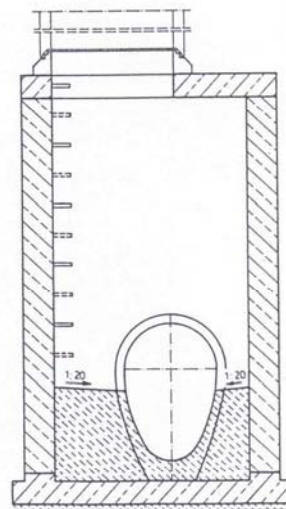


presjek B-B

**Okno preko profila  
DN600mm**

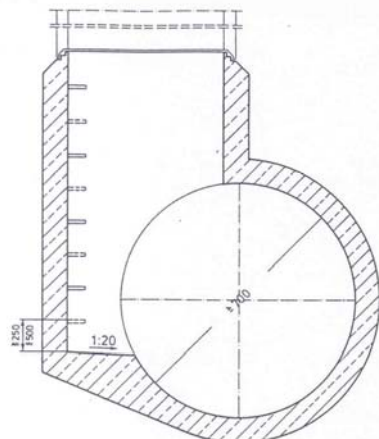


tlocrt

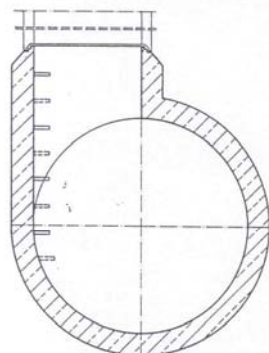


varijanta

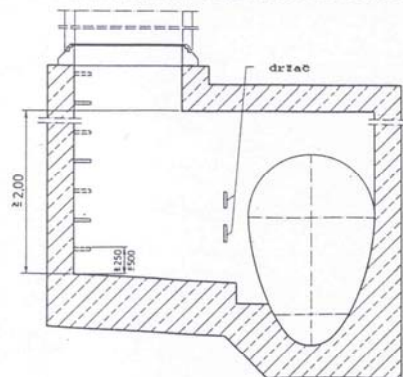




tangencijalno okno s jednostranim nogostupom



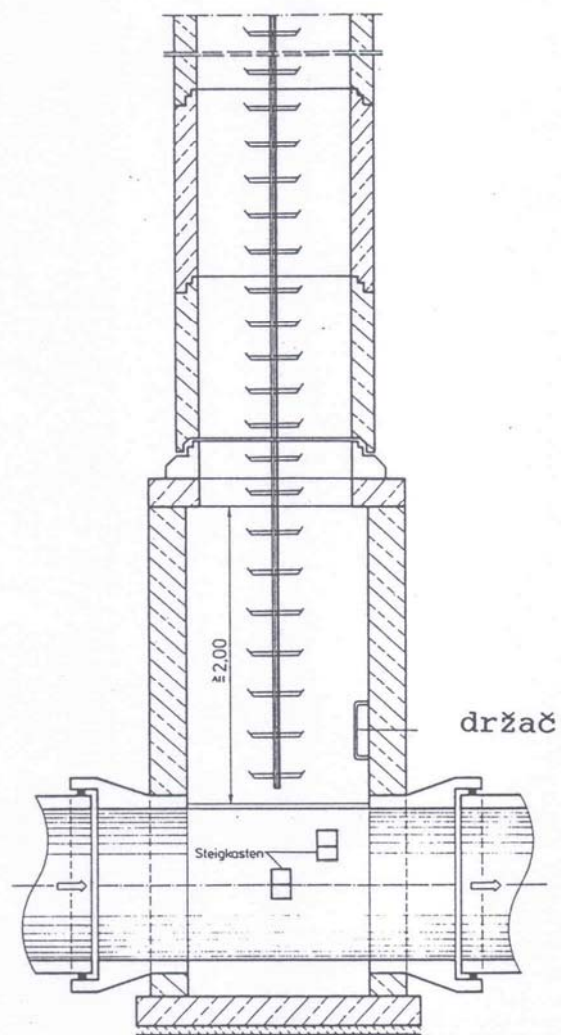
tangencijalno okno bez nogostupa  
oborinski ili rasteretni kanali



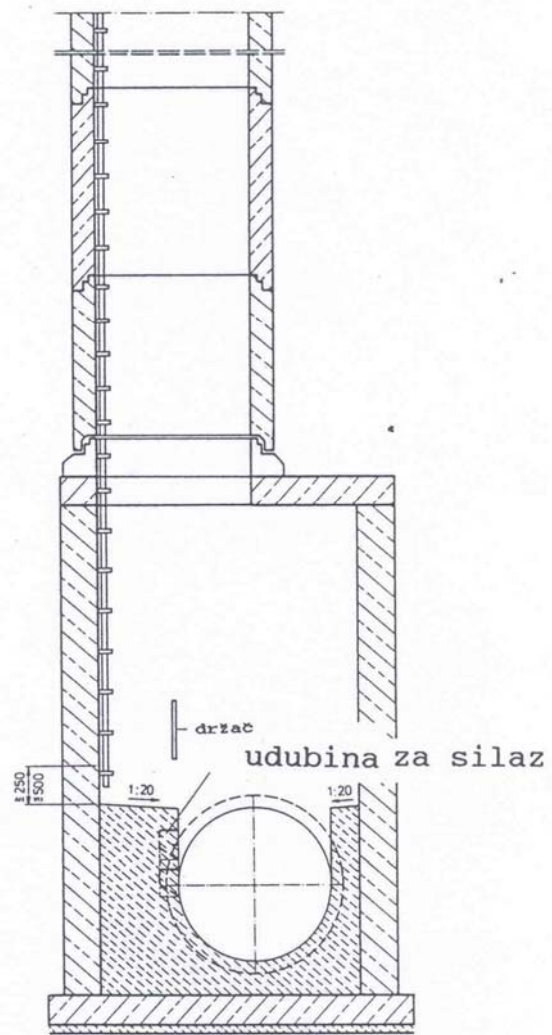
s bočnim nogostupom

**Okna s bočno  
postavljenim silazom  
(veliki profili cijevi)**



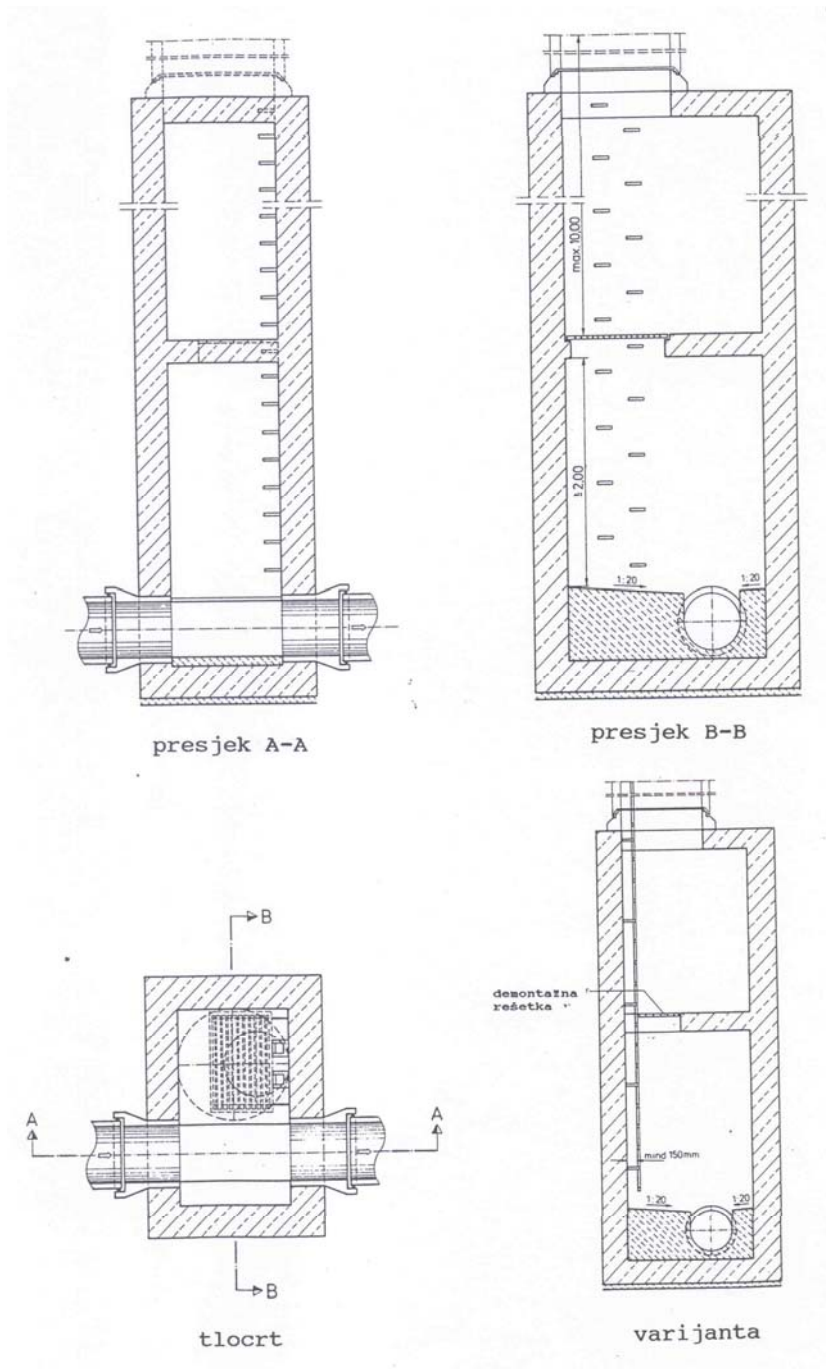


presjek A-A

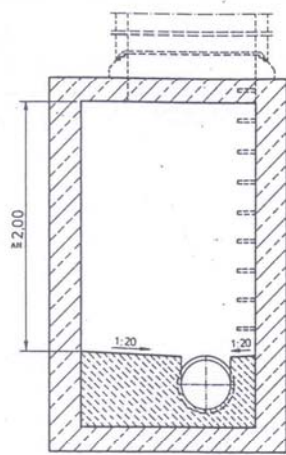


presjek B-B

**Okno velike dubine s  
osiguranjem od pada**

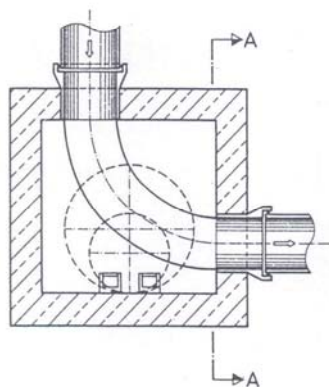


**Okno velike dubine s  
međupodestom**

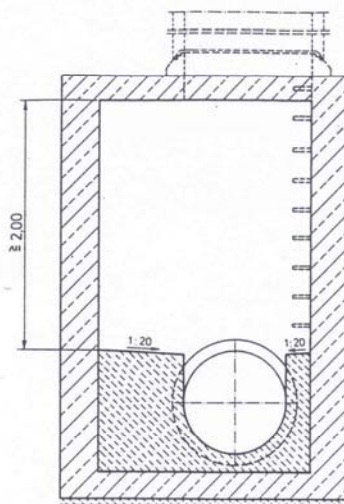


presjek A-A

a

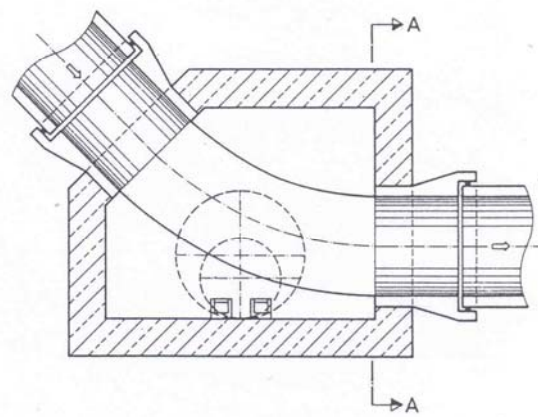


tlocrt



presjek A-A

b

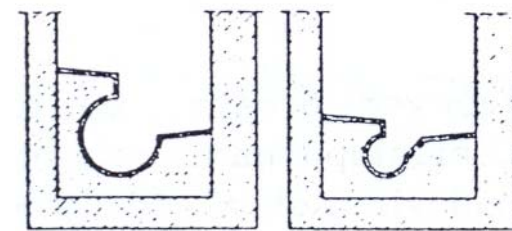


tlocrt

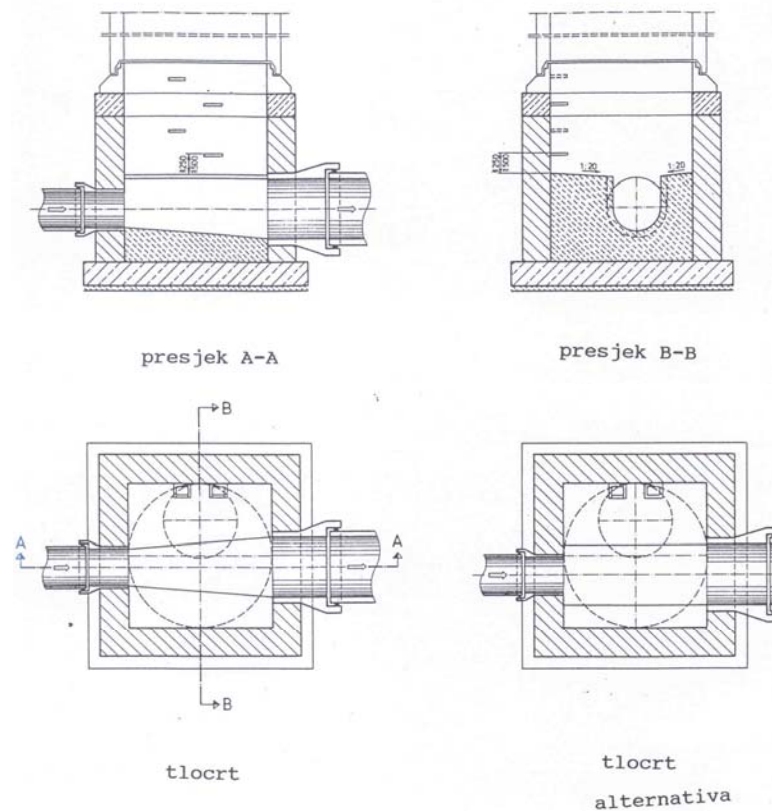
**Okno za skretanje kanala:**

**a) do DN 500mm**

**b) od DN 600mm**

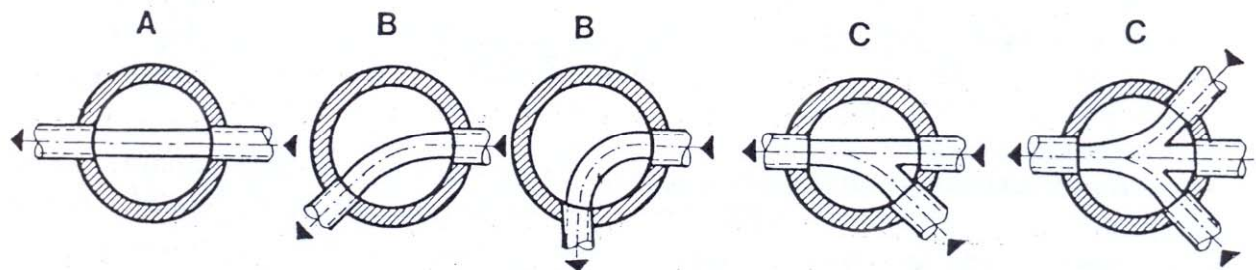


**Oblikovanje kinete u luku kod velikih padova kanala:**



**Izvođenje kinete u  
pravcu kod promjene  
profila kanala**

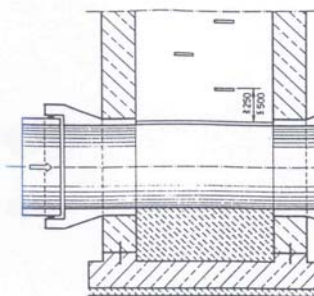
$$R \geq 3D; \alpha_{\max} = 90^\circ$$



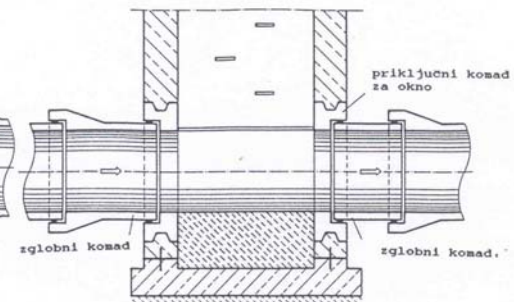
**Izvođenje kinete: a) kanal u pravcu, b) kanal u skretanju, c)  
priključenje više kanala**



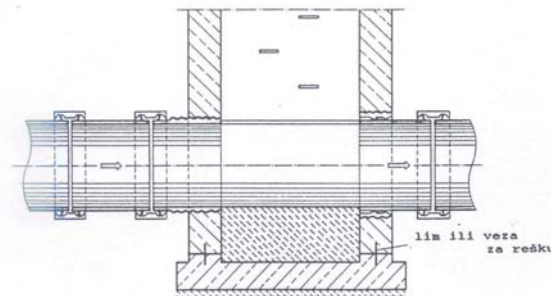
## Načini priključenja različitih vrsta cijevi na okna



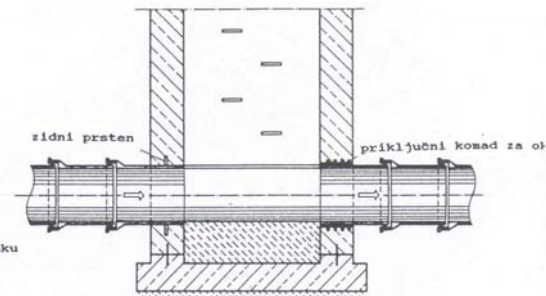
priključenje betonskih cijevi



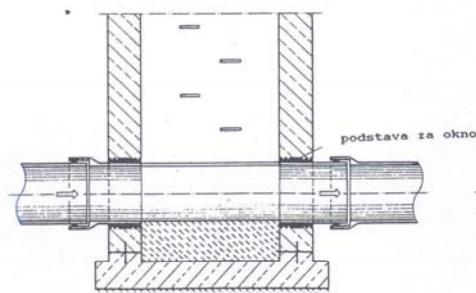
priključenje betonskih cijevi (varijanta)



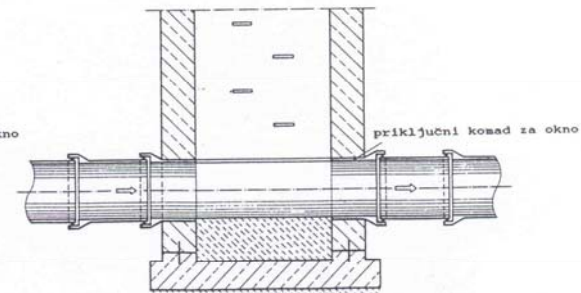
priključenje AC-cijevi  
s dvije mogućnosti priključenja



priključenje L.Ž. cijevi  
s dvije mogućnosti priključenja



priključenje plastičnih cijevi



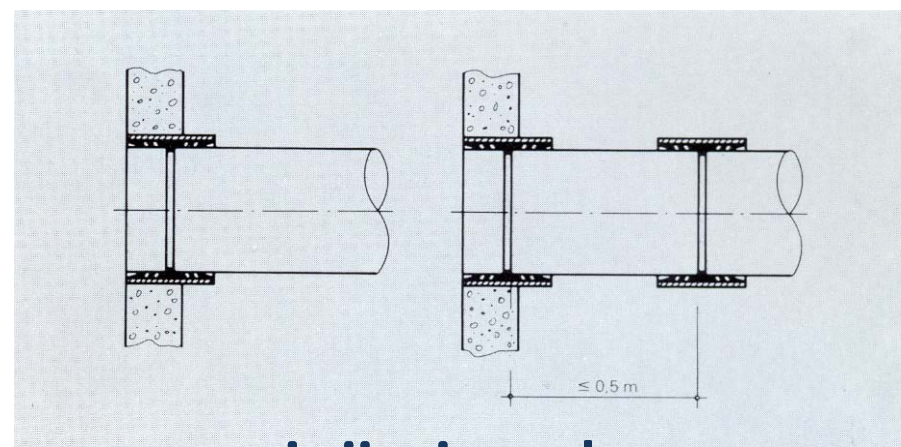
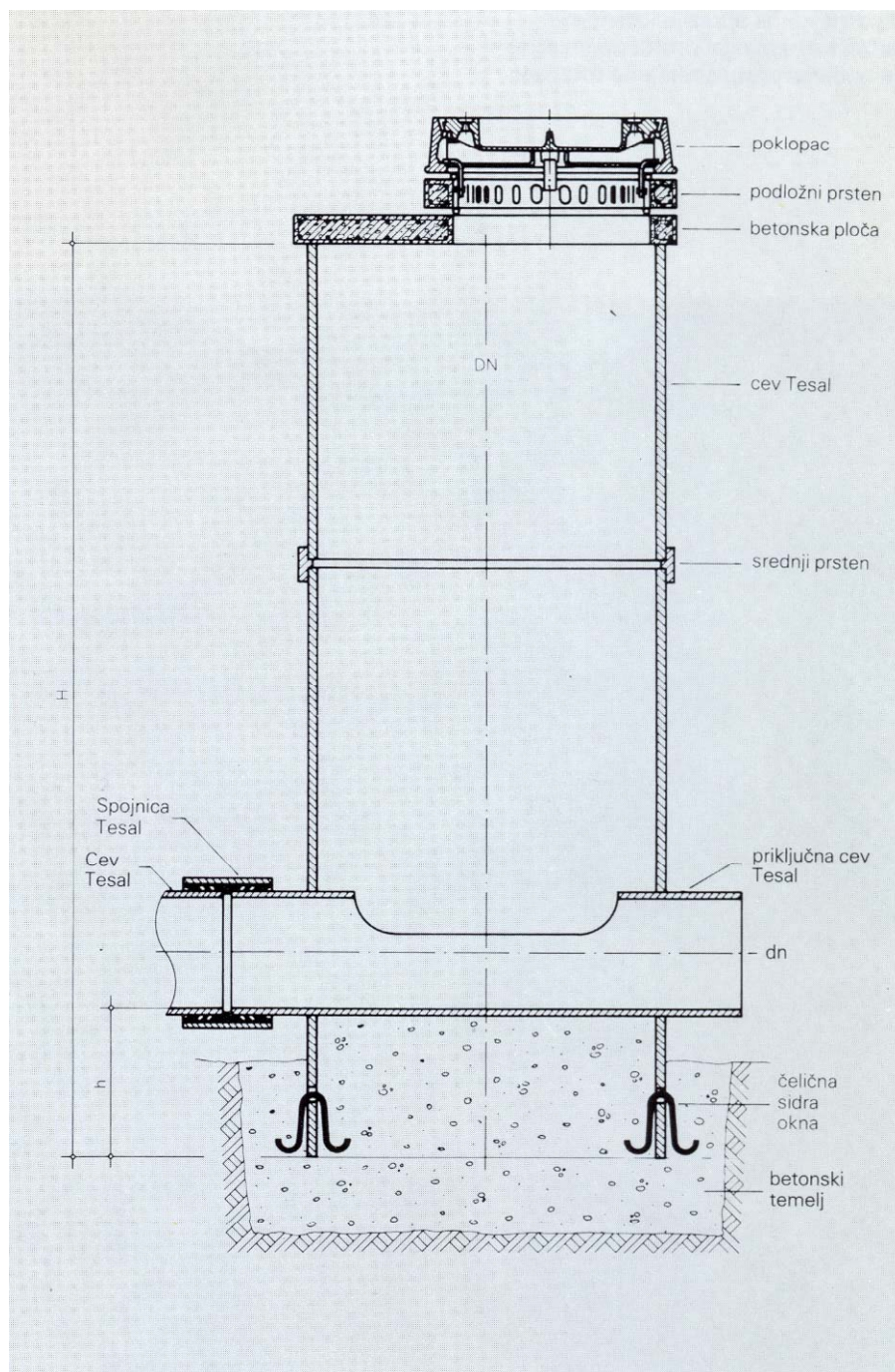
priključenje cijevi od kamenštine



**Izrada kineta od poliestera**



## Montažno okno od poliestera



spoj cijevi na okno

## Betonsko montažno okno "SAMOBORKA"



**gumena brtva**





RO 1000



## Polipropilenska okna



**Polietilenska okna**



# Poklopci

**Okrugli**

**Φ600**

**Φ800**

**Kvadratni**

**600/600**

**800/800**



**Klasa A - 15 kN**

**Klasa A - 50 kN**

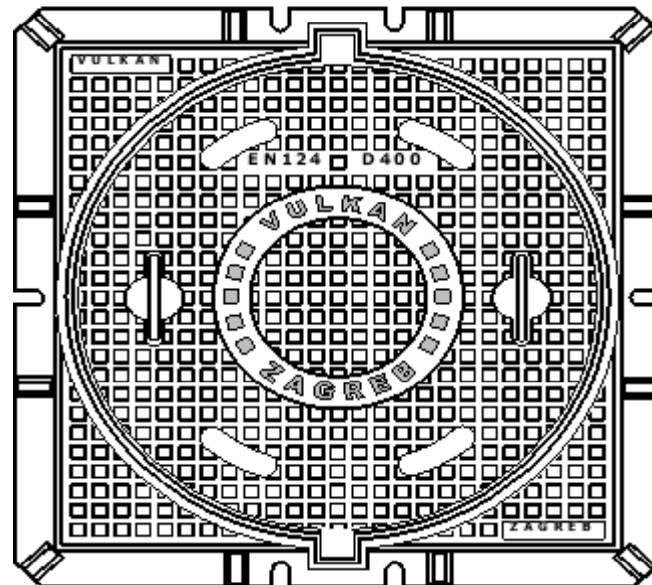
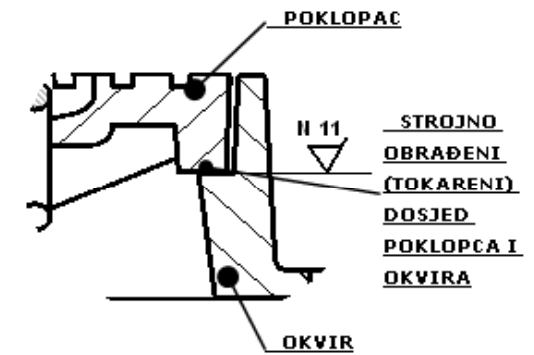
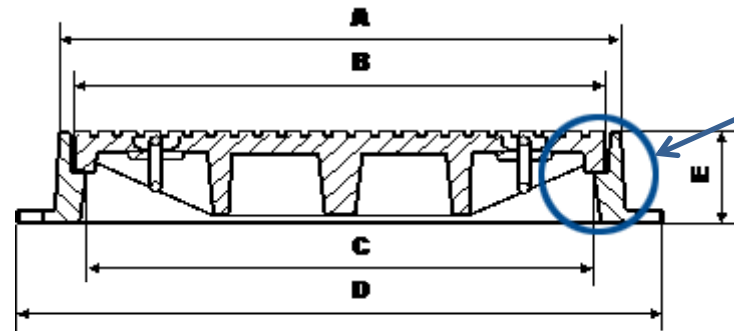
**Klasa B - 125 kN**

**Klasa B - 150 kN**

**Klasa C - 250 kN**

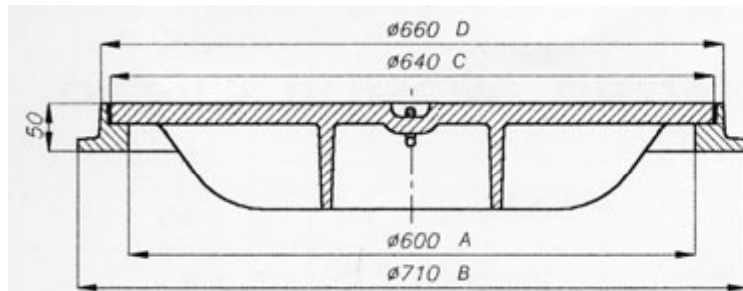
**Klasa D - 400 kN**

# Kvadratni poklopac

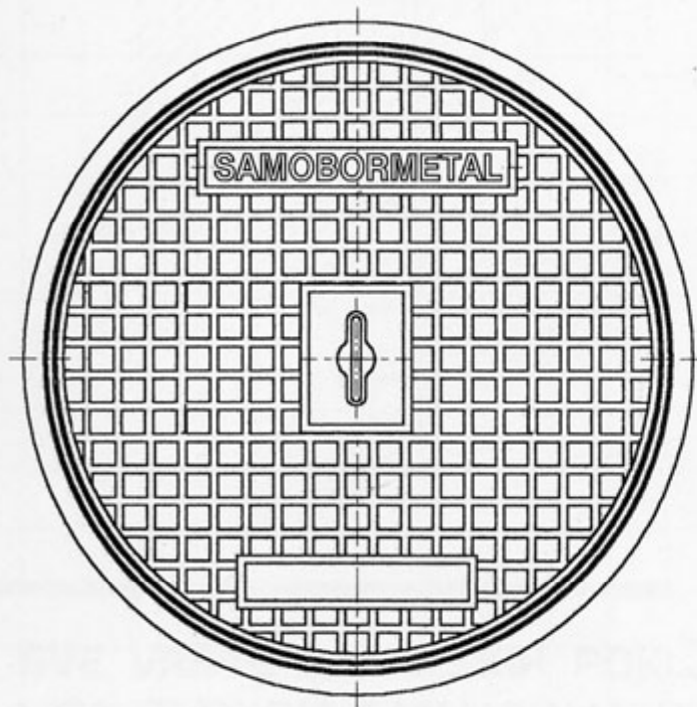




## Okrugli poklopac



NOSIVOST	A	B	C	D	KG
50 KN	600	710	640	660	54
150 KN	600	710	640	660	65
250 KN	600	710	640	660	85
400 KN	600	710	640	660	92



## Magnetni podizač poklopaca





**Poklopci s raznih strana svijeta**