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Study of the properties of monolithic concrete of large open surface modular flat structures in dry hot climates and acceleration of hardening.

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Abstract. The optimal ... design was determined ... from the condition of ensuring its maximum strength, including a layer of dry concrete mix. To obtain the objectivity of the characteristics, taking into account the total thickness of the structure and the ratio of the heights of the layer of dry and mixed concrete, the method of mathematical planning of the experiment was applied. An analysis of the data obtained will make it possible to establish that there is such a layer thickness of the dry concrete mix at which the overall strength of the structures corresponds to the design and even exceeds it. The decision ... made it possible to conclude that high .. layer contact can be obtained with a ratio of b / N = 65 ... 72% or a dry layer thickness of 3 ... 6 cm. was evaluated in experiments with concretes of three different compositions (c1, c2, c3) placed by the dosage of components, cement content, ... ratio and perversity at 28 days of age. These compositions are used for the most common types of extended structures. An increase in the proportion of cement in concrete leads to an increase.

Key words: monolit, concrete, layer, climate, ratio.

Studying the properties and accelerating the hardening of monolithic concrete of flat structures with a large open surface modulus in a dry hot climate is possible provided that ... the use of solar coating and the method of two-layer concreting with mixed water and dry concrete mixes is possible. soft dry layer, resulting in increased mechanical density and operational properties of monolithic concrete. At the same time, effective moisture saturation of the Lower dry layer ... Laugh will be provided with ... increased Mobility of water molecules. The influence of factors such as care conditions, degree of compaction, thickness of structures, initial humidity, speed of water saturated in hot climates on the physical and mechanical characteristics of concrete is considered, since this serves as the basis for the development of technological parameters for two-layer concreting of structures erected in a dry hot climate. The proposed technology for concreting products using the dry forming method is limited by factory conditions and involves the use of dry concrete mixes with a moisture content of not more than 0.5%. Studies of the influence of this factor on the strength characteristics of concrete during two-layer concreting confirmed ...

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restrictions on the initial moisture content up to 2% led to a decrease in strength ... by 32% in tension with a bend of 25%.

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time .. saturation of the layer of dry concrete mix. So, if for concrete c1 (cement consumption 200kg / m2) the stabilization time of water saturation of the dry layer ranges from 40 ... 50 minutes, then for concrete C2 (cement consumption 300kg / m3) it is 90 ... 110 minutes and for concrete c3 (cement consumption 350kg / m3) -170...220 minutes. The rate of water saturation of the dry layer is influenced by the degree of its preliminary compaction. With its increase, the rate of water penetration increases with age, while pre-compaction influences opinion more than compositions. It ranges from 10 minutes for C1 concrete to 20 minutes for C3 concrete. The rate of moisture saturation increases as a result of the fact that a more finely pore structure was formed in the dry concrete layer during its compaction, which was more quickly saturated with water. Theoretical explanation of the experimental data was obtained by three studies of mass transfer parameters in the system of mixed concrete-dry concrete mix. Studies have suggested that the properties of the layer of dry concrete interrogator of the entire structure is largely determined by the amount and uniformity of the distribution of moisture, moved by the Shuttered Concrete over the dry layer. To optimize the technological parameters of layer-by-layer concreting, we have studied the method of mathematical planning of Experiments. As an Optimized ... Concrete strength of 28 days old at the age of Pw(or U) was taken as the Variable factors of the active experiment, the following parameters were chosen: x1 Initial moisture content of dry concrete mix,%

X1 The ratio of the height of the shutter layer of concrete total thickness of structures bz / N,%

X3 Duration of preliminary compaction of dry concrete mix, s. Research was carried out in the optimum area. To describe the strength of concrete, a Second order polynomial of the type: .....

An art anal plan of a full factorial experiment was chosen. Initial data of the active experiment. Table 1. .....After mathematical processing of the obtained results and static analysis of the

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polynomial coefficients, the following equation was obtained that adequately describes the strength of concrete at 28 days of age: .....Analysis of the obtained mathematical models allows us to draw the following conclusions.

1. The most significant factor influencing the strength of concrete is the duration of the preliminary compaction of the dry concrete mixture, since the coefficients at x3 (+ 3.35) and x2 (-2.49) in total take the highest value. For technological and environmental considerations, the duration of pre-compacting dry concrete mixture should be limited, take x3 = 10 sec.
2. The next most important was the ratio s/H(x2). The coefficient at x2 (+0.27) and x22 (-4.08) indicates that the center of the experiment was chosen as the Optimum region. The optimal value of the ratio bz / N, Obtained by differentiating the regression equation, is 72%
3. Less important than this is the initial moisture content in the dry concrete mix. On the graphical dependence of the strength of concrete on the factor ... What with

an increase in the initial ... up to 2% The strength of concrete sharply ... And it stabilizes somewhat in the range of 2% to 4% of the initial moisture content of the dry concrete mix. The initial moisture content of the dry concrete mixture should be limited to 0.5%, which is confirmed by the previously obtained research results.

It has been established that the best physical and mechanical properties are achieved when the moisture content of the dry concrete mixture is not more than 0.5%, the thickness is 3-6 cm,

Medium density 2400 kg/M3 at 10 sec vibrocompaction and Temperature 20..25 s. When using the proposed technology of two-layer concreting of monolithic preparations of extended structures with the care of a single-layer ...

Firstly, the heat treatment time is reduced, secondly, the consumption of cement is reduced, thirdly, the maintenance time is reduced And, accordingly ... labor costs.

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