

Instructions for the use of concrete masonry units

The following will give you some basic principles and advice which should be followed when using paving stones.

Installing paving stones

- a. Stones brought to construction site must be stored on an even surface. In order to reduce efflorescence effects it is recommended to take the stones out of their packaging as soon as possible.
- b. Construction drawings should be followed when calculating the ground which will be covered with paving and curb stones and it should be considered that the part covered with curbs must stay within the limits of the ground.
- c. At the preparation of subsoil, soil should be at first cleaned which includes the removal of unsuitable subsoil (growth soil, peat) and possibly decaying materials (tree roots, sawdust, etc.). Subsoil must have high load-bearing capacity for it to enable building other layers on it. Subsoil should also have slight incline towards water outflow (we recommend at least 10 mm per 1 running meter of the ground). In case the subsoil has weaker load-bearing capacity, it is recommended to use geo-textiles or mixture prepared in cement mixer.
- d. At the preparation of the support and bottom layer, the soil's characteristics, load-bearing capacity of the filling material and the use of the future road should be taken into account. In case of an evenly burdened bottom layer, the support layer may not be built at all. In case of an unevenly burdened bottom layer, a sufficiently thick support layer must be built from crushed stones. The thickness of each layer should be 100–300 mm. If the bearing layer is thicker it is recommended to thicken the soil by using vibration equipment of suitable power.
- e. Crushed stones with 16–32 mm fraction (or coarse gravel) are used for bottom layer and crushed stones with 32–64 mm fraction for support layer. It is not recommended to use sand for evening the unevenness and bumps of bottom layer.
- f. At places where it is difficult to thicken the bottom and support layer (such as near walls) it is recommended to use cement bound materials.
- g. The next step should be the installation of curbs along the external edge of the paving. The bottom layer must definitely reach the external edge of curbs. Curbs must be placed on a 100 mm thickened support layer. Use half dry or dry sand or construction concrete fixing.
- h. After laying and evening support and bottom layers, the result is checked with a measurer. Deviations of a finished bottom layer from the project height should not exceed 10 mm.
- i. Crushed stone screenings or fine sand (fraction 0–5 mm) is used for making the installation layer. An installation layer which is up to 50 mm thick must be carefully evened. If stones are laid manually, sand is preserved as porous as possible until paving stones are laid. If stones are

laid mechanically, sand must be firmly thickened in order to avoid stones sinking in the sand when paving stones are placed. In order to get an even layer of sand, levelling rails, edge barrier of a nearby pavement, a tightened string or horsehair can be used as a reference point. Lower parts on the sand must be filled again and evened by using a levelling board. It must be noted that sand would fill all the areas near edge barriers. It is not recommended to walk on finished foundation.

- j. Laying stones on sand must be started from a wall or curbs. Stones are laid tightly next to one another while observing the desired pattern. A 2–3 mm joint is left between stones if stones do not have joint projections. The right alignment of a stone row can be checked with a tightened string. The surrounding of all objects in the pavement (such as gutter, wells, posts) are laid with full-length stones; if the next stone does not fit in its place, it is left empty in the beginning. At the final stages of the work, empty spots are filled with stones that have been cut in proper size. It is not recommended to use pieces of paving stones which form 25% of the original stone for filling the empty spots, as they may easily move from their place. Such spots should be filled with concrete mixture.
- k. Right after installing the pavement joints must be filled with fine dry sand. The sand used under the pavement is usually not suitable for that. The sand binds the stones together and does not let them sink askew. A broom or a brush may be used for doing that. Now the stones are evened and tightened with a vibratory plate. If a stone is damaged during the vibration, it must be immediately removed and replaced with a new one. The evenness of the finished surface is checked with a rule. Finally more fine dry sand is sprinkled on the pavement and joints are finally filled. After rain or washing the ground it must be checked that joints are filled with sand. In order to discover and eliminate possible mistakes it is recommended to check the pavement at least once a month after it is finished.

Maintenance

- a. It is not permitted to use street cleaning machines and heavy machinery for the maintenance of paving stones.
- b. Use a soft brush or broom for cleaning the pavement.
- c. Maintenance of pavement means cleaning paving stones from trash and weed or moss.
- d. When you notice weed or moss, it should be removed while not damaging paving stones and joints must be again filled with fine sand.
- e. During wintertime, avoid placing salt on paving stones and breaking ice by striking it.
- f. Constant spreading of water on the stone surface causes salts to wash out (efflorescence).