Joniec

INSTRUCTION OF FENCE BUILDING

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Fence should be built in accordance with the best building practices and provisions of building regulations. Information included in hereby guidebook are general guidelines and recommendations. In case of designed fences, the constructor's recommendations and guidelines must be taken into consideration. Investor and constructor, who has to obtain required qualification and authorizations, are responsible for the overall work.

I. VARIANTS

Based on JONIEC® products we can do the fence in several ways:

1. Fence built of posts.

a) Drill holes for reinforced concrete feet. Build posts from blocks on encased in concrete feet. Precast foundations or concrete boards can be installed between posts. Using concrete foundations is a great solution which allows for fast and cost-effective building of a fence base, because of low materials and labour costs.
b) Make strip footing over the entire length of the fence, releasing the reinforcement in the areas where the posts are planned. Strip footing should be placed few centimetres over the ground level.

2. Standard fence – foundation made of blocks placed on strip footing over the entire length of the fence; posts built on the foundation at planned distances.

Two ways of building:
a) Do strip footing under the entire length of the fence with proper posts, gates and panel segments layout. Lay the foundation of blocks in layers and fill with concrete. Next, install posts (like the foundation) at planned places and install caps.
b) Do reinforced concrete feet on which SUPPORT system should be installed. Then run the job just like in point 2a.

3. Standard fence with expanded posts – expanded posts built directly on concrete feet or strip footing; foundation built between posts.

Plan the size and placing of the posts. Do strip footing under the entire length of the fence. In the place of planned posts, strip footing must be fitted to their size. First, built posts, then built foundation in layers between posts.

4. Wall built of blocks over the entire length of the fence.

The principle of building is the same as in point 2 but considering following parameters: during designing and building of strip footing and during reinforcement installation take into consideration landform, localization, type of soil, size and weight of the wall.

5. Foundation made of 2 - 3 layers of blocks; posts made of metal.

The principle of building is the same as in point 2 but considering following parameters: posts should be fastened to the foundation foot to the appropriate depth or be installed on the foundation before placing caps.

II. FOUNDATION BUILDING

Make strip footing below the level of ground freezing. Due to those levels, Poland is divided into four zones. The level of freezing is respectively: in 1st climate zone – 0,8 m, in 2nd climate zone – 1 m, in 3rd climate zone – 1,2 m, and in 4th climate zone – 1,4 m. This parameter should not be ignored because in winter groundwater is freezing, what causes foundation damages and in result whole fence damage.

During foundation building take into consideration following guidelines: in the strip footing make vertical expansion joints every 10 – 15 meters. We recommend making slots where the foundation is joining the posts. Remember to make cutting in blocks which are placed above slots, which will be extension of the slot. It prevents fence elements from cracking in case of foundation moves. Fill slots with non-permeable permanent elastic sealing material.

Place horizontal reinforcement in the strip footing what will additionally harden the strip footing and prevent it from cracking. Place vertical reinforcement in the corner of post's core. During performing reinforcement follow constructor's recommendations and guidelines. Vertical and horizontal reinforcement can be connected by rebar tie wire in order to prevent bars from moving during filling with concrete.

Before filling excavation with concrete, make formwork, especially when soil is not cohesive. Thanks to that, the land will not fall to the excavation and concrete will not mix with it. Concrete used to strip footing should meet the requirements of the PN-EN 206:2014 norm. According to it, concrete of class XC2 is predicted for that type of elements. If we are dealing with an individual project, we should use requirements contained therein.

General guidelines for concrete used in strip footing:

Concrete ordered in concrete plant	- concrete strength class C20/C25 - maximum w/c ratio=0,60 - minimal cement content 280kg/m3 - minimal cement content CEM I 42,5 and CEM II/A 32,5 (when k=0,2) 260 kg/m3 - minimal cement content CEM I 42,5 and CEM II/A 32,5 (when k=0,4) 250 kg/m3 - slump class S3 - maximum aggregate's granulation 16 mm
Concrete made in concrete mixer	Exemplary proportions of components for the production of concrete mixture of strength class C20/C25, based on minimum grade 32.5, sand washed with a maximum particle size of up to 2 mm, rinsed aggregates with a maximum particle size of up to 16 mm and tap water (in case of other components, parameters of concrete may change).

Table 1

Remove formwork after 2 - 3 days. Apply horizontal insulation on the strip footing, which protects the fence from pulling water capillary from the ground – insulation significantly prevent from lime efflorescence and cracks made by frost. We recommend using IZOHAN foil for horizontal isolation.

III. BEFORE FENCE ASSEMBLY

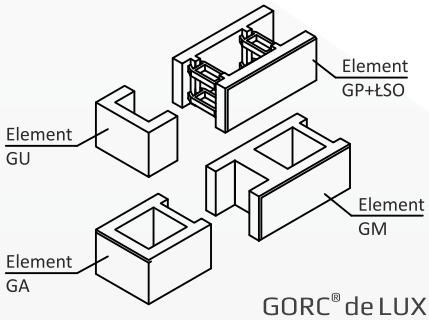
Place elements of the fence by fitting the blocks together. Place blocks tight to each other. Minimize any horizontal deviation by grinding or using nog.

Fence system GORC® is characterised by stone-like surface, which is achieved by splitting concrete blocks. Due to splitting technology each block is uniqueness. During assembly, blocks should be selected so that any differences in the splitting are eliminated, i.e. blocks with similar surfaces place next to each other.

MULTI-COLOR® technology which is used in fence system GORC® makes our blocks imitate natural stone by creating a variation of shades and mutual diffusion of colours. The characteristic feature of MULTI-COLOR® is that each block is differently coloured due to uneven colour distribution. During fence assembly, colour distribution in each block should be taken into consideration. Blocks should be mixed and placed so that to create the most beautiful mélange. The best effect is gained by mixing blocks so that one colour is not saturated in a given area.

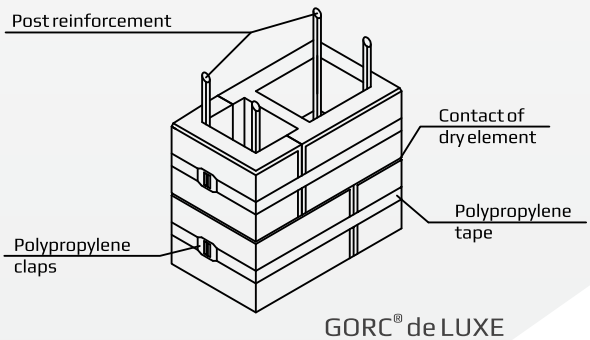
IV. FENCE ASSEMBLY

Layers of split fence system GORC® place alternately:



GORC® de LUXE

Glue blocks to each other by using montage glue (manufacturer recommends using JONIEC Sealing glue or roofing silicone). As a result, placed blocks will not change their position during filling with concrete and all welds will be sealed. Do not move glued blocks for minimum 4 – 5 hours in order to prevent concrete from getting through the slots between the blocks. It can stain the fence's surface. Additionally, posts can be protect from unwanted blocks movement during filling them with concrete by using strapping tape.



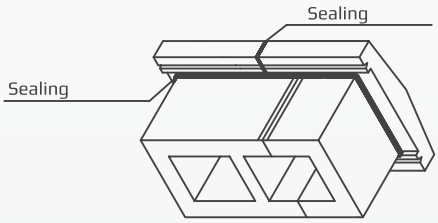
GORC® de LUXE

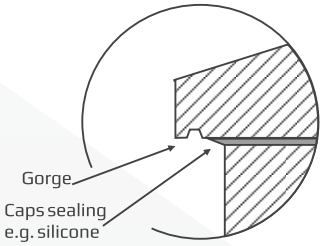
Fill blocks with concrete in layers – 1 – 3 layers in once. Proper quality of cement and aggregates should be taken into consideration while preparing concrete for filling the blocks. Moreover, exposure class should also be taken into account – Manufacturer recommends exposure class not lower than XF1. Before filling blocks with concrete wet those with water in order to not pulling water from concrete mix by dry blocks. Do not water blocks with a big stream (for example directly from a bucket). Water should be sprinkle with sprayer (for example Karcher). Blocks should be wet however water cannot be inside the blocks. If this happens, remove water before filling blocks with concrete.
Consistency (degree of liquidness) of concrete mix should be easy to form and fit into blocks' chambers. Plasticizer added to concrete improves concrete's workability and hence concrete fills tightly all chambers. During filling blocks with concrete, do manual compaction by using wooden scantlings or metal rod. Do compaction until mixture tightly fills chambers, however be careful not to desegregate the mixture. From the moment of preparation to the use of concrete should not pass more than 40 minutes under normal weather conditions. It is forbidden to add water to concrete mixture because it weakens concrete quality.

After filling blocks with concrete mixture, cover them with construction foil so that vaporization from concrete mixture does not appear. Use the cover until placing the caps or for minimum 7 days.
It is extremely important not to carry out work below +5C and above +25C. In exceptional situation work can be carried out in temperature +30C, however with careful care procedure.
Contamination caused by the work should be removed from the surface of blocks immediately.

V. CAPS ASSEMBLY

If the cap does not have a gorge - make appropriate cuts. Grind the place of contact of blocks with the caps and glue on frost-resistance adhesive. Seal the joints and gaps between the visors or between the visors and the blocks to protect the blocks against moisture. To protect caps from dirt, moss growth or other factors impregnate or paint them with concrete paint.

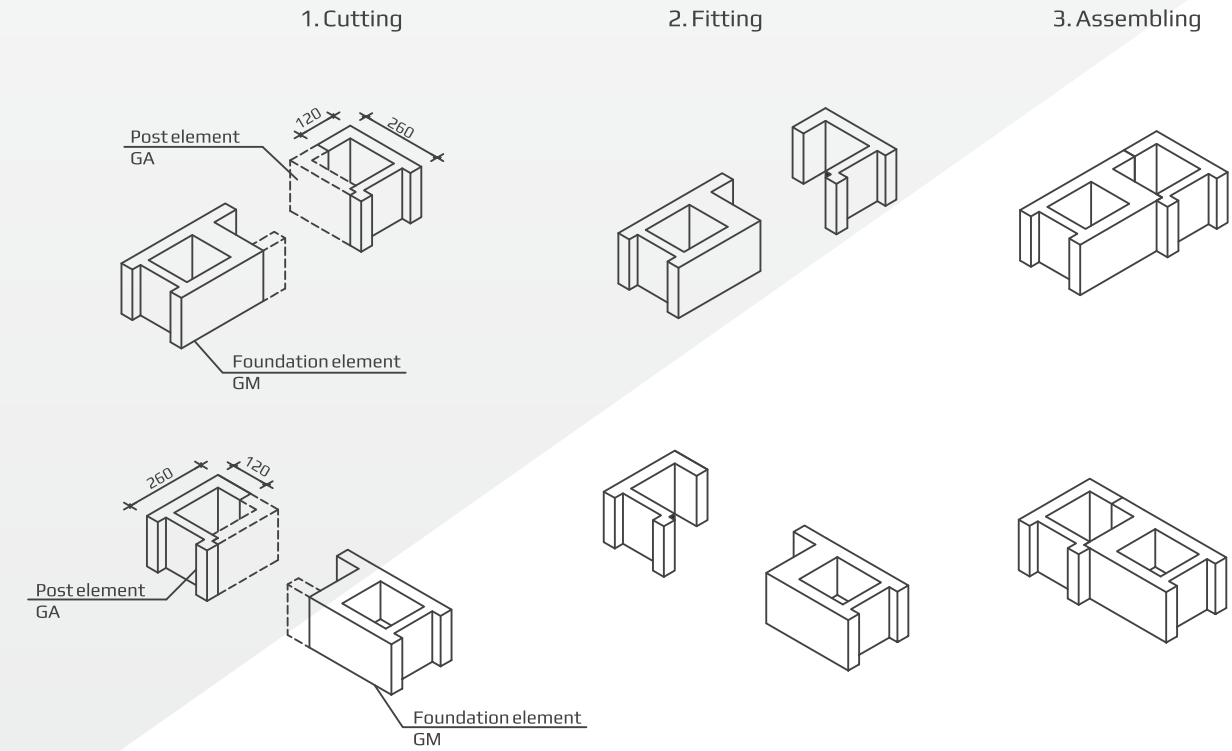




VI. THE PRINCIPLE OF BUILDING FENCE CORNERS

In the case of fences with corners, foundation blocks and caps have to be cut in order to gain an aesthetic fence.

GORC® DE LUXE



VII. FINAL STAGE

Clean the residue of dirt from the surface of the blocks. Use the cleaning agent only at the dirt spot in accordance with the manual instruction. Rinse thoroughly with water. The manufacturer recommends using preparation for removal of efflorescence JONIEC. Impregnate the fence in proper weather after drying all elements. Remember that elements have to be completely dry during impregnation.

VIII. GATES AND PANELS ASSEMBLY

Drill holes in the posts so that gates and panels fastening elements are anchored in concrete core. Then fasten them by using chemical anchor. The anchors should be placed closest to the centre of the post to ensure the stability of the assembled gates and panels. The holes should be filled with adhesive. Fasten panels and gates in accordance with manufacturer's instruction. Do not fasten them at the contact of block with the core because it leads to damage or cracks of concrete elements.

IX. ADDITIONAL INFORMATION

FENCE ASSEMBLY ON SLOPING GROUND

On sloping ground fence can be built in two ways:

1. When the line of built fence coincides with the ground: place blocks in a slopping manner – according to the drop of the ground.
2. When building fence cascade, the ground unevenness is levelled by making strip foundation in the horizontal line creating stepped jumps. For visual purposes, it is recommended to make steps that are adjusted to the height of the block or the multiple of the height of the block.

FENCE ASSEMBLY ON THE EDGE OF THE SLOPE

While building fence on the slope, do properly strip footing. Take into consideration the type of soil on which the fence will be built. If the ground is exposed to movements or landslides – do geological expertise and consult the project with constructor. It can prevent from unpleasant happenings.

In the case of fence built across the acclivity, it is extremely important to do drainage. Flowing from a slope water must be drained so that it does not penetrate the strip footing and fence. It will prevent concrete from absorbing water and in result from calcium efflorescence and cracking of concrete elements.

Drainage should be made of drainage pipes placed along the line of the fence from the upper side with the possibility of drainage across the fence. Drainage pipes should be placed on two levels:

1. First pipe on the bottom line of the strip footing
2. Second pipe few centimetres under the ground

Drainage should be built in accordance with the best building practices.

WARRANTY

Warranty period: 5 years from the date of purchase.

WARRANTY INCLUDES:

The warranty covers damages and defects resulting from the fault of the manufacturer, i.e. defects in performance found on receipt of the goods.

WARRANTY DOES NOT INCLUDE:
The warranty does not cover damages resulting from: improper design or construction of the fence, improper or incompatible with the principles of the built-up assembly of purchased products, use of inappropriate materials for assembly of products, failure to follow the instruction, Seller's recommendations on assembly, insulation, impregnation and protection of products, use of low quality or consistency of concrete for filling blocks, improper and incompatible with the principles of building strip foundation, improper use, improper storage and transport, force majeure, particularly natural disasters and other unforeseeable accidents. Warranties are not subject to and are not considered to be defects permitted by applicable standards and reference documents: deviations in dimensions and appearance of products, calcium efflorescence on the surface of the products, natural changes in product's colour, possible capillary surface cracks resulting from shrinkage associated with maturation of products, deviations in structure and colours due to the product's manufacturing process and the natural variability of grain size and coloration of aggregates and other raw materials, elements' cracks resulting from using concrete of low exposure class or improper building or curing.

CALCIUM EFFLORESCENCE:
Calcium Efflorescence is a natural phenomenon. The cause of efflorescence lies in limestone which is one of the cement components used for the production of fencing blocks. During chemical bonding of cement with water, the calcium contained in cement remains unbound. Rainwater and dew penetrating the blocks dissolve free calcium. This solution exits through the capillaries to the surface and evaporates water. Free calcium reacts with carbon dioxide from the atmosphere and forms a hardly soluble limestone that settles on the surface of blocks to form white rays. Depending on the type and intensity, the eruptions disappear under the influence of use (abrasion) for up to 3 years.
To protect the fence against calcium efflorescence it is necessary to impregnate the fence. The impregnation step should take place after the period of complete drying of the concrete. For impregnation we recommend concrete fence impregnate JONIEC.

SHADES
Differences in shades of one colour may be due to production under different atmospheric conditions and to the variability of aggregates that is a component of natural origin. Differences in shades are not a defect in a product and are not a reason for complaint.

REMEMBER!!! WHILE USING DIFFERENT PRODUCTS (FENCES, PALISADES, AND ELEVATIONS), SURFACES AND COLORS OF ELEMENTS VARY FROM EACH OTHER DUE TO USING DIFFERENT KIND OF AGGRAGATES AND PRODUCTION TECHNOLOGY.