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FENCE MADE LOCAL WOODEN MATERIALS STRETCH SCORE

t.f.n E.Yunusaliyev,
I.Toshpulatov
Fergana Polytechnic Institute
ferpi_info@edu.uz

Abstract
In this scientific paper, the basics of designing beams made from local wood products are studied in detail. In this, glued and whole wooden beams made of local wood materials are studied in classes. Methods for calculating beams made of local wood materials for stretching were also considered. Depending on the types of materials of beams made of local wooden structures, types of all-round, metal-round, glued timber were considered.

Keywords: Cutlery made from local wood products, glued wood fence, whole wood fence, metalwork, wood fence joints, polygonal wood farms.

Introduction

Today, the level of use of wooden structures in our republic has reached a new level. Modern buildings and structures use structures made of wooden materials, and various wooden materials are widely used in the construction of new residential buildings. Therefore, it is important to study the design of this type of construction, improve computational work, check the strength of materials, taking into account the physical and mechanical properties, create new types of attachment methods.

The rapid development of construction in our country assumes the widespread use of new and improved construction structures that meet the requirements of high efficiency and industrialization. The need and expediency of using wooden structures, having the most environmentally friendly and high structural features, makes it possible to expand the scope of their coating and increase competitiveness.

It is known that Wood is a valuable wood material that has the ability to fill its place in short periods, widely used for the preparation of light construction structures. The efficient use of lightweight construction structures made of wooden materials makes it possible to increase the efficiency of construction and reduce the duration of construction processes by several times. As a building material, wood has a number of important advantages over other materials, including its lightness, ease of processing, small labor costs in transportation and installation in place, from which it allows you to make various wooden structures, namely closures, beams, columns, frames, arches, farms, tiles of wooden structures and spatial structures [2]. Another of the most important advantages of wood is the ease of processing into materials. Therefore, the level of use of wooden materials in our republic is increasing from year to year.

Therefore, the decision of the Cabinet of Ministers of the Republic of Uzbekistan dated August 27, 2020 No. 520 “on measures to establish fast-growing and industrialbop pavlovnia tree plantations in the Republic”in order to develop the cultivation of local wood products and their widespread use in the construction industry is aimed at execution. Based on this decision, the tasks of preparing effective building materials from locally grown wood products in our country, increasing pavlonia tree plantations, meeting the need for wood products in the furniture industry, drastically reducing the volume of imports are set. In this scientific article, work is studied on the calculation of barrier structures made from the pavlonian tree grown in our republic.

The pavlonia tree we are researching is a type of fast-growing tree. The color of pavlonia wood ranges from Silver-Gray to light brown, sometimes with a reddish tint. Pavlonia tree is very strong, soft and resistant to bending and twisting.

Weight: Pavlonia Wood stands out as the lightest wood. But it is considered very durable in terms of strength. The average weight of one cubic meter of pavlonia is about 208-300 kg, which is almost four times lighter than oak (one cubic meter weighs 850 kg) and twice lighter than pine wood (one cubic meter weighs 482 kg).

Strength: Pavlonia Wood has the highest strength-to-weight ratio of any type of wood. In addition, Pavlonia perfectly resists deformation under load and under the influence of moisture. The fire hazard of pavlonia Wood is low. Pavlonia burns at a temperature twice the combustion temperature (400°C) of coniferous wood (Spruce, Pine).

Drying: drying in the air takes at least 30 days. The boards can be dried in ovens at high temperatures for 24 hours until the moisture content in the wood is between 10% and 12%. The shrinkage coefficient of wet wood compared to oven-dried wood is only 2.2% to the cross-sectional surface and 4% to the length.

Price: on the world market, one cubic meter of Pavlonia tree is sold for $ 200 to $ 800, depending on the level of processing. At the same time, due to its extremely rapid growth, Pavlonia is far ahead of other trees in terms of annual weight gain.

The pavlonia tree does not absorb water well, which in turn helps to consume protective equipment and varnishes more economically. Products made from pavlonia do not change shape and size under the influence of severe weather conditions and are difficult to rot.

Methods. The most common bending elements of wooden structures and structures include various strophiles, ceilings, closures, beams, etc. At the cross section of the bending element, the bending moment M and the cutting force Q appear from external loads. For example, in a one-rave honeycomb fence, from a flat distributed (q) load the bending moment M=2Q/8 between the rave and the bending moment M =R/4 from the load R, which is located singly between the rave. Under the influence of the bending moment, a normal voltage appears on the surface of the cross-section of the element. Compressive stresses occur at the top of the cross-sectional surface and stretching stresses at the bottom, so that the element bends.

Elements where bending occurs along one axis are called simple bending elements. For this reason, elements are made of Type II materials. The normal stress on the cross-sectional surfaces of ordinary bending Crucible elements is determined from the following formula:

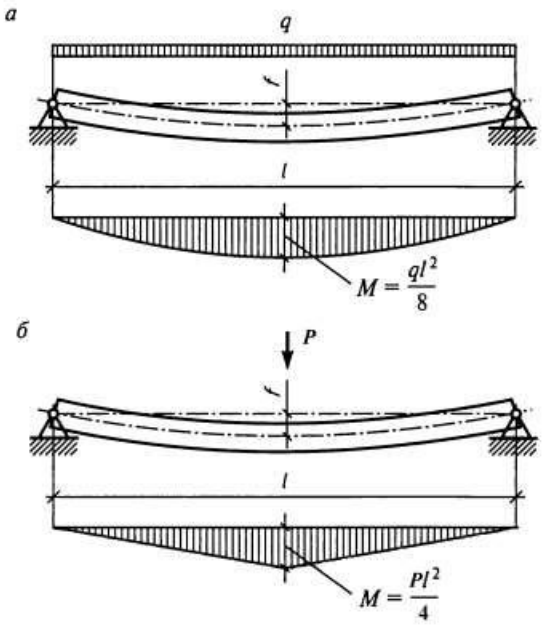
$$\sigma = M/W_{HT}\, R_{Э}/\gamma_n.$$

here: M is the calculated bending moment;

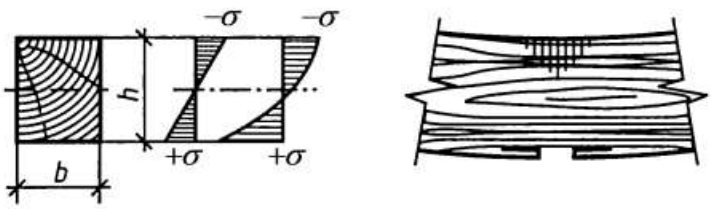
W_{HT}– Netto resistance moment of the calculation cross-sectional surface;

R_e– computational resistance of the material in bending;

γ_n– confidence coefficient.



Accounting scheme of the fence. a) on a load evenly distributed along the barrier; b) on a point of accumulated load.



Normal voltage epura on cross-sectional surface

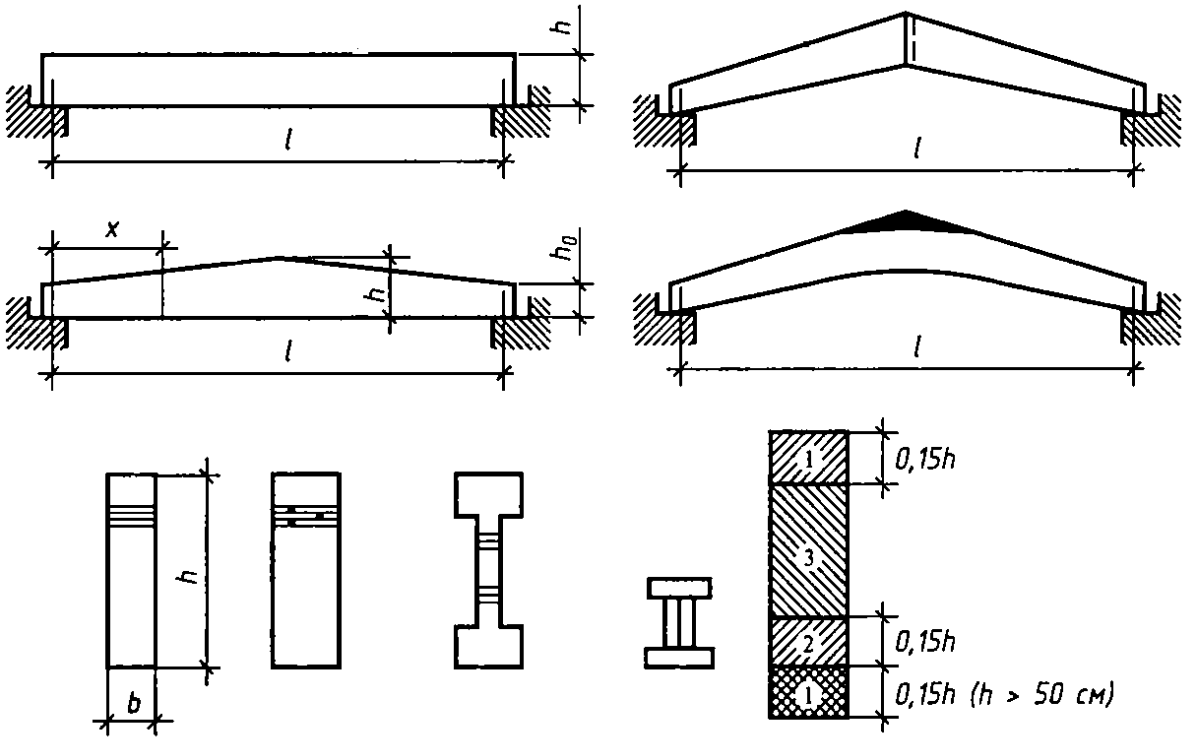
One of the main elements of the wooden cinch Castle and structures are beams. Therefore, it is important to study, design and calculate the types, advantages and disadvantages of barriers. Fences are selected taking into account the type of building, Rafter spacing, roof slope, material and other technical economic indicators.

In the preparation of round cutlery, there is a large difference from other cutlery in the low cost of Labor, ease of preparation, low cost. The disadvantage is the limited length. For this reason, the rave range of this type of barrier will be small and widely used as various orientations.

At present, effective glued beams are widely used in wooden cinch structures, and their geometric views will be as follows. This type of barrier has a number of advantages over organized barriers, including:

- they work like a whole whole whole structure under the influence of loads;
- there is an opportunity to prepare the cross-sectional surface at a large height;

- To make structures larger than 6.5 meters in length, small-sized boards can be lengthened using threaded joints;
- the possibility of using high-grade, compressed and relatively low-quality wooden materials in the middle part in the stretch zones of the cross-sectional surface, etc..



Glued beams can be of any size and geometric shapes. For this reason, this type of fence is widely used in Commonwealth countries in castles with a raft range of up to 24 meters, and in world practice-up to 30 meters.

The height of the glued beams is taken in a ratio of ht=1/15 l, width b=1/15 h_t. For the preparation of rectilinear elements, the thickness is 33 mm, and for curvilinear elements, board materials with a thickness of b=16-20 mm are used, taking into account the radius of curvature of the structures.

To form a solid and reliable glued seam, the following basic requirements must be followed:

- the moisture content of the gluing boards should correspond to the moisture content of their operation;
- it is not recommended to use materials of different moisture when gluing;
- when gluing, special attention should be paid to the orientation of the annual floors of the boards;

Glued beams can be of any size and geometric shapes.

For this reason, this type of barrier is common in Commonwealth countries. It is widely used in buildings up to 24 meters, and in world practice-up to 30 meters.

The height of the glued beams is taken in proportion h_m=l/15 l, b=1/15 h_m. The thickness δ=33 mm is used to make linear elements, and for curvilinear elements, board materials with a thickness of δ=16-20 mm are used, taking into account the radius of curvature of the structures.

To form a solid and reliable glued seam, the following basic requirements must be followed:

- the moisture content of the gluing boards should correspond to the moisture content of their operation;
- it is not recommended to use materials of different moisture when gluing;
- when gluing, special attention should be paid to the orientation of the annual floors of the boards;
- the moisture content of the gluing boards should be up to 12%;
- it is recommended to prepare the width of the cross-sectional surface from boards equal to b=175 mm.

The strength of the glued beams is determined from the following formula.

$$\sigma=M/W\leq R_e m_b m_k$$

here: M- bending moment

W- resistance moment of cross-sectional surface, $W=bh^2/6$ (cm^3);

R_e- computational resistance of the material in bending, R_e=13 MPa;

m_b- taking into account the working conditions is the coefficient, the value of which is less than 1;

m_k- coefficient taking into account the number of floors.

The required resistance moment, height or width of the cross-sectional surface is determined from the following formulas:

$$W_{tq}=M/R_e, \qquad h_{tq}=\sqrt{6M/R_e b};$$

$$b=6M/R_e h^2; \qquad d=\sqrt[3]{10W_{tq}}$$

The strength of the glued beams in the crack is checked from the following formula:

$$\tau=Q\cdot S/J\cdot b<R_{f\ yor.}$$

here: Q- maximum cutting force, $Q=q\cdot l/2$;

S- static moment of inertia of the cross-sectional surface, $S=b\cdot h^2/8$ (cm^3);

J- moment of inertia of the cross-sectional surface $J= b\cdot h^3/12$ (cm^4).

The strength of a single-stranded glued barrier in bending is determined by the following formula:

$$f=5q^H\cdot l^4/384J \qquad E\leq(f_{cheg})$$

here: q^H- normative value of the load;

l- row length of the fence;

E- modulus of elasticity of wooden material;

J- moment of inertia of the cross-sectional surface $J=b\cdot h^3/12$ (cm^4).

For the preparation of glued beams uses synthetic adhesives such as KB-3, FR-12, FR-50, FR-100.

Conclusions

- It is distinguished by a number of important advantages of local wood as a building material over other materials, including its lightness, ease of processing, small labor costs in transportation and installation in place, from which it is possible to make various

wooden structures, namely closures, beams, columns, frames, arches, farms, wooden structures, and spatial structures. [2]

- Another of the most important advantages of pavlonian Wood is the ease of processing into materials. Therefore, the level of use of pavloniua tree materials in construction work in our republic is increasing from year to year.
- According to the results of the calculation work on Boril, the plant from the pavlonia tree, which is a local wood product, has shown that it has its own peculiarities in the preparation and use of glued structures in conditions.
- One of the most important directions for the use of glued wooden structures is the presence of the possibility of applying large rave structures for cladding, making cross-sectional surfaces in holistic, boxy, rectangular, double-cross-sectional views.
- Through the effective use of glued wooden structures, the opportunity has appeared to put into practice unique projects and constructive solutions of modern buildings and structures proposed by architects.

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