Ministry of Education and Science of the Russian Federation
Federal State Budgetary Educational Institution of Higher Education
«Nizhny Novgorod State University of Architecture and Civil Engineering»

V. V. Shilin, G. F. Gorshkova, A. A. Khudin

# Secondary general education school for 550 places

*Educational-Methodological Manual*

for Students in the direction of training 07.03.01 «Architecture»,
Profile «Architecture»

FOR INTERNATIONAL STUDENTS IN ENGLISH

Nizhny Novgorod
NNGASU
2025

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UDC 727.1. (072)

Shilin, V. V. Secondary general education school for 550 places : educational-methodological manual / V. V. Shilin, G. F. Gorshkova, A. A. Khudin ; Ministry of Education and Science of the Russian Federation, Nizhny Novgorod State University of Architecture and Civil Engineering – Nizhny Novgorod : NNGASU, 2025. – 22 p. – 1 CD ROM. – Text : electronic.

The basic provisions to be taken into account in the design of school buildings are presented. The principles of functional zoning, solutions of planning zones and separate rooms, their areas and equipment are considered. The program of the secondary school building for 550 places is offered.

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Reviewer:
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CONTENTS

## THE PURPOSE, OBJECTIVES AND COMPOSITION OF THE PROJECT

In the process of instructional design in the 3rd year, students develop successive topics related to volumetric modeling of public spaces and residential buildings located on the territory of the settlement previously designed by them (2nd year). Along with an apartment house of medium storey (dwelling) the school as the most important public building is included in the planning structure of the suburban settlement.

The placement of the school site and spatial environment are determined by the student when developing the master plan of the settlement.

The purpose of the school building project is to familiarize students with the object of complex organization, with a branched system of multifunctional spatial environment, with the multiplicity of processes of school life: education, nutrition, recreation, physical education, labor education. It is necessary to comprehensively solve the following tasks:

- to clarify the location of the school site and the staging of the building on it;
- to determine the necessary spatial orientation of the building and convenient approaches and entrances to it;
- to determine the favorable orientation of the sides of the building, based on the normative requirements for lighting of various rooms;
- determine the functional structure of the building, based on the principle of functional zoning and calculated areas;
- to draw up a volumetric and spatial model of the building, adopting compact or block schemes of volume organization;
- express by compositional and artistic means the materialized form of the building and the essential character of the children's institution.

The completed project shall include the following drawings:

1. situational plan of the building location in the village layout (1:2000);
2. master plan of the site (1:500);
3. floor plans (1:200);
4. section (by main rooms) (1:200);
5. facades (1:100, 1:200);
6. perspective or axonometry;
7. explanatory note with a summary of: the idea of architectural-planning and constructive solution; basic technical and economic indicators (TEP).

## GENERAL PROVISIONS

The social education of children requires the creation of an environment in which they can spend a significant part of their time. At the same time, the school and pedagogical process improves over time and this has an impact on the architecture of school buildings.

The existing complex programs of education and upbringing of children at school, combining mental, labor and physical education, impose requirements not only to the formation of the external architectural image of the building, but also to the solution of the functional organization of the internal spaces of a variety of premises: classrooms, recreations, halls of various purposes, etc.

The introduction of preschool education from the age of 6 requires the development of a special environment for this age group. Labor education covers various forms: labor classes during school hours, labor during vacations, and vocational guidance. The problem of increasing the role of extracurricular activities includes the organization of extended day groups, work with parents, the connection of school and extracurricular forms of technical creativity, aesthetic and physical education.

With this increasing complexity of processes of education and upbringing of children it is necessary to find new planning and spatial and compositional-artistic solutions of school buildings. In the development of course project is better to be guided by architectural solutions functionally flexible, suitable for various transformations of compositions that meet a variety of learning models. Flexible solutions reconcile the contradictions of pedagogical concepts.

The main issues on which searches and researches are conducted to determine the optimal types of school buildings are as follows:

- changing forms and methods of teaching, mastering new information technologies, application of technical means of teaching;
- influence of progressive forms and methods of teaching on the formation of new and reorganization of the old functional structure of buildings, on the development of functional groups of rooms, composition of rooms, their areas and equipment;
- improvement of engineering and technical complex of school buildings construction, application of large-span constructions for realization of free, flexible planning solutions with possibility of premises transformation; creation of optimal microclimate: application of air-conditioning, natural overhead lighting; application of means of communication, information transfer and management of educational process;
- Expanding the scope of the school's activities in conjunction with public institutions of residential areas (settlements) with mutual use of these buildings by both students and residents outside of school hours.

Based on the above provisions, we can outline the following perspectives in the typology of school buildings:

- Development of preparatory children's institutions in the structure of the general education school;
- development of vocational preparatory schools;
- development of schools with a special bias towards technical, economic, humanitarian, ecological or aesthetic education;

lyceum schools with diverse education; schools with in-depth study of foreign languages, mathematics, chemistry, physics, biology; schools with an artistic or architectural bias; with a direct link to higher education institutions;

- development of the rural school system;
- creation of school campuses on the basis of enlarged school buildings;
- creation of small specialized schools such as craft or family schools.

Currently, schools, as general educational organizations in accordance with the Federal Law "On Education in the Russian Federation" (2014), are divided into three types: primary

(grades 1-4), basic general (grades 1-9), secondary general (grades 1-11). The basic type is an eleven-year school comprising grades 1-11. In addition to regular general education schools, there are boarding schools, club schools, as well as music, sports, and art schools.

URBAN PLANNING PECULIARITIES OF THE LOCATION OF SCHOOL BUILDINGS

The type of school building is chosen based on the size of the settlement or neighborhood. The radius of service for the population of urban schools is standardized within 500 m. In rural areas, the prevalence of small settlements located at great distances from each other, forces to build a school network based on a combination of:

-primary schools;

- basic and secondary schools;

- boarding schools in larger settlements and district centers.

The site allocated for the construction of a school should be favorable in climatic terms, protected from dust. It should be chosen away from streetcar and railway lines, highways with busy traffic, as well as airfields.

In some cases, schools may be located at the borders of residential groups, near a green area: park, garden, public garden.

Schools should be conveniently located within the student service area and in relation to public transportation routes. Paths leading to the school should be safe for pedestrian traffic.

SCHOOL LAND

The size of the land plot, including the building construction area, ) is determined on the basis of 50 m2 per 1 pupil. The minimum size of a school plot with 1 class is not less than 1000 m2. A school for 500 pupils should have from 2 to 2.5 hectares (Fig. 2).

School buildings should be placed on plots with an indent from the red lines of streets at a distance of at least 15 m.

The distance between buildings with windows in classrooms from other buildings located on the same plot and from the borders of the plot should be at least 8 m.

The distance between the outer walls of classrooms when they are illuminated only through windows in the walls shall not be less than 12 m.

The area of the courtyard should be at least 400 m2 and have a dust-free surface (asphalt, tile paving, concrete, brick). The enclosed courtyard space should have a passage for fire and garbage trucks.

The following zones should be shown on the site master plan:

1) sports-8800 m2;

2) training and experimental - 1500 m2

3) recreation - 1500 m2;

4) economic (storage building, garage for school cars, turning area with garbage collector) - 500m2.

The following grounds should be provided in the sports zone:

- athletics - 4900 m2;

- for gymnastics - 1950 m2;

- combined for basketball and volleyball - 540 m2;

- for table tennis - 160 m2;

The following areas are allocated in the training and experimental zone:

- for greenhouses - 40 m2

- for greenhouses with zoological corner - 100 m2;

- meteorological and geographical grounds - 50 m2.

In the recreation zone it is necessary to provide the following sites:

- for mobile games - 250 m2;

- for preparatory classes - 400 m2;

- for 1-2 classes - 400 m2;
- for 3-4 classes - 400 m2;
- for 5-9 classes - 200 m2;
- for quiet rest - 150 m2.

Household zone should be located on the side of the entrance to the production rooms of the canteen.

The sports zone is not allowed to be located on the side of the windows of classrooms.

The area of greenery should be 40 - 50% of the area of the site.

The width of the green strip along the boundaries of the school land plot shall be at least 1.5 meters, and on the street side - at least 6 meters.

Fire and utility entrances to the building shall be provided on the school site with a width of 3.5 m, which shall have a hard surface as well as the territory of the utility zone.

## VOLUMETRIC AND SPATIAL COMPOSITION SCHOOL BUILDINGS

The volumetric and spatial composition of school buildings is formed on the basis of many components:

- social and functional processes taking place in the building;
- the normative capacity of the volume;
- the area of construction and the requirements of the master plan;
- peculiarities of structural systems.

The composition of school buildings is often based on such factors as the staggered organization of the student body and the grouping of rooms according to their functional purpose. In a school building there is a combination of several functional processes, running in parallel and separately with subsequent intersection in the general school premises. Examples of planning composition of school buildings of different types are shown in Fig. 1 in the appendix.

According to the methods of composition school buildings are linear, block, perimeter and compact.

The main element of a school is a classroom (Fig.6). Classes are united into educational sections for each age group. Such a section includes 4-6 classrooms or classrooms, recreation and restrooms.

The study section should be well connected to the general school premises and sufficiently isolated from the study sections of other age groups. Study sections are organized into blocks of rooms for younger, middle and older students.

The layout and inter-location of classroom sections affect the composition of school buildings.

One-sided orientation of windows in classrooms creates a linear layout of rooms, which excessively lengthens communications in low-rise buildings.

To achieve a compact building, two- and three-sided orientation of windows in classroom sections is used.

Block school buildings consist of separate buildings-blocks, connected by transitions or directly adjacent to each other. Such a composition is used in the design of buildings of large capacity, as well as in seismic areas with a strongly rugged terrain. With this composition it is possible to well disperse groups of students while maintaining short connections between separate groups of rooms and achieve a combination of separation of volumes and compactness of the building as a whole.

Centralized compositions are used for buildings of small capacity, as well as for buildings intended for construction in northern regions. Such buildings are economical in construction and operation. They have minimal cooling area, small building area and short connections between separate groups of school rooms.

Pavilion-type school buildings, consisting of separate classrooms and halls not connected by passages, are common in southern seismic areas and areas with highly rugged terrain. The

pavilion-type composition of buildings increases the isolation of separate groups of rooms, as well as lengthens the interconnections between them.

Depending on capacity and overall planning structure, school buildings are usually designed from one to three stories. In residential areas with high population density and in congested areas it is allowed to construct four-storey buildings.

School buildings and complexes of large capacity can have a mixed number of storeys: educational blocks of junior classes - two-storey; middle classes - three-storey; senior - four-storey. At the same time, lowering the number of storeys allows to create better conditions for students and teachers, provides connections with the site. However, at the same time, communications in low-rise buildings of large capacity may be excessively extended. Finding the optimal solution in the interrelation of all these factors is the task of creating a volume-spatial composition in the course project.

## ARCHITECTURAL PLANNING AND EQUIPMENT SCHOOL BUILDINGS

According to functional zoning all school premises are divided into 4 groups:

a) general school auxiliary and service premises: lobby, checkroom, clerks' office, teachers' room, medical center, sanitary facilities;

b) general school halls: universal space (of forum type), assembly hall, sports hall, canteen and auxiliary rooms attached to them;

c) educational sections consisting of classrooms and recreations;

d) training and production rooms: laboratories, workshops, labor rooms, and recreational facilities attached to them.

### a) General school auxiliary and service premises

The entrance hall is designed at the rate of 0.1 m2 per 1 student. A vestibule with two doors is provided at the entrance to the entrance hall. Checkroom (room or area behind the barrier) at the lobby is designed at the rate of 0.15 m2 per 1 student. Depending on the adopted planning decision lobbies and checkrooms are designed centralized or separate for junior, middle and senior students. It is possible to organize floor checkrooms at recreation or even by classes.

Sanitary units for students should be located above each other, not less than two on the floor at the rate of 1 toilet and 1 urinal for 40 boys, 1 toilet for 30 girls.

Sanitary units for staff should be designed in the first floor, where the teachers' room is located. For technical staff it is possible to use sanitary rooms in the assembly hall. The entrances to the sanitary facilities may not be arranged from the stairwells and opposite the entrances to the classrooms.

The group of classrooms includes the teacher's room and the room of teaching aids, the office of the principal and the head of the teaching department, the office, the room of technical staff and the utility room. The office and the principal's office should be located on the first floor, preferably close to the entrance hall; the technical staff room should be located at the school entrance.

The school medical center consists of a medical room and a dentist's office.

### b) All-school halls

Recreation halls are the main recreational facilities for schoolchildren. Their size and the nature of their space can increase the efficiency of the educational process and improve conditions for extracurricular activities, ensure the normal development of children, reduce morbidity, satisfy children's need for motor activity, expand and enrich their aesthetic spatial perception.

The developed spatial structure of recreations combines indoor and outdoor spaces of cold and warm modes of use.

Warm internal recreations of schools are universal halls, double-light courtyards with mezzanines, passages-recreations.

It is necessary to separate recreations from communications, i.e. to design them in the form of independent halls used for educational and extracurricular activities with students, where there are:

- lectures with showing of movies;
- gymnastics and rhythmic lessons;
- circle work;
- group classes.

The universal space is designed on the basis of a lobby group or by combining it with a foyer, assembly hall, swimming pool, etc. It is important that it is possible to use them together, thus increasing the area when necessary or, on the contrary, fencing off isolated areas from the total area.

The universal space is used for:

- organization of mobile and quiet recreation of students during breaks, and it is necessary to provide for its transformation into separate zones of different use, mobile play equipment, portable benches and suspended forms of landscaping;
- exhibitions, thematic expositions; this requires open areas with free passage for children and visitors, as well as stationary, mobile or prefabricated information walls;
- school-wide assemblies and celebrations, which require an open area with walk-around galleries and balconies;
- music and dance evenings, festivals, which also require a free area with wide possibilities of transformation: spectator seats, amphitheater, stage with a screen and curtain, suspended acoustic screens;
- organization of hobby groups; sports activities such as table tennis, badminton, gymnastics, board games (chess, checkers).

Thus, the universal space - school forum is the center of recreation, social activities, a place of communication, meetings. In one of the sub-zones of the universal space it is acceptable to arrange a splashing and swimming pool with the size of 3x7 meters and a small artificial beach.

Buffer recreational spaces are cold verandas, walkways at the upper floor level, covered courtyards. The minimum width of recreational spaces is 2.8 m, and adjacent to classrooms - not less than 4 m and not more than 6 m.

Training and sports facilities consist of sports halls of 9x18 m, 12x24 m or 18x30 m, depending on the capacity of the school buildings. They include: equipment room, instructor's room, locker rooms, showers and restrooms for boys and girls. Sports halls are usually located on the first floor. The equipment room is connected to the gym through a door or an open aperture at least 2 meters wide. The gymnasium has access to the school grounds. The height from the floor to the ceiling of the gym must be at least 5.5 m (Fig. 5). If a sports pool is required in the school, it should be designed with a size of 16x16 or 25x(6-8) m with a depth of 0.8 m to 1.8 m (Fig.4). Pools can be illuminated by overhead light.

School canteens are designed to serve all students in four seats (i.e. 25% of the total capacity of the building). School canteens can be located in the ground floor or basement. In the second case, the burial should be no more than 1.5 meters from the level of the ground floor. The height of the dining hall is not less than 3.3 m.

Storage and utility rooms of the canteen may be located in the basement and ground floor, with a separate exit to the street in the economic zone of the school site. Washbasins shall be provided in the corridor in front of the canteen. This corridor should be light and have a width of 3.5-4 meters (Fig. 5).

The assembly hall - movie auditorium is designed for cultural and mass work.

It is designed at the rate of 0.6 m2 per spectator seat with a capacity of 25% of the total number of students. The group of rooms of the assembly hall includes: stage, movie equipment, radio room, inventory, as well as rooms for classes of clubs. Amphitheater in the assembly hall is

not allowed. The depth of the stage is not less than 3 meters, and the floor of the stage should be higher than the floor of the hall by 0.9 meters. The height of the assembly hall is not less than 4.2 m (Fig. 5.).

c) classrooms

The main teaching facilities include classrooms, offices and laboratories. Classrooms are organized into teaching sections for each age group. Each such section includes 4-6 classrooms or classrooms with laboratory rooms, a recreation room, toilets and possibly a checkroom. The teaching section should be well connected to the all-purpose space, school-wide support facilities and sufficiently isolated from the teaching sections of other age groups.

The number of students per classroom is determined based on many socio-demographic factors and may vary over time on a site-by-site basis. In the present project, the occupancy rate of classrooms is as follows:

- preparatory - 25 students,
- grades 1-9 - 30,
- 10-11 grades - up to 25.

The most common type of classroom is a "longitudinal" classroom with a row arrangement of two-seat desks or tables and one-sided natural lighting (Fig. 6). In order to bring students closer to the blackboard and thus increase the level of natural illumination, a "square" classroom with a four-row arrangement of desks and two-sided natural illumination (direct or through the recreation area) is also used. There are also possible "transverse", circular and polygonal classes with overhead light, etc. In all cases, when choosing the configuration of the classroom, its lighting options, equipment and furniture arrangement should be based on the activities that are carried out there.

The main teaching rooms should be located in the above-ground floors, isolated from the rooms that are sources of noise and odors. Laboratories should be adjacent to the relevant laboratories on the demonstration table side.

Entrances to classrooms are provided on the side of the front tables (desks). The flow of light should be to the left of the students.

Teaching sections are divided into:

- Preparatory class section with recreation, sleeping room, playroom, checkroom and sanitary facilities;
- a section of 1st-4th grades with classrooms, recreation, checkroom and sanitary facilities;
- classrooms and laboratories of grades 5-11 with recreation and sanitary facilities.

The width of corridors adjacent to classrooms should be at least 1.8 meters, and other corridors - at least 1.5 meters.

The area of classrooms shall be taken at the rate of 2 m2 per 1 pupil with a class occupancy of 25-30 pupils.

The distance from the blackboard to the first desk should be not less than 2 m, and from the blackboard to the chair of the last row - not more than 9 m. The height of classrooms from the floor of the lower floor to the floor of the upper floor shall be not less than 3.3 meters and not more than 3.6 meters.

d) training and production rooms

Training and production rooms consist of a manual labor room for students in grades 1-3, woodworking and metalworking workshops for older grades and adjoining tool storage rooms, classrooms for maintenance types of labor (cooking and home economics rooms) and a teaching and methodological room for vocational guidance of students. Workshops are equipped with workbenches, machines and devices for carpentry work, cabinets for storing tools and finished products. Service labor rooms are equipped with electric stoves and sinks, sewing machines, tables and other devices for teaching housekeeping.

Workshops should be located on the first floor. They may be located as a separate building on the site. The woodworking workshop should have an additional exit to the street. Rooms for labor training may be located in the basement. The manual labor room should be located near the 1st-3rd grades.

In addition to the main entrance it is necessary to provide service entrances to the kitchen and library.

The width of staircases should be not less than 1.35 m and not more than 2 m with a slope of 1:2. It is not allowed to install running stairs.

From all rooms of the school must be provided with access to the stairwell at a distance from the door of the room to the stairs not more than 40 meters. The dead-end corridor should be no more than 25 m.

MEANS OF CREATING A COMFORTABLE ENVIRONMENT

When locating school buildings, the appropriate orientation of school premises should be ensured:

- classrooms - S, W, SE and not more than 25% to the SW, 3;
- drawing and painting classrooms - any orientation, except for SW and SSW;
- classrooms and laboratories - SW, B, SE and not more than 50% on other sides.

School rooms should have direct natural light. Protection from excessive insolation is also necessary. The area of window openings should be at least 1/5-1/2 of the floor area. If the depth of classrooms is 6.5m or more, two-way natural lighting is necessary. The height of window sills should be no more than 0.9m.

It is allowed to illuminate the second light of corridors that are not recreations, washrooms, as well as locker rooms in gymnasiums.

Only artificial light can have assembly halls, dressing rooms, linen rooms and showers for canteen staff, corridors of canteens, utility and inventory storage rooms, radio room and announcer's room, tackle and showers in gyms. Directionality of the main light flux in classrooms should be on the left side of the students. It is allowed to install additional light openings on the right and behind with the dominant light on the left side, as well as additional overhead light.

The color design of the building exterior and interior environment should not be discouraging. It is possible to create an interesting color solution of facades and interior spaces, using a variety of industrial finishing materials: facing ceramic tiles, natural facing stone, colored concrete blocks, colored plaster.

blocks, colored plaster. You can use such means of artistic expression, such as painting surfaces, figurative masonry, various types of mosaics and stylized images of bent iron. All this revitalizes the architecture of buildings and contributes to the aesthetic education of children.

All this should be taken into account that school buildings, as a rule, are objects of mass construction, so their architectural and artistic expressiveness should be achieved by simple and modest means.

STRUCTURAL SOLUTIONS OF SCHOOL BUILDINGS

According to structures and construction materials, school buildings are divided into: frame-panel buildings; large-panel buildings; large-block buildings; with bearing walls made of local materials (brick, natural stone); wooden buildings.

The planning and structural scheme of buildings should be designed on a modular basis. It is convenient to take planning dimensions of 3x6m, 6x6m, 6x7,2m, 6x9m. The height of educational, industrial, auxiliary and service premises is accepted 3,3m from floor to floor, gym - not less than 5,5m, assembly hall - 4,2m, dining hall not less than - 3,3m.

In the project should be given technical and economic indicators (TEP), characterizing the cost-effectiveness of volume-planning solution of the building:

- area of the school site,
- building area,

- total (usable) area of the building,
- working area of the building,
- area per student.

REVIEW OF DOMESTIC AND INTERNATIONAL EXAMPLES
SCHOOL BUILDINGS

Different compositional schemes of volume-planning solutions of school buildings allow organizing functional processes and separating different age groups in different ways.

For example, isolated groups of classrooms (block scheme) allow maximum separation of age groups of students.

Perimeter system (classrooms - on the outer contour of the building) gives the opportunity to create an internal schoolyard, protected from the external unfavorable effects of the street.

The central compositional system (Fig. 11) accentuates the central part of the building and at the same time creates a dominant position of the whole volume in the planning structure of the settlement.

The compact solution of the composition consisting of three pavilions connected by galleries is represented by the example of the music school in Alma-Ata (Fig. 10). Here, a multi-level terrace was created in front of the main entrance, used both as a recreation and as a stage for outdoor concert performances.

The Children's School of Arts in St. Petersburg (Fig. 12) serves as an example of a solution when the urban planning situation requires isolation from the negative external environment.

The complex of the Pedagogical Institute in Vama (Fig. 14) is a peculiar example of a complex planning situation. The imagery of the internal spaces of the building creates the impression of a theatrical setting of a medieval city with streets and squares.

In buildings with ultra-compact and flexible layouts, small classroom spaces are grouped around an assembly or sports hall. Compact building solutions generally reduce heat loss in cold climatic areas. The planning structure of schools in such cases includes atrium spaces, covered passages, which play the role of general communication of the building.

In rural schools there is a cellular isolation of classrooms, their openness to nature or even complete openness in the air (Fig. 15).

COMPOSITION OF SCHOOL PREMISES FOR 12 CLASSES
(500 PUPILS)

| Name of premises | Quantity | Area m2 |
|---|---|---|
| 1 | 2 | 3 |
| ***Entrance group*** | | |
| Entrance group (at the rate of 0.1 m2 .per 1 count and 0.15 m2 per 1 count). | | |
| | | |
| *Total: 125m2* | | |
| ***Classrooms*** | | |
| 1. Classrooms | 5 | 54x5 |
| 2. Study rooms | | |
| - native language | 1 | 54 |
| - literature | 1 | 54 |
| foreign languages | 2 | 54+18 |
| - history and social studies | 1 | 54 |
| - geography | 1 | 54 |
| - mathematics | 1 | 54 |
| - drawing and painting | 2 | 54+18 |
| 3. laboratories: | | |
| - physics and astronomy | 2 | 54+18 |
| *- chemistry and biology* | 2 | 54+18 |
| *4. Training and Production Workshops;* | 2 | 54+18 |
| *- woodworking and tool room* | 2 | 54+18 |

| | | |
|---|---|---|
| *- textile preparation room* | 2 | 54+18 |
| *- cooking room* | 1 | 54 |
| *5. Technical Facilities:* | 1 | 6 |
| *- inventory* | 1 | 8 |
| *- photographic laboratory* | 1 | 6 |
| *6. Recreational premises: at classrooms and other premises (based on the norm of 0.6 m2 per 1 pupil)* | | 300 |
| *7. Library:*<br>*- reading room and book depository* | 2 | 54+18 |
| *- library staff* | 1 | 18 |
| *8. Premises of technical means of education: / - computer room* | 2 | 72+72 |
| *- storage of equipment (technical teaching aids)* | 1 | 18 |
| *-computer room* | 1 | 54 |
| *Total: 1724 m2* | | |

| | | |
|---|---|---|
| *School-wide halls* | | |
| *1. Training and sports:* | 1 | 288 |
| *- gym 12x24m* | 1 | 16 |
| *- instructor's room* | 1 | 16 |
| *- tackle room* | 2 | 24+24 |
| *- locker rooms, showers, restrooms* | 1 | 180 |
| *2. assembly hall-cinema auditorium for 160 seats: -* | 1 | 36 |
| *- bandstand* | 1 | 27 |
| *- movie equipment room* | 1 | 12 |
| *- inventory room* | 1 | 6 |
| *- restroom with a washbasin* | 1 | 190 |
| *3. Dining room:* | 1 | 40 |
| *- dining hall for 190 seats* | 1 | _____ 6 _____ |
| *- preparation room* | | |
| *- vegetable shop* | | |

| | | |
|---|---|---|
| | 1 | 9 |
| - meat and fish shop | 1 | 24 |
| - kitchen and tableware washing room | 1 | 9 |
| - cooling room | 1 | 9 |
| - pantry | 1 | 9 |
| - vegetable pantry | 1 | 9 |
| - loading room | 2 | 9+4 |
| - checkroom staff washroom and shower room | | |
| *Total: 947 m2* | | |
| *School-wide auxiliary and office space* | | |
| *1. administrative offices:* | | |
| *- principal's office* | 1 | 25 |
| *- head teacher* | 1 | 12 |
| *- office* | 1 | 12 |
| *- teachers' room* | 1 | 54 |
| *- methodical room* | 1 | 54 |
| *- technical staff* | 1 | 12 |
| *- social work room* | 2 | 32+8 |
| *- doctor's office* | 1 | 16 |
| *- dentist's office* | 1 | 16 |
| *2. Restrooms:* | | |
| *- for students* | | 78 |

| | | |
|---|---|---|
| *- for staff* | 2 | 4+4 |
| *Total: 327m2* | | |
| *Total: 3123 m2* | | |

Technical and Economic Performance (TEP):

1. Working area (m2)

2 Total (usable) area (m2) = Working area (m2) + area (m2) of corridors, vestibules, passages (without stairs)

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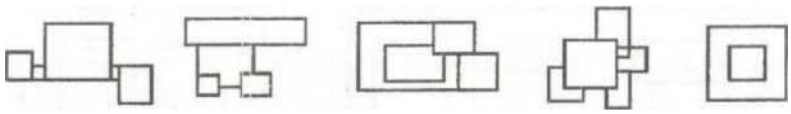
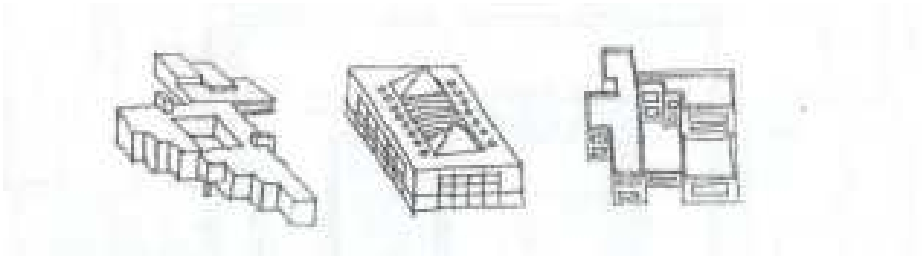
APPENDIX

Fig. 1 Examples of school building compositional schemes



1 block; 2 centralized-block; 3 perimeter;
4 centralized; 5 compact



Linear Block Perimeter

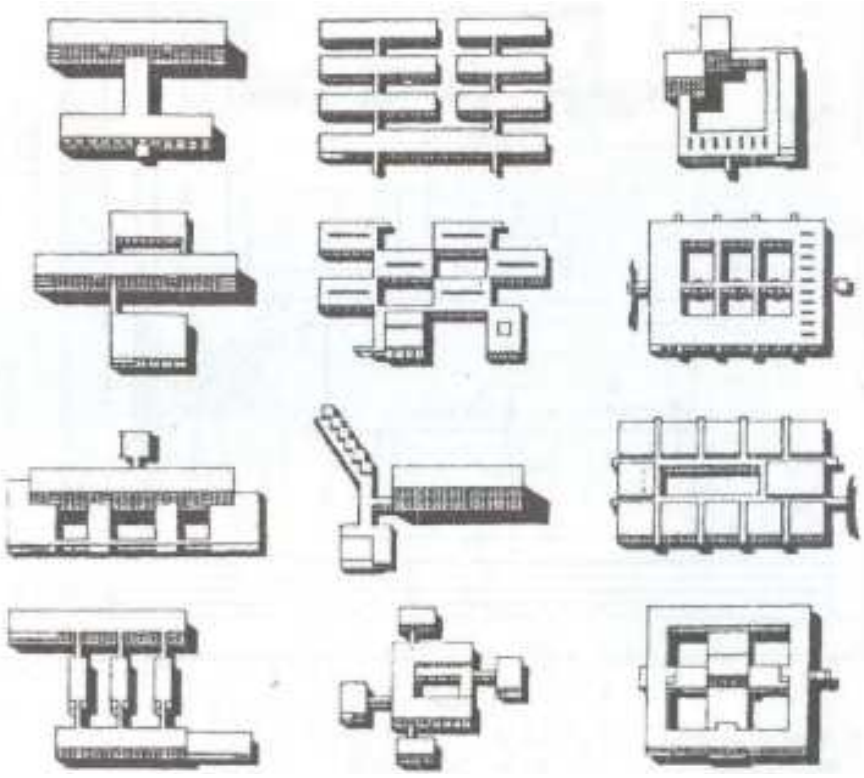
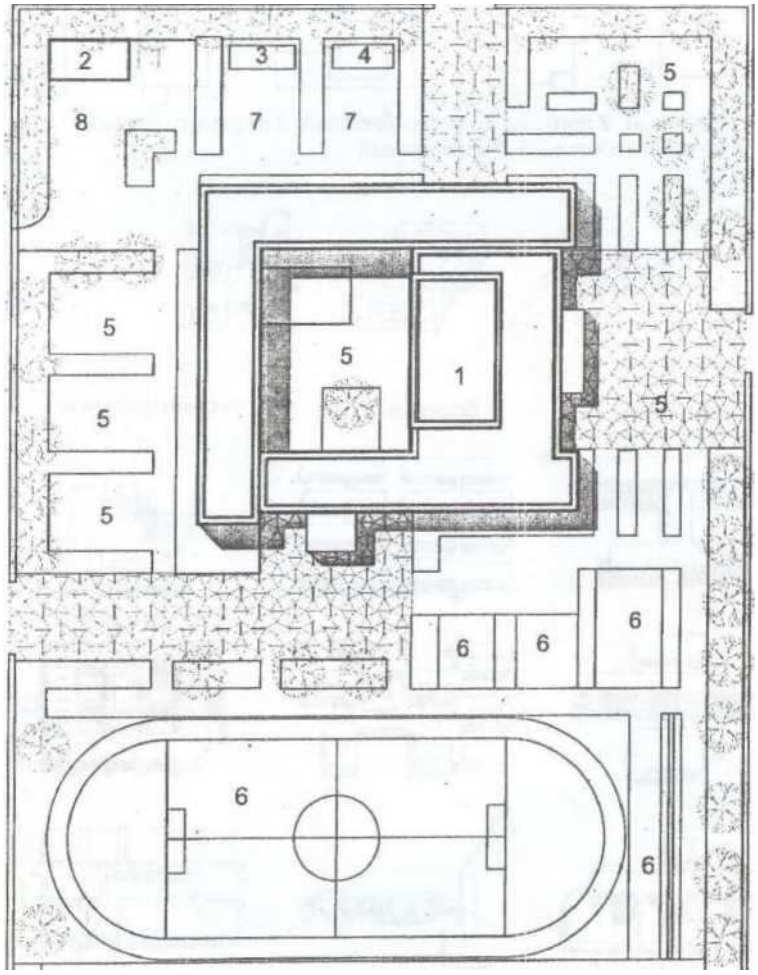
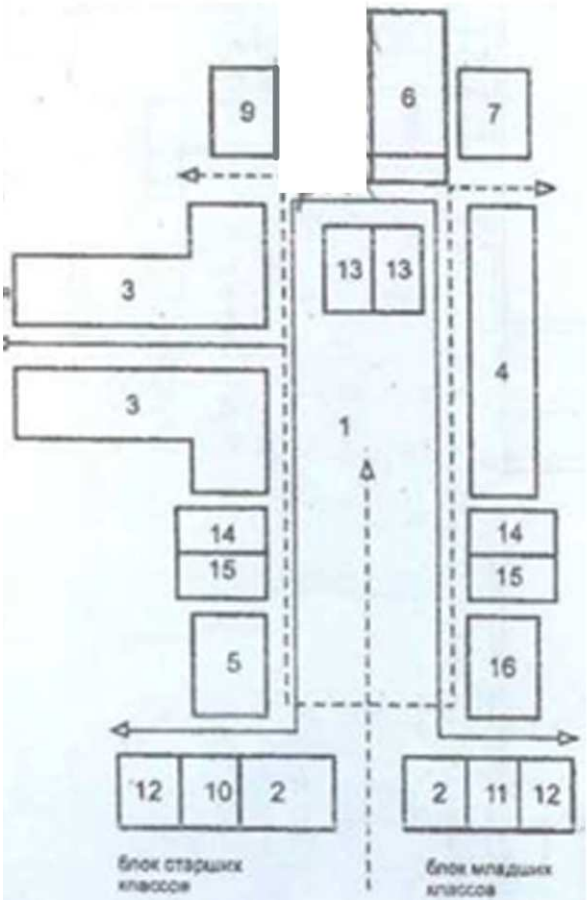


Figure 2. Master plan of the site of the secondary school for 500 students



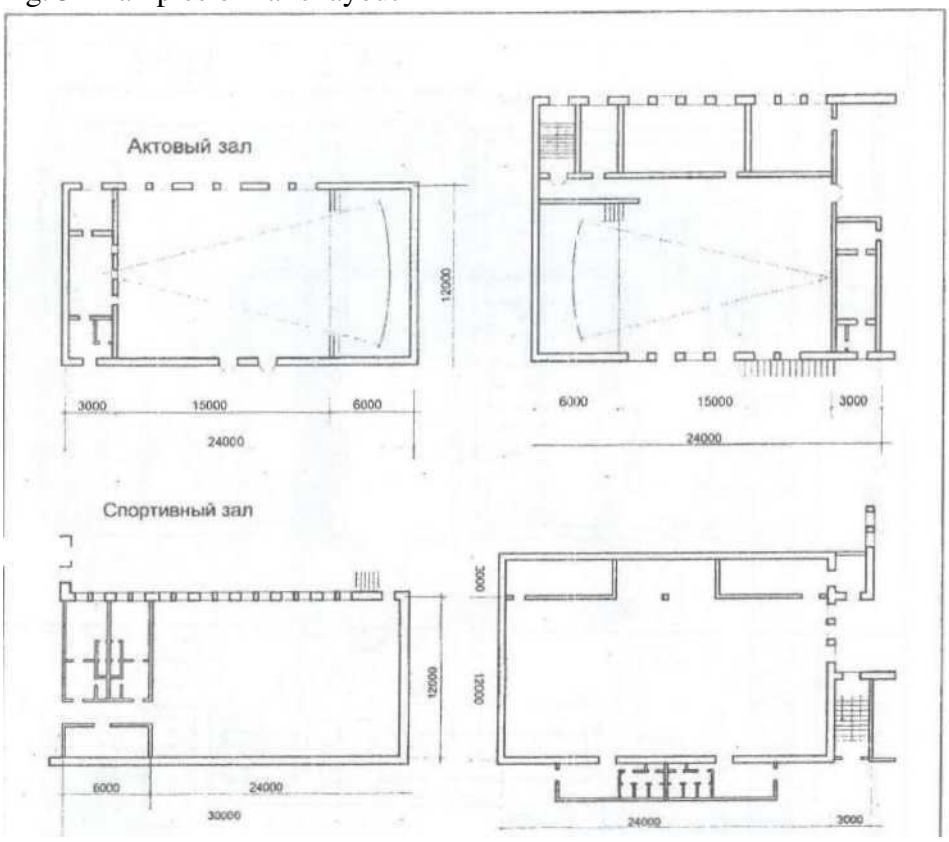

1. school building
2. outbuildings
3. educational greenhouse
4. greenhouses
5. recreation area
6. sports area
7. educational and experimental zone
8. economic zone

Fig. 3. Structure and interconnection of facilities




1.lobby, recreational areas, foyer
2.checkroom
3.classrooms, laboratories
4.classrooms
5.labor training room
6.gymnasium
7.canteen
8.swimming pool
9.assembly hall
10.administration
11.teachers' lounge
12.utility rooms
13.library
14.tso classrooms
15.computer rooms
16.day care rooms

Fig. 5 Examples of halls layout



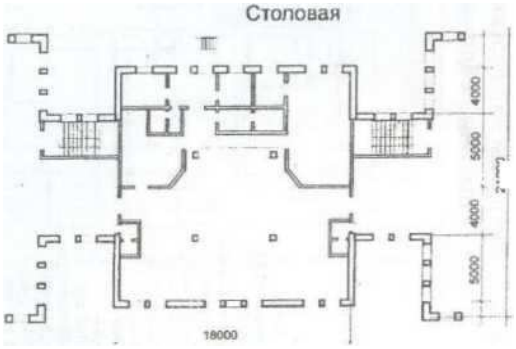



Fig. 6 Classrooms (options for room layout and equipment arrangement)

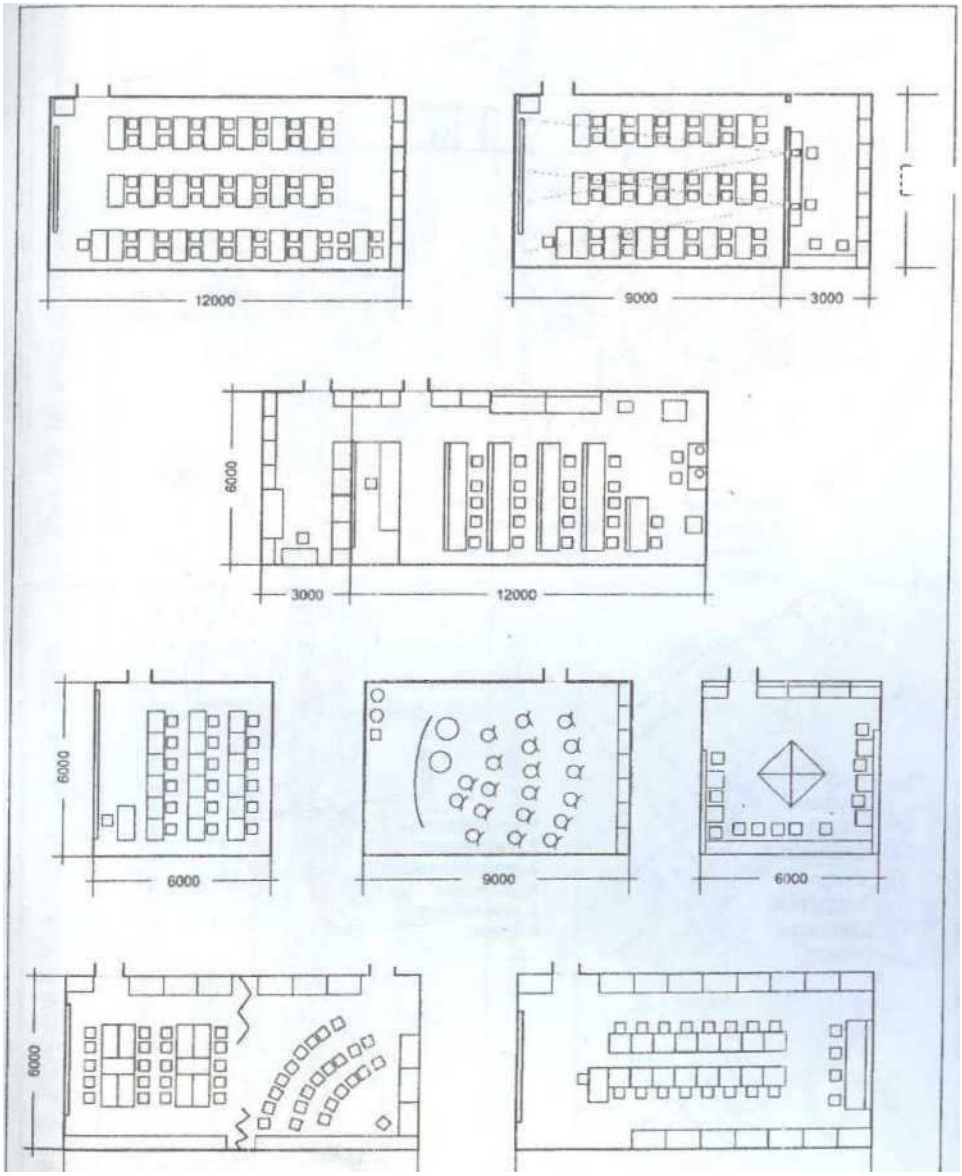


Figure 8. Women's gymnasium in Innsbruck. 1979r.

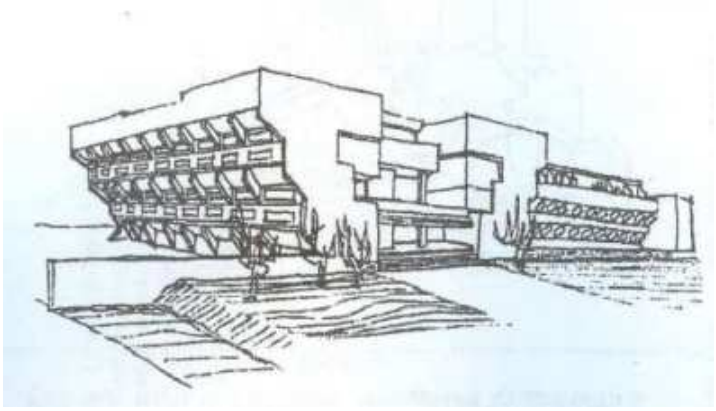


Fig.9 Boarding school in Schloss Castle, 1981.

Fig. 10. Music school for 500 pupils

Fig.11 Centric structure building, Studio Center

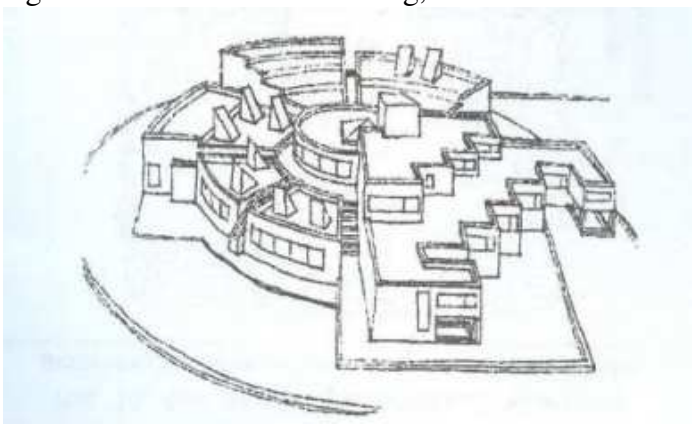


Fig.12. School of Arts in St. Petersburg

Fig.13. Arch.V.Lebedev. Academy of Arts in Moscow

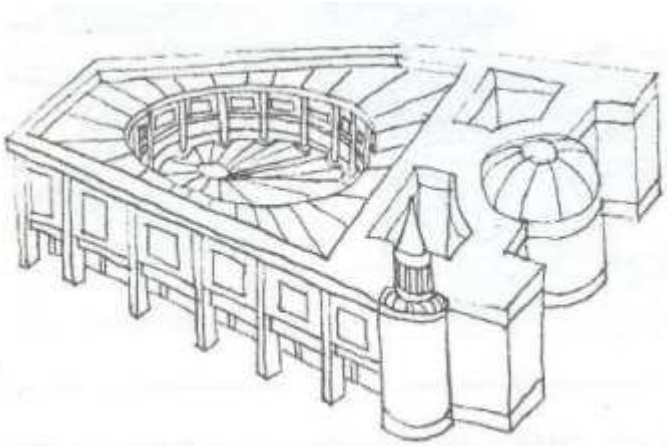
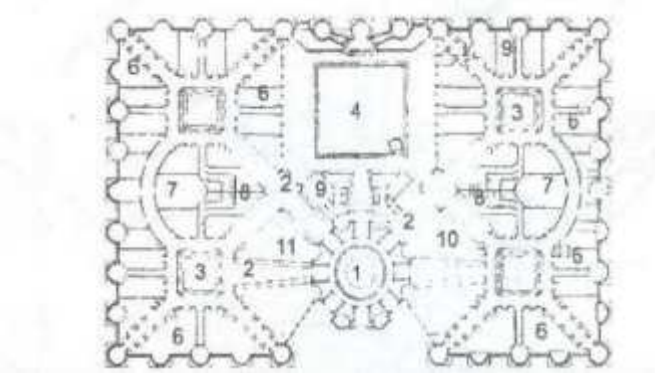


Fig.14. Arch.M.Nunez-Yankovsky. Complex of asychopedagogical institute in Vama. 1984.



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# Secondary general education school for 550 places

Educational-Methodological Manual

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