

CONCRETE MANHOLE KKS2

List of components

- 1 upper half
- 2 base slab
- 3 cover + bolts, nuts for fastening
- 4 spacer ring(s)
- 5 brackets
- 6 consoles + bolts, dowels
- 7 connectors
- 8 ready-mixed concrete 50kg

Manhole installation requires

1. transport to site:
 - a) vehicle with 1t load capacity (truck)
 - b) lifting apparatus with 1t lifting capacity (excavator, crane, lift)
2. unloading on site:
 - a) lifting apparatus with 1t lifting capacity (excavator, crane, lift)
3. placing manhole into the trench requires a lifting apparatus with 1t lifting capacity (excavator, crane)
4. assembly:
 - a) lower half installation (excavator, crane)
 - b) upper half installation (excavator, crane)
 - c) installing of brackets & consoles (two men)
 - d) breaking through, drilling of connection points (two men)
 - e) cover installation with bolts (two men)
 - f) pouring concrete (two men)

Summary: Installation required a lifting apparatus for approx 0.5h and it took two men **approx. 2h.**

DISADVANTAGES

- a) transport to site expensive and cumbersome
- b) requires a lifting apparatus for loading and unloading
- c) requires a lifting apparatus for installation
- d) requires assembly
- e) consists of several components
- f) not soil or water resistant
- g) crumbles and cracks with time
- h) no floating cover (existing floating covers very expensive)
- i) requires regular maintenance
- j) sensitive to the sun, water and the cold
- k) requires post-installation monitoring
- l) connection points can only be made on site

NO ADVANTAGES

PLASTIC MANHOLE KKS2

List of components

- 1 manhole as one complete unit
- 2 floating cover
- 3 connectors

Manhole installation requires

1. transport to site:
 - a) car with 100kg load capacity (passenger car, small van)
 - b) two men
2. unloading on site:
 - a) two men
3. two men to install

Summary: Installation took two men **approx. 10 min.**

ADVANTAGES

- a) transport to site cheaper
- b) no lifting apparatus required for loading and unloading
- c) no lifting apparatus required for installation
- d) no assembly required
- e) no separate components, comes as one complete unit
- f) completely soil and water resistant
- g) does not crumble or crack
- h) floating cover that adjusts to the surface
- i) does not require any future maintenance
- j) not sensitive to the sun, water or the cold
- k) guaranteed factory quality that doesn't require post-installation monitoring against water or soil damage (simplifies monitoring work)
- l) connection points can be ready-made at the factory

NO DISADVANTAGES

Indirect savings

- a) no need to buy (rent, lease) a truck to transport manholes in the future, as a passenger car is sufficient (small van or trailer)
- b) no need to send a lifting apparatus to load to and unload from a vehicle
- c) no need to call off trenching machinery from trenching in order to assist with manhole installation
- d) no need to spend man-hours on assembly
- e) no need to acquire, maintain or keep secure small tools such as generator, hammer drill, extension leads, mixing bath, trowels etc.