



Joniec



**FENCE CONSTRUCTION
INSTRUCTIONS**

ROMA Horizon

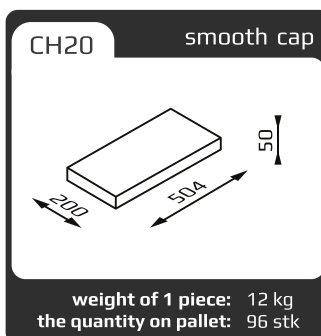
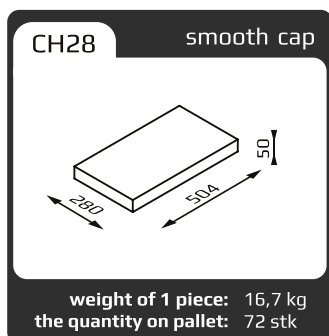
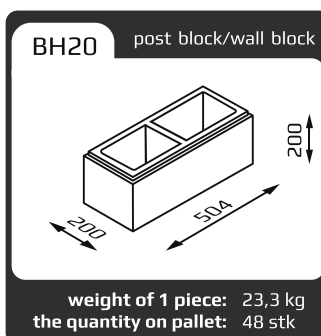
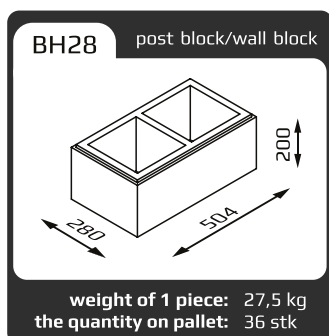
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Fence should be built in accordance with the building art and provisions of building regulations. Information included in hereby guidebook are general guidelines and recommendations. In the case of designed fences, priority must be given to the builder's recommendations and guidelines. Investor and contractor, who has to obtain proper qualifications and authorizations are responsible for the overall work.

I. SYSTEM COMPONENTS



II. VARIANTS

Based on JONIEC® products, we can make a fence in several ways:

1. Fence built of posts only.

- Drill holes for reinforcement concrete feet. Build posts from blocks on flooded feet. Prefabricated boards can be installed between the posts or concrete foundations. The proposed solution is one of the cheaper ways to build a fence due to the low cost of materials and labor.
- do foundation benches along the entire length of the fence, releasing reinforcement in places where posts are planned of blocks. The foundation bench should be placed a few centimeters above ground level.

2. Standard fence - a foundation made of blocks placed on the foundation along the entire length of the fence; posts built on the foundation at the planned distances.

Proposed two methods of construction:

- make a concrete bench along on the whole fence with proper arrangement of posts, gates and spans. Lay the foundation of blocks laying them in layers and pouring with concrete. Then mount the posts (just like the foundation) in planned places and mount the caps
- Do reinforcement of concrete feet on which "The Support" foundations will be mounted. Continue the work as in the poured concrete bench system (point 2a).

3. Standard fence with widened posts- widened posts built directly on the concrete foot or foundation benches: foundation built between the posts.

Plan out the size and location of the posts. Do foundation benches along the entire length of the fence. At the places of posts planned, the foundation bench must be adjusted to their size. First build the posts, and then build the foundation in layers in the spaces between the posts.

4. Full wall made of blocks along the entire length of the fence.

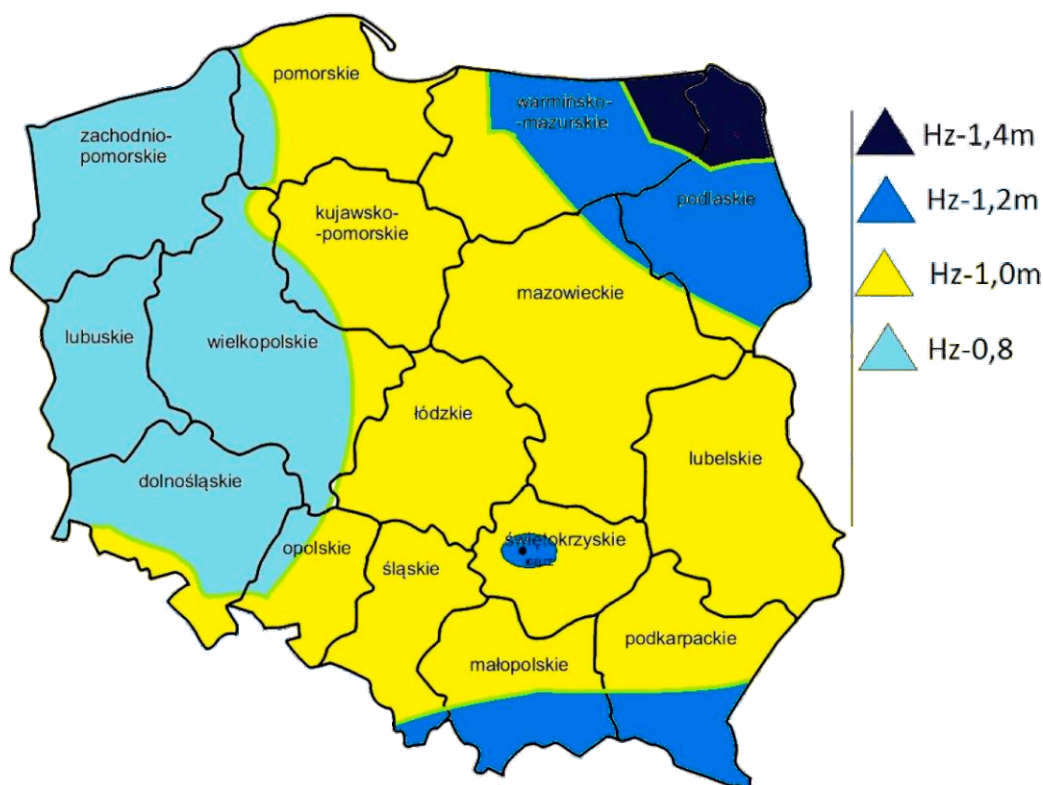
The building principle as in point 2 with the following parameter: designing and building a concrete bench and when installing reinforcement, the terrain conditions, locations, soil type and wall size and weight should be taken into account.

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

The building principle as in point 2 with the following parameter: the posts should be anchored to the appropriate depth in the footing or mount them on the foundation before laying the caps. .

III. FOUNDATION BUILDING

Make foundation 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 – 0,8m, in 2nd climate zone – 1m, in 3rd climate zone- 1,2m, and in 4th climate zona – 1,4m. This parameter should be not ignored because in Winter groundwater is freezing, what causes foundation damage and in result wall damage.



During the constructions of foundation take into consideration following guidelines: in the foundation benches make vertical expansion joints every 10-15m. we recommend to make gaps where the foundation is joined with the post. Remember to make a cut in the blocks located above the gaps, which will be an extension of the gap. This will prevent cracking of the fence elements in the event of any foundation movements. Fill gaps with non-absorbent elastic sealing material.

Lay horizontal reinforcement in the foundation, which additionally stiffens the foundation to prevent cracks. place vertical reinforcement in the corners of the planned post core. When making reinforcement, follow the recommendations and guidelines of the designer – builder. Horizontal and vertical reinforcement can be tied together to prevent rods from moving during pouring concrete. Layout is particularly important and releasing reinforcement for post elements from the foundation. In the case of ROMA Horizon system, when laying the foundation to a height of more than 3 layers, we will also reinforce the foundation.

Before pouring concrete into the excavation make the formwork especially if the ground is not cohesive and flakes off. Thanks to this the soil will not fall down for excavation and concrete will not mix with it. Concrete used to concrete feet should meet the requirements of the PN-EN 206+ A1:2016- 12 + PN-B-06265:2018-10 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 for the foundation:

Concrete ordered in a concrete plant	<ul style="list-style-type: none"> -concrete strength class C20/C25 -maximum indicator value $w/c = 0,65$ -minimum cement content 280kg/m³ -minimum cement content CEM I 32,5 i CEM II/A 32,5 (with $k=0,2$) 260kg/m³ -minimum cement content CEM I 42,5 i CEM II/A 42,5 (with $k=0,4$) 250 kg/m³ -consistency S3 -maximum aggregate grain size 16 mm
Concrete made in a concrete mixer	Exemplary proportions of ingredients for production, concrete mix strength class C20/ C25, based on cement minimum 32.5, washed sand with a maximum grain size of 2mm, washed aggregate with a maximum grain size of 16 mm and tap water (if other components are used, the parameters of the mix and concrete may change).

Remove formwork after 2-3 days. Apply a horizontal isolation which protects the fence against capillary pulling water from the ground- insulation significantly prevent from lime efflorescence and the cracks made by frost. Isolation is most often done using single-component high-pressure ecofolia IZOHAN.

IV. BEFORE YOU START BUILDING

Place each layer of the fence first without pouring concrete, adapting the individual blocks to each other. Blocks should be laid so that they adhere closely to each other and that there are no vertical and horizontal deviations. Compensate for any level deviations by grinding or using wedges.

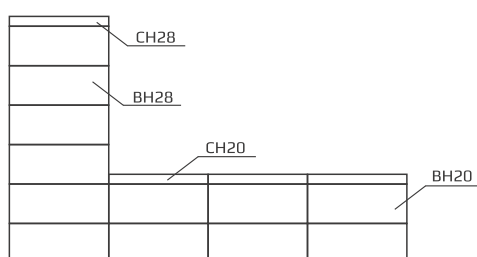
ROMA HORIZON fencing elements have a smooth texture and are available in one-color and MULTI-COLOR versions.

MULTI-COLOR are the effects obtained in the course of production by mixing several colors. A characteristic feature of MULTI-COLOR is that each block is colored differently due to the uneven distribution of colors. When building a fence, pay attention to the different color distribution on each block, then mix the blocks and arrange them so as to create the most beautiful *mélange*. The best effect is obtained by mixing the blocks so that there is no saturation of one color in a given area.

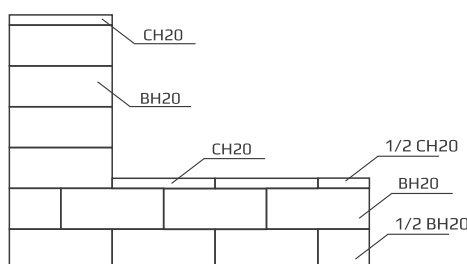
V. FENCE ASSEMBLY

The fence in the ROMA Horizon system can be laid in many ways however, the most common are:

a) "Block on block" foundation



b) Foundation - blocks alternating



Glue the blocks together using assembly glue (the producer recommends using glue for this purpose – sealing glue or roofing silicone) so that the blocks will not change position relative to each other during pouring concrete and all joints will be sealed. Glued blocks should not be moved for a minimum of 4-5 hours to avoid the penetration of concrete through the gap between the blocks. It can stain the surface of the fence. Flood the blocks in layers - one to three layers at a time. When preparing concrete for pouring blocks, pay special attention to the appropriate quality of cement and aggregates used in its production, and ensure that the appropriate exposure class is obtained - producer recommends that it not be lower than XF1. Before pouring the blocks with concrete, moisten them with water beforehand so that water does not get out of the concrete mix through the dry blocks. Do not pour blocks of water with a large stream of water (e.g. directly from a bucket). Water is best dispersed using a sprayer (e.g. Karcher). Sprinkle in such a way that the blocks are moist, while inside they do not cool down to collect water. If this happens, remove excess water before pouring the concrete mix into the blocks.

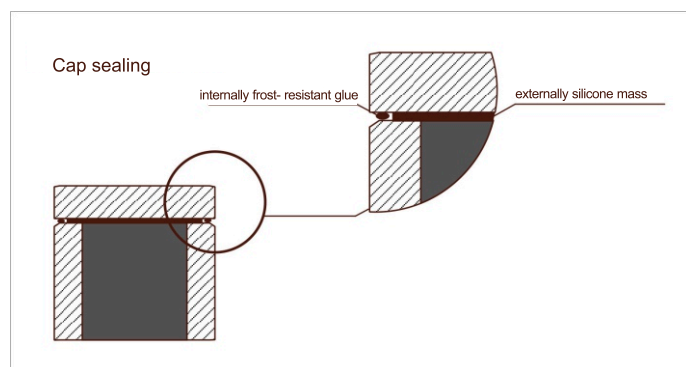
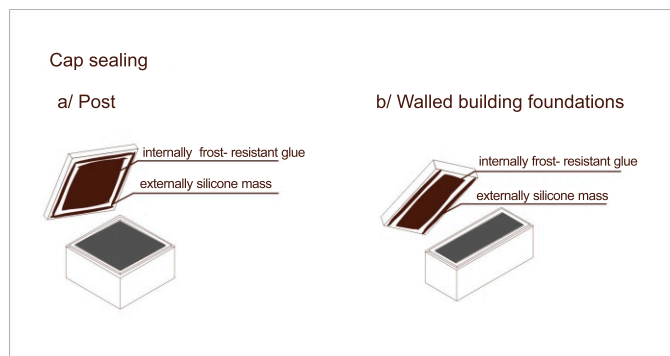
The consistency (degree of liquidity) of the concrete mix should be adjusted so that the mix can easily be formed and laid in the block chambers. The use of a fluidizing plasticizer added to concrete improves its workability, and what goes with concrete tightly fills all chambers (the producer recommends the use of concrete antispasmodic admixture –LBN, Joniec company). Pouring the mixture in blocks should be accompanied by thickening by hand engraving using a wooden square timber or a metal rod. Compaction should be carried out until the mixture tightly fills the mold, but be careful not to separate the mixture. The time that passes from the preparation of the concrete mix to the moment of pouring the blocks should not be longer than 40 min in normal weather conditions. It is forbidden to add water to the mixed concrete, as this weakens its quality.

After pouring the blocks with the concrete mix, cover them with building foil so that the water does not evaporate from the mix. such cover should be used until the fence is finally covered with finishing caps or for a minimum of 7 days.

It is very important not to exercise do not carry out concreting works at temperatures below +5 C and above +25 C. In exceptional cases, concrete works can be carried out at temperatures up to +30 C, however with particular care treatments. Dirt caused during works should be removed from the surface of the blocks on an ongoing basis.

VI. CAP ASSEMBLY

The caps of the ROMA Horizon system do not protrude beyond the block outline. Grind the place of contact of blocks with the peak. Install peaks on frost- resistant glue or silicone mass. Seal the joints and gaps between the visors or between the visors and the blocks to protect the block chambers against moisture. To protect cap from dirt, moss growth or other factors – paint it with a good concrete paint.



VII. FINAL STAGE

Clean the remains of dirt from the surface of the blocks. Use the cleaning agent only at the place of contamination according to the operating instructions. Afterwards flush with plenty of water. The producer recommends using a preparation for removing efflorescence and deposits JONIEC. Impregnate the fence after drying all elements and in appropriate weather. Remember to keep the fence elements completely dry during impregnation.

IMPREGNATION SHOULD NOT BE EARLIER THAN 30 DAYS AFTER THE FENCE ASSEMBLY IS FINISHED.

After using the preparation for removing efflorescence and white stains JONIEC, impregnation should not be earlier than after 5-7 days.

VIII. ASSEMBLY OF GATES AND SPANS

Drill holes in the posts so that the fastening elements of the gates and spans are anchored in the concrete core and then attach them using glue (chemical anchor). Anchors should be mounted closest to the center of the posts to ensure the stability of the installed gates, wickets and spans. The holes should be filled tightly with glue. Attach the spans, gate and wicket in accordance with their producer's assembly instructions. They must not be attached at the junction of the block with the core because it may cause damage or cracking of concrete elements.

IX. ADDITIONAL INFORMATION

BUILDING A FENCE IN A SLOPE AREA

On slopes you can build fences in two ways:

1. The line of the fence being built coincides with the line of the area: we put the blocks in an inclined way - according to the slope of the terrain.
2. Cascade built fence: terrain unevenness neutralize by making a foundation, in a horizontal line forming stepped faults. For visual purposes it is recommended to make steps adapted to the block height or a multiple of the block height.

FENCE ASSEMBLY ON THE SLOPE

When building a fence on the slopes, use special care to make foundation benches correctly. Pay special attention to the type of soil on which the fence will be placed. If the area is exposed to ground movements or landslides - carry out geological expertise and consult the entire fence construction project with a constructor. This can prevent the unpleasant consequences, for example, tilting or completely shifting the fence.

For fences which will be founded across the hill very important is to do a good drainage. Water flowing down the slope must be drained so that it does not penetrate the foundation and the fence. This will prevent concrete soaking and hence formation of calcium efflorescence and cracking of the concrete core and concrete elements.

Drainage of the fence should be done using drainage pipes along the fence line from the top of it, with the possibility of draining water across this fence. Pipes are best placed in two levels:

1. First pipe on the bottom line of the bench.
2. Second pipe a few centimeters below the ground surface.

Drainage works should be carried out in accordance with the principles of building art.

WARRANTY

Warranty period: 5 years from the date of purchase.

GUARANTEE INCLUDES:

The warranty does not cover 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 damage 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 instructions. Seller's recommendations on assembly, insulation, impregnation and protection of products use of low quality or consistency of concrete for fulfill fences, improper and incompatible with the principles of fence framing, improper use and characteristics of purchased products, improper storage or transport, force majeure, in particular, 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 products, natural changes in the color of the products under their use, possible capillary Surface cracks resulting from shrinkage associated with maturation of products, deviations in structure and colors due to the product's manufacturing process and the natural variability of grain size and coloration of aggregates and other raw materials.

CALCIUM EFFLORESCENCES

Calcium efflorescence are a natural phenomenon. The cause of the 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 penetrate inside the blocks dissolve free calcium. This solution exits through the capillaries to the Surface and evaporates water there. Free calcium reacts with carbon dioxide from the atmosphere and forms a hardly soluble limestone that settles on the Surface of the blocks to form white rays. Depending on the type and intensity, the eruptions disappear under the influence of wear (abrasion) for up to 3 years.

To protect the fence against calcium efflorescence it is necessary to impregnate the fence. The impregnation step should be taken after the period of complete drying of the concrete.

SHADES

Differences in shades of one color 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 the product and they are not a reason for a complaint.

MULTI-COLOR is the result of the production process by mixing several dyes. The characteristic feature of MULTI-COLOR that each block is differently colored due to uneven color distribution. During the construction of the fence should mix the blocks and arrange them to create the most beautiful mélange possible.