INSTRUCTIONS AND SAMPLES FOR GRAPHIC WORK IN DRAWING AND DRAWING GEOMETRY

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Abstract: ***This article provides information on the subject of Descriptive Geometry and Engineering Graphics to gain knowledge and skills that allow you to create and read drawings, as well as to develop spatial imagination. Helps to comprehend and read drawings, methods of making images, solving various positional and metric problems, and a number of conventions accepted in descriptive geometry and construction drawing.***
Keywords: ***Drawing geometry, engineering graphics, drawing, sketches, plane traces, positional and metric, projection, perspective, general situation, horizontal and frontal.***

Introduction. To create traces of a plane, it is formed by making traces of at least two or all sides (Fig. 1, a) in the same plane and connecting them.

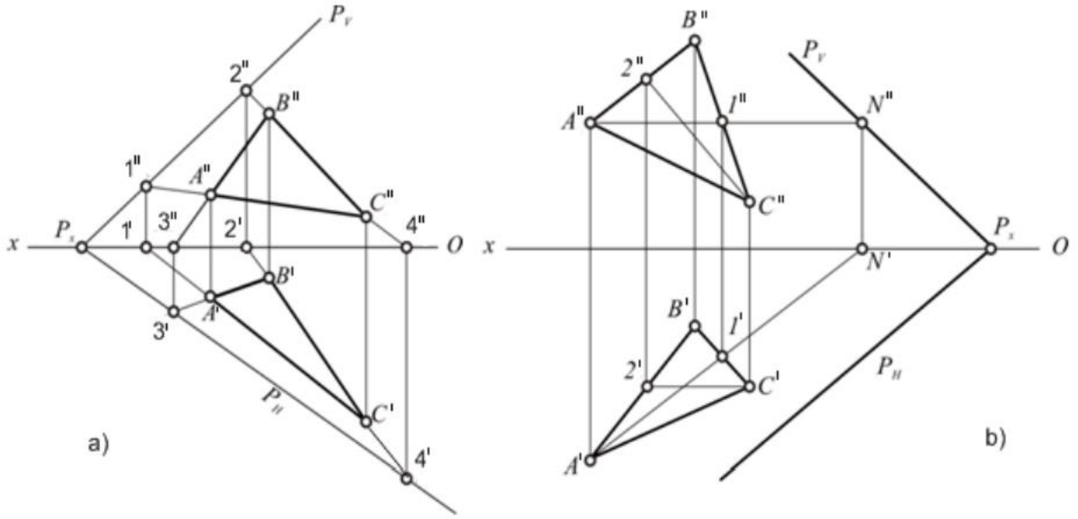

Figure 1.
(1st semester)

Determine the horizontal and frontal traces of the triangle ABC plane (Example).

To make a horizontal trace of the BC side in the diagram (Fig. 1, a), it is necessary to determine a point equal to the Z coordinate. To do this, the point of intersection of the horizontal projection of the side B^1C^1 with the OX axis 2^1 is found and determined by the projection connecting line 2^{11}. The point of intersection of the frontal projection B^{11} C^{11} with the OX axis is found 4^{11} and determined by the projection line 4^1. The horizontal projection A^1 is determined by the point of intersection of C ^{1} with the OX axis ^{11} using ^{111}. The frontal projection A^{11} is at the point of intersection of C^{11} with the OX axis at 3^{11}, which is determined by 3^1. By connecting the resulting 3^1, 4^1, and ^{111},2^{11}, the intersection point of the PH and PV traces forms the frontal and horizontal traces on the PX OX axis.

It is convenient to use the horizontal and front of the plane when the traces of straight lines in the general condition of the plane go beyond the boundaries of the drawing.

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In Figure 2 b, A ABC is held A^1-horizontal and C^{11}-frontal. A frontal trace of the horizontal A^1 - a PV - trace is drawn parallel to point C^{11} 2^{11} from point A^{11}. PH is transferred from the resulting point PX parallel to A^{111}.

2 graphic work.

Determine the distance from point S to the plane ABC (Example).

Solution. The problem is solved on the basis of the following construction algorithm:

• Projections of horizontal and frontal lines of the ABC plane;
• From the projections S^1 and S^{11} of the point S, the projections m^1 and m^{11} of the perpendicular are made as m^1O, m^1M^1 and $m^{11}S^{11}$, m^{11} S^1;
• the point of intersection of the perpendicular with the BBC plane is determined by the projections S^1, and S^{11} of S;
• An auxiliary horizontal projection plane M (My M,) is drawn perpendicular to m,
• Projections 31 41 and 311411 of the line of intersection of the planes ABC and M are made;

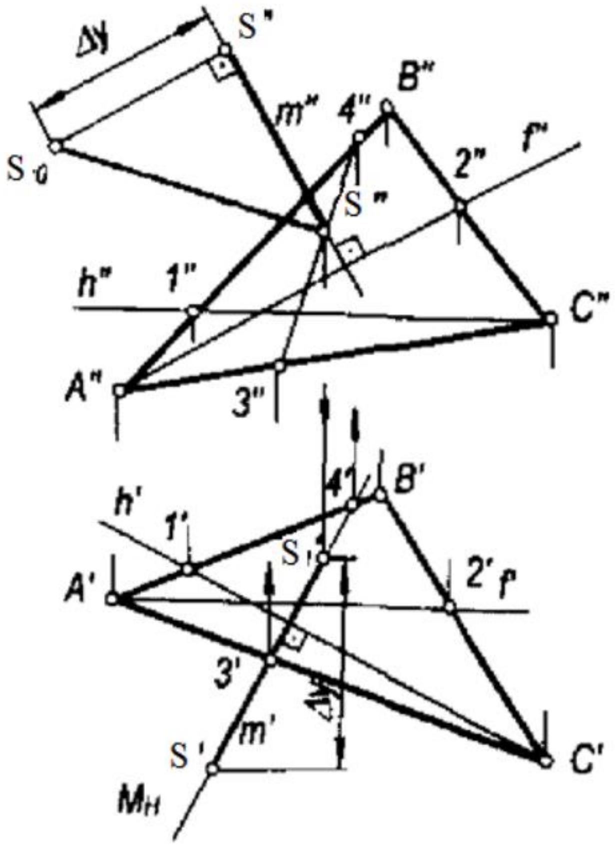

Figure 2.

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With the projections of the line of intersection of the planes 3^1 4^1 and $3^{11}4^{11}$, the intersection S of the perpendicular m^{11}, the projections S^1 and S^{11} of the point are determined: S^{11} = m^{11}m, $3^{11}4^{11}$ and S^{11} m11. The projections S^1S, and O^1S^{11} formed in the graph are the projections of the distance S, S sought. Its true size is the hypotenuse S^{11} of the right-angled S^1S^{11}. If the plane is given in a special case, then no additional constructions are required to determine the distance from the given point to the plane.

3 graphic work.

Determine the true size of the ABC plane using the projection plane substitution method (Sample).

The plane in the general case is given by three points A, B, C (Fig. 3). To solve this problem, the new projection plane must be brought to a position perpendicular to the triangle ABC at the same time, as well as to one of the projection planes. This means that the new plane must be perpendicular to the line of intersection of the given plane with one of the projection planes. There is no need to draw a line of intersection, as its direction can be determined by the level lines of the plane, ie the horizontal and the front.

Therefore, it is necessary to draw one of the level lines in a given plane, for example, the horizontal AH. This horizontal new projection plane determines the position of V^1. When X^1 is set perpendicular to A^1 H^1, two conditions are met: the new plane V^1 is perpendicular to both the plane H and the triangle ABC. Projection lines are drawn from the horizontal ends of the triangle perpendicular to the new X^1 axis. These lines are intersected by ZA, ZB, and ZC from the X^1 axis, and a new frontal projection of the triangle on one line, A^{111} B^{111} C^{111}, is made. a is the true magnitude of the angle of inclination of the angle ABC to the plane H.

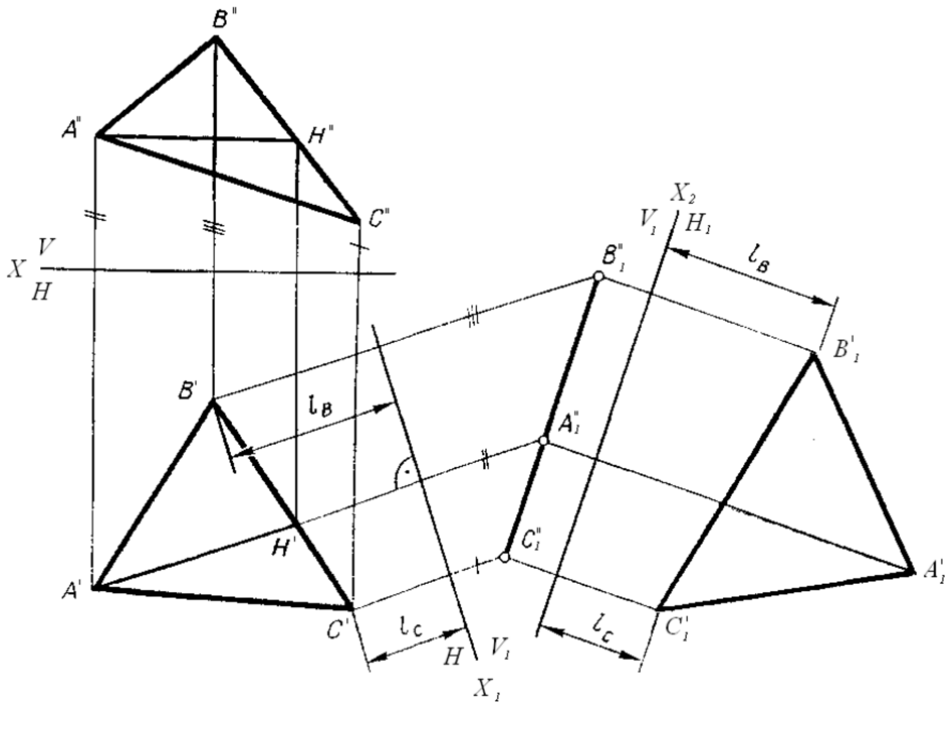

Figure 3.

4 graphic work.

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Find the third view from the two given views and make the desired cut and construct the axonometry, make the necessary cut (Sample).

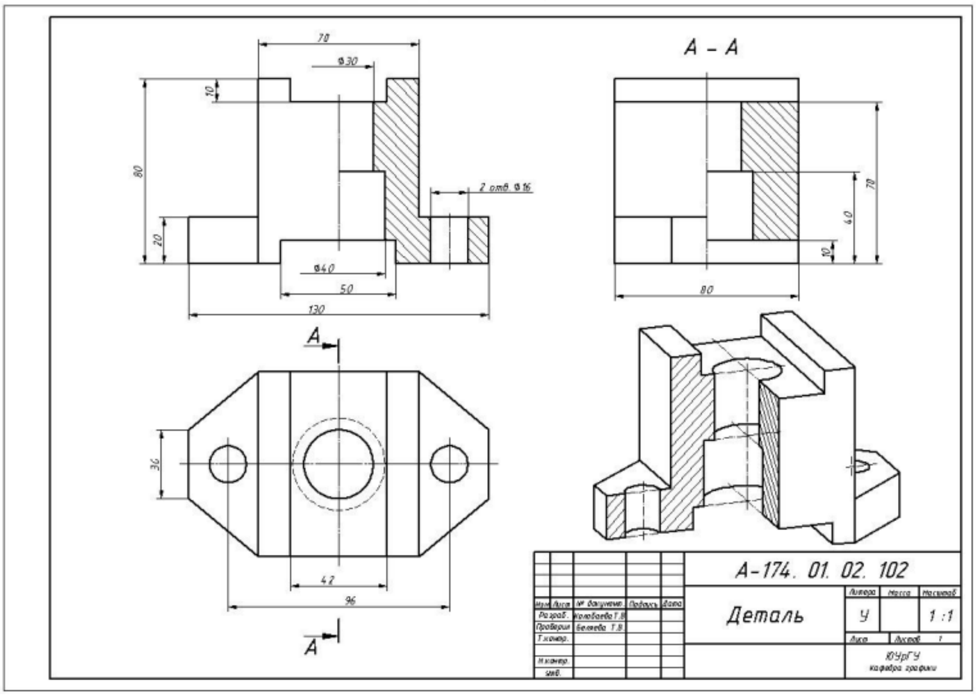

Figure 4.

5-8 graphic work. Architectural and construction drawing of the building: plan, facade, shear. Drawing of the A-compound (Sample).

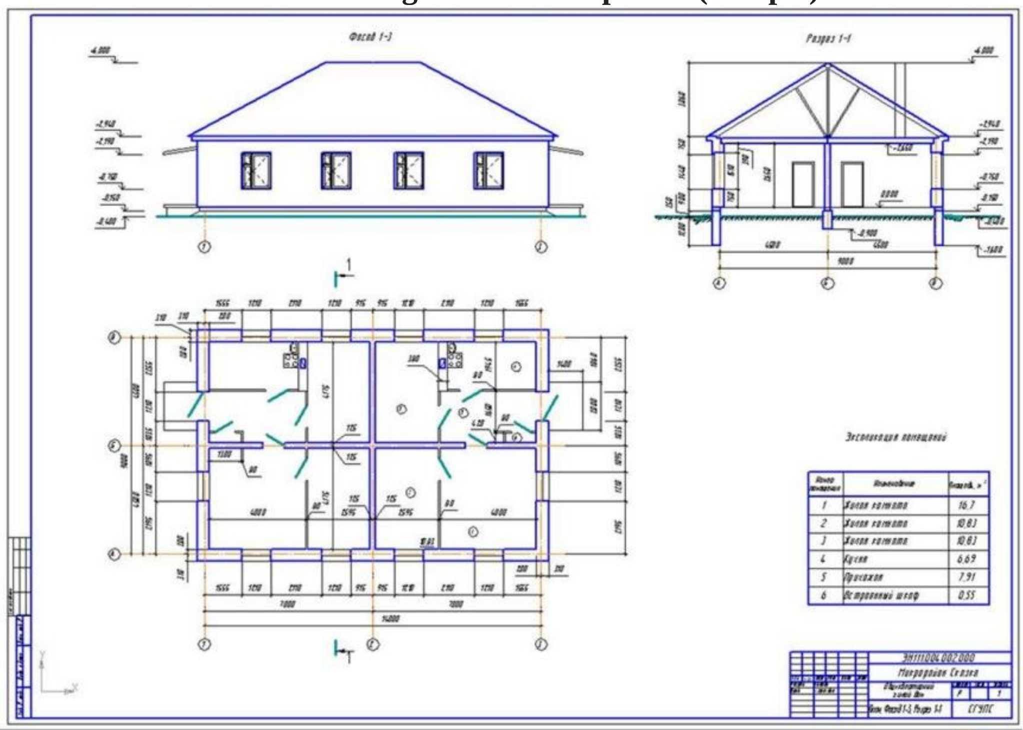

Figure 5

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5-8 graphic work. Working drawing and axonometric projection of metal and reinforced concrete structural joints.

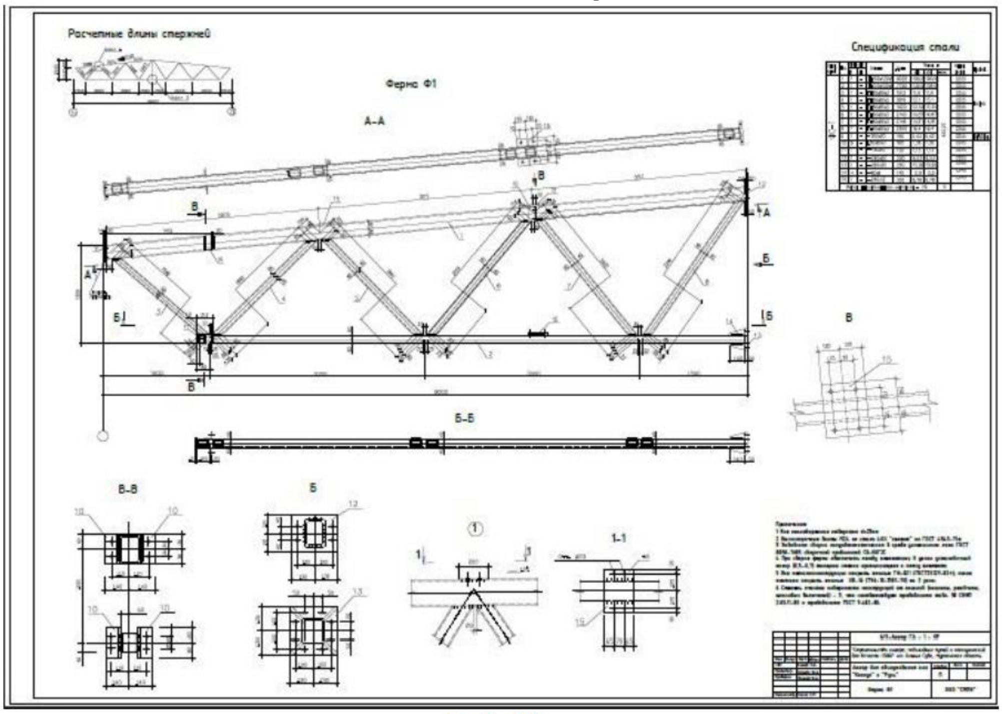

Figure 6.

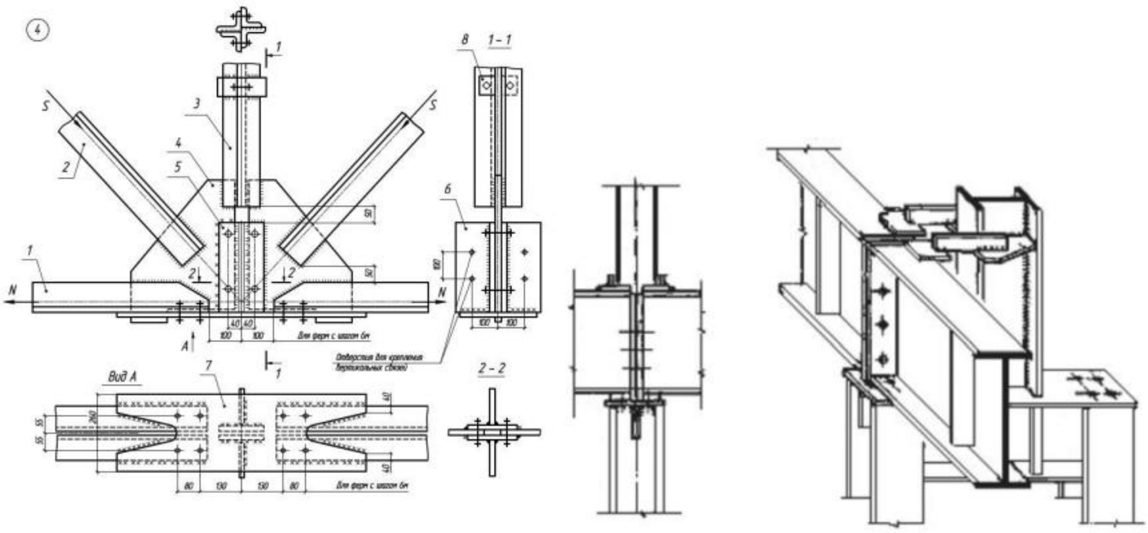

Figure 7.

Sources and publications used:

1. Turaev X.A. va boshqalar “Chizma geometriya” fanidan uslubiy qo’llanma “Surxon-Nashr”-2019.62-bet.

2. Turaev X.A. “Bo’lajak chizmachilik fani o’qituvchilarining loyihalash kompetentligini rivojlantirishning didaktik imkoniyatlari”. Ilmiy maqola. “Ta’lim va innovatsion tadqiqotlar” jurnali. 2021 y. Maxsus son. 249-254 b.

ISSN 2277-3630 (online), Published by International journal of Social Sciences & Interdisciplinary Research., under Volume: 11 Issue: 05 in May-2022
https://www.gejournal.net/index.php/IJSSIR

3. Turayev X.A. “Bo’lajak chizmachilik fani o’qituvchilarining loyihalash kompetentligini rivojlantirishning grafikaviy asoslari”. Monografiya. -T.: “LESSON PRESS”. 2021-y. 5-7-b.

4. Muslimov N.A. “Bo’lajak kasb ta’limi o’qituvchilarini kasbiy shakllantirish”. Monografiya. -T.: “Fan”. 2004 y. 126 bet.

5. Khumoyiddin T. IMPROVING THE DEVELOPMENT MODEL OF PROJECT COMPETENCE OF FUTURE DRAWING TEACHERS //Universum: технические науки. – 2022. – №. 2-6 (95). – С. 62-65.

6. Abdugafforovich T. K. THE TECHNOLOGY OF DEVELOPING THE DESIGN COMPETENCY OF FUTURE DRAWING SCIENCE TEACHERS THROUGH AutoCAD GRAPHICS SOFTWARE //Conference Zone. – 2022. – С. 334-337.

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