List of project documentation on the section “General Layout” (GENPLAN).

1. List of documentation of the stage “Pre-project work of area planning of development site“ including materials which provide the possibility of realization of the Technical Task:

1. General brief explanatory note with a calculation of the technical and economical values;
2. Situational plan, Scale 1:10 000;
3. Plan of the current use of the area (basis plan), scale 1:1000;
4. Scheme of the general layout with a development draft, scale 1:1000;
5. Relief scheme, scale 1:1000;
6. Engineering services layout scheme, scale 1:1000;
7. Transport scheme, scale 1:1000.

2. List of documentation on the stage of Project of area planning (PPT)

1. Explanatory note with initial and permissive documentation;
2. Planning structure layout scheme in the documentation of area planning, scale 1:10 000;
3. Scheme of use of the area within preparation of area planning project , scale 1:10 000;
4. Scheme of the zones with the special area use, scale 1:1000;
5. Scheme of the architectural and planning area organization, scale 1:1000;
6. Road network and transport scheme, scale M 1:1000;
7. Leveling operation and engineering preparation scheme, scale 1:1000;
8. Engineering services placing scheme, scale 1:1000;
9. Accomplishment and greenery of the area scheme, scale 1:1000;
10. Layout drawing of the red lines, scale 1:1000;

3. List of planning documentation (work documentation stage “RD”) of the main issue of the general layout:

1. General data of the working drawings of general layout in “General Layout” section.
2. Situational plan scale 1:1000, scale 1:500.
3. General layout scale 1:1000, scale 1:500.
4. Layout drawing, scale 1:1000, 1:500.
5. Relief scheme scale 1:1000, 1:500.
6. Soil masses scheme scale 1:1000, 1:500.
7. Accomplishment scheme, scale 1:1000, 1:500.
8. Engineering services layout, scale 1:1000, 1:500.
9. Remote elements (details, units), scale 1:1000, 1:500, 1:100.

1. «Pre-project work of area planning of development site»

1.General brief explanatory note with a calculation of the technical and economical values;

On the explanatory note following issues are shown:

- Brief characteristic of the surrounding area
- Town-planning characteristic of the area;
- Architectural, planning and functional area zoning;

- Social and economical characteristic of the area, calculations of: population, providing of social and cultural service and public areas;
- Explication of blocks and structures;
- Description of the existing and designed transport system;
- Calculation of the capacity of the engineering services (storm and domestic sewage, water supply, electricity, heating);
- Info on connection and layout of the other engineering services;
- Relief info;
- Accomplishment and greenery;
- Environmental protection;
- Fire prevention;
- Total technical and economical calculation.

2. Situational plan, scale 1:10 000;

On the situational plan following issues are shown:

- Area limits;
- Red lines of the existing quarters (housing, public etc.);
- Existing (planned) roads;
- Names of the surroundings areas and owners, explication of the blocks and structures;
- transit main engineering services;
- Existing (planned) engineering services with the connection units (according to Technical Conditions);
- If necessary:
- Sanitary, water-protection zones, coastal lines;
- Borders of zones of monuments that are under protection;
- The scheme of placing of the designed area with its transport and social communications is shown on the drawing with the scale 1:25000

3. Plan of the current use of the area (basis plan), scale 1:1000;

On the plan of current use following issues are shown:

- Borders of the given area;
- Red lines of the existing surrounding area;
- Street names;
- Existing (kept and demolishing) blocks and structures;
- Existing engineering services;
- Connection units of existing engineering services;
- Explication of blocks and structures;
- Sanitary, water-protection zones, coastal lines, zones under limitations of construction;
- Zones of monuments that are under protection;
- Borders of green plantation;
- Owner's names of the surrounding areas.

4. Scheme of the general layout with a development draft, scale 1:1000;

On the general layout following issues are shown:

- Borders of the given area;
- Designed red lines of quarters with borders of: individual sites; sites with spublic blocks and greenery, including existing saved zones (accomplishment and greening borders);
- Red lines of the existing surrounding quarters;
- Owner's names of the surrounding areas.
- Apartment blocks and other buildings;
- Internal roads, parking, local roads;

- Sanitary, water-protection zones, coastal lines, zones under limitations of construction;
- Existing engineering services;
- explication of the blocks and structures – the balance of territory;
- technical and economical values.

5. Relief scheme, scale 1:1000;

Here the principle scheme of groundwater flow is shown. Planned and existing grades in intersections of roads and pedestrian roads axis in places where the profile of elevation is broken, slope ratio according to the axis of roads, situation of rain sewage structures.

6. Engineering services layout scheme, scale 1:1000;

Here the following issues a shown:

Water supply and sewage (storm and domestic) lines, power supply, gas system, illumination, telephone and TV cables, drainage, structures of engineering equipment and connection units of engineering services.

7. Transport scheme, scale 1:1000.

Here following issues are shown:

- Roads categories;
- Transport direction;
- Transport structures (overpasses, over-bridges, bridges, tunnels, pedestrian subways and crossings);
- Transport stops;
- Pedestrian lines;
- Cattle routes;
- Structures for transport storage and service;
- Filling station
- Cross profiles of streets, roads are shown as stand alone drawings.

2. Project of area planning

(according to the Act of the Government of Moscow Region
№ 536/23 of 19, June 2006):

1.1. Projects of area planning, carried out according to acts of area planning of Moscow Region and act of municipals of Moscow Regions, consist of Basic part and its explanation.

Basic part:

1.2. Drawings of the basic part are the planning drawings in a scale of 1:2000, or 1:5000, or 1:10000.

2.1.1. On the drawing of the project of the area planning are:

Red lines to mark existing, planned (changed or renewed) borders of the area of common use, borders of land areas, where are situated: engineering networks, power supply lines, communication lines (linear and cable structures) pipe lines, roads, railways, and other linear objects;

Laying out of red lines with end and turn points' numbers, distances between red lines, angles and curve radiuses of red lines and other dimensions that make easier the offset of red lines;

Lines, that mark roads, streets, incl. pavements, pedestrian lines, communication lines, engineering and transport services;

Borders of zones of planned placing objects of capital construction of social, cultural and domestic and other use.

1.3. Text documents of the Basic part of planning project are made in a form of Regulations of placing the object of capital construction of regional and local use.

2.1.2. Regulations of placing the object of capital construction should involve:

List of the objects of capital construction to be placed of relatively regional and local use and their characteristics (functional use, content, number of storey, volume, square of development);

Characteristics of the planning area incl. data about the limitations of planning parameters, technical and economical values of following systems: social and cultural, domestic, transport and engineering services.

Explanation part:

1. Scheme of planning element placing in documents of area planning (note-photocopy from scheme of area planning of Moscow Region , scale 1:100000 or 1:200000, local districts, scale 1:250000 or 1:50000, general layouts of settlements, city districts scale 1:5000 or 1:10000);

2.2.1. On the scheme of planning element placing in documents of area planning are shown:

Borders of local districts and settlements;

Existing and planned borders of towns;

Planning elements of towns, transport and communications, landscape elements (rivers, lake, forests, open spaces etc.);

Borders of lands of different categories (agricultural, specially protected, lands of forest and water inventory, reserve lands, lands of: industries, power supply system, transport, communications, radio, TV, IT, lands for space use, lads of defense and of other special use;

Borders of agricultural lands.

2. Scheme of area use within the preparation of area planning project, scale 1:2000, or 1:5000, or 1:10000;

On the scheme of area use within the preparation of area planning project are shown:

- Borders of designing area;
- Lange engineering structures;
- Transport system;
- Linear engineering objects;
- Existing and planned (changed and renewed) red lines;
- Saved elements of development and natural landscape sites;
- Borders of zones of planning objects' placing of capital construction of federal, regional and local use;
- Borders of sites to place objects of capital construction of federal, regional and local use and objects of capital construction of federal, regional and local property;
- Borders of area zones (residential, business, industrial, engineering and transport, agricultural, recreation, specially secured etc.) and established tow-planning regulations. ;
- Existing development with characteristics of blocks and structures (number of storey, use) roads with types of surface, transport objects, engineering services, borders of areas for each kind of development and accomplishment;
- Borders of area sites with type of property and permitted use.

3. Scheme of road network and transport system on corresponding area, scale 1:2000, or 1:5000, or 1:10000;

2.2.3. On the scheme of road network and transport system on corresponding area are shown:

- Categories of streets and roads;
- Motion organization with traffic lights and pedestrian lines;
- Transport structures (overpasses, over-bridges, bridges, tunnels, pedestrian subways and crossings);
- Stops of all transport;
- Main routes of pedestrian lines;
- Household and cattle routes;

- Structures and units for storage and service of transport (incl. underground);
- Filling stations.
- This scheme may also involve drawings of roads, streets transverse profiles.

4. Scheme of borders of objects of cultural heritage, scale 1:2000, or 1:5000, or 1:10000;

2.2.4. On this scheme the borders of objects of cultural heritage of federal, regional and local use are.

5. Scheme of borders of zones with special conditions of land use and borders of area that are under risk of being exposed to extreme situation of natural and technical origin (flood, landslide, karst, erosion etc) and their consequences, scale 1:2000, or 1:5000, or 1:10000;

2.2.5. On this scheme the following issues are shown:

- Borders of water-protective and sanitary zones;
- Borders of zones of protection of water sources for different needs;
- Borders of security zones and protected objects;
- Borders of zones of protection of objects of cultural heritage of federal, regional and local use;
- Borders of areas planned for creation of specially protected zones of federal, regional and local use;
- Borders of other zones, established by legislation of Russia Federation;
- Borders of area that are under risk of being exposed to extreme situation of natural and technical origin (flood, landslide, karst, erosion etc) and their consequences.

6. Scheme of leveling operation and engineering preparation of area, scale 1:2000, or 1:5000, or 1:10000;

2.2.6. On this scheme are shown:

Area leveling operation (existing and project grades on axis of roads in intersection of streets and in points of change of longitudinal profile, project slopes);

Planned actions on engineering preparations (discharge of surface and level decline of ground waters);

Existing and planned structures of engineering protection from extreme situations (dams, discharging channels).

7. Scheme of engineering service placing, scale 1:2000, or 1:5000, or 1:10000;

2.2.7. On this scheme are shown:

- Existing (saved, reconstructed, demolished) and designing engineering lines and structures of water supply, sewage (incl. storm) gas, heating, power supply, illumination, TV, radio and telephony with their main characteristics, drainage network and point of communication with engineering mains;
- Placing of managing;
- Requests of development of engineering service (existing and projected services and borders of engineering objects of future development or reconstruction);
- Existing and designing large underground structures .

8. Red lines marking drawing, scale 1:2000, or 1:5000, or 1:10000.

2.2.8. Here are shown:

- Borders of designed area;
- Existing and planned (changed and renewed) red lines;
- Existing blocks and structures;
- Borders and names of engineering service;
- Numbers of end, and turn points with coordinate list;

- Distances between red lines, angles and curve radiuses of red lines;
- Other dimensions that make easier the offset of red lines.

Graphical materials of area planning project could also involve following:

9. Drawings of architectural and town-planning concept;

2.2.9. Here are shown the possible zoning of the area and possible development characteristics.

10. Scheme of architectural structure of the area;

2.2.10. Here are shown:

Existing (saved, reconstructed, demolished) and designing blocks and structures, objects of social and cultural service, recreation areas, areas for sport, streets, side-streets, pedestrian lines, greenery and landscape);

Areas of different stages of development (development, reconstruction, accomplishment etc).

11. Development suggestions;

2.2.11. This part could involve materials with architectural and planning solutions of development.

12. Accomplishment and greenery scheme, incl. landscape management scheme;

2.2.12. Here are shown existing (saved, reconstructed, demolished) and designing areas of accomplishment and greenery, incl. different grounds, pavements with surface details, green plants, illumination

13. Town-planning plants, if the project includes site separation.

2.2.14. Here is the information of sites and regulations according to the legislation of Russia Federation.

Besides, to be more illustrative the project could involve modeling and different visualizations.

14. 1.5. Text materials on the explanation of project should be done as an <u>explanatory note</u>, proving accepted solutions.

2.5. Explanatory note should include description of the following actions:

- Actions to protect area from extreme situations of natural and man-caused origin with characteristics of potentially dangerous objects, on which chemical, flammable, radioactive substances are kept, overworked and transported and zones of extreme situations occurred within accidents and catastrophes on this objects; water reservoirs and pressure objects, zones of possible catastrophic flood
- Actions on civil security and fire prevention;
- Suggestions on developing in transport system (length of roads, lines of public transport, garages quantity and public parking)
- Suggestions on developing of engineering services(considering current and future water, gas, power consumption, heat consumption for ventilation, hot water supply);
- Suggestions on developing the objects of social, cultural and domestic service on the planning area(kindergartens, schools, polyclinics, pharmacies, shops, food stores, objects of culture and art, domestic service, sport structures, post offices, banks etc.);
- Actions on environmental protection, incl. description of current and forecast conditions on environment of planning area, reservoirs, acoustic statement, sanitary condition and zones, greenery areas, planning limitations.

15. **1.6. According to the town-planning Code of Russia Federation the project of area planning could include preparations of <u>area separations project</u> and tow-n-planning project.**

2.2.13. Here is shown information of land sites according to the requirements to the land surveying documentation.

3. Working documentation

(according to the GOST 2.508-93 Rules of making the working documentation of general layouts of industrial plants, structures and residential objects)

1. **General data on working drawings.**

General data on working drawings are carried out according to GOST 21.101 considering the following additions:

- no list of specifications;
- in general regulations (in addition to the requirements of GOST 21.101) the names of documents are stated that are the basis for general layout drawings , accepted axis system and grades.

2. **Layout drawing.**

Here are shown and marked:

a) construction geodetic network and substituting marking basis: for the residential objects town geodetic network is shown, that cover the entire drawing;
b) red line that separates mains, streets, and squares form the development area;
c) fences with gates and doors or the conditional border of the area. If the fence coincides with the red lines or the conditional border, only the fence is to be shown with corresponding mark on the drawing;
d) wells of geodesic survey, that are not shown on the topographic;
e) blocks and structures, incl. communication (over passes, tunnels);
f) industrial and storage sites;
g) roads and sites with road surface;
h) railways;
i) accomplishment units (pavements, sport and recreation grounds;
j) planning relief (slopes, breast walls, ramps);
k) drainage structures;
l) North-pointer with the arrow and letter C (top left corner).

Layout drawing is made with coordinate or dimension snap.

Construction geodetic network is shown into the entire layout drawing in a form of a square ten centimeters on side.

Point of origin is in the bottom left corner.

Axis of construction geodetic network are marked by Arabic digits according to the number of hundred meters and capital letters of Cyrillic alphabet.

Within the enlarging, reconstruction and reinforcement it is accepted to use existing axis marks..

Dimension snap is made from marking basis.

Marking basis could be any straight line, that goes through two fixed points, marked with capital letters of Cyrillic alphabet.

Blocks and structures are shown in the scale of the drawing, marking the gates and doors, end axis, and if necessary with marking of gates axis coordinates or gates snap to the block.

Inside the block outline are shown:

a) block number in a bottom right corner;
b) Absolute grade, that is a conditional zero-grade, accepted in working drawings of the block, that is stated on the offset line in marked with the ↓ (for residential objects – if necessary).

On the block outline are shown:

a) a) Coordinates of intersection of coordination axis of the block, in its two opposite corners, and within complex configure of the block or if it is not parallel to the construction geodetic network – in every corner, for cylindrical blocks – its center and one characteristic point, and also the diameter; for linear structures – axis coordinate and end point of each section;
b) dimension snap of coordination axis of the block to the marking basis and block dimension between axis if the construction geodetic network is absent;
c) Marking of coordination axis of the block in coordinate points.

Around the block outline the stone riprap, incoming ramps, ladders and entrance grounds are shown.

On the layout drawing of roads are shown and marked:

a) a) railway crossing;
b) Road junctions;
c) Coordinates or snaps of roads, and if necessary their numbers;
d) Width of roads;
e) Curve radiuses on the edge of roads in intersection points;
f) groove and embankment slopes (if necessary).

On the layout drawing of railway are shown and marked:

a) a) railway numbers;
b) junctions;
c) buffer stops;
d) groove and embankment slopes (if necessary).

3. Relief organization plan;

Relief organization plan is made on the basis of layout drawing without marking and showing coordinate axis, coordinates, dimensions and dimension snaps.

Here are shown and marked:

a) absolute grades inside block outline according to 5.6 (list б);
b) project grades and slope marks on red lines;
c) project horizontal lines or project grades of basic points with the relief slope direction;
d) Grades of slope top and bottom, ladders, breast walls, ramps;
e) grades of bottom in the change points of longitudinal profile, direction and slopes of drainage structures;
f) storm water screens in the lower points of relief with the screen top grades;
g) project grades of planning and actual grades of relief on the external outline on stone riprap in the block corners or if stone riprap is absent, showed grades in the intersection of walls with relief in the corners of block – in a form of proportion with project grade in numerator and actual grade in denominator;
h) project grades of planning and actual grades of relief (if necessary) on the top of the sites of different use in the intersection points with relief in the corners and characteristic points;
i) lines of change of project relief – within performing the plan in project grades of basis points;
j) slope direction of project relief is to be shown with bergstrich – within performing the plan in project horizontal lines and with arrows – within performing the plan with project grades.

6.3 On the relief organization plan in the section of roads are shown:

a) a) project horizontal lines – within making the project with project horizontal lines;
b) outlines of transverse profile of roads – within making the plan in project;
c) точки перелома продольного профиля с проектными отметками;
d) slope markers on the axis of road;
e) drainage structures – ditches with bottom grade in change points of transverse profile and slope value of the bottom;
f) storm water screens in the lower points of relief with the screen top grades.

6.4 On the relief organization plan in the section of railways are shown:

a) a) slope markers;
b) bottom grade of drainage structures in change points of transverse profile and slope value of the bottom.

6.5 Relief organization plan as a rule should be made in project horizontal lines.

While making relief organization plan in project horizontal lines, they are drawn with relief section in 0.1 or 0.2 meter through the entire area (land surface, roads, sites) It is admitted that on the sites with monotonous relief the horizontal lines could be drawn in 0.5 meter.

Grades of project horizontal lines are marked from the relief increase side. Grades of project horizontal lines, divisible by 1 meter are written fully, intermediate – made up to the integer according to two digits after a point.

While making a relief organization project in the project grades of basis points of planning, as a basis points the following values could be taken:

a) corners of blocks, structures and sites;
b) top and bottom relief points;
c) roads axis intersections;
d) change points of railway or roads relief.

Project grades of pipe inlet and outlet together with bottom change points are shown on the relief organization plan. The offset line of drainage gutters shows their brief name.

4. Soil masses plan;

Soil masses volume is calculated with square method.

Other methods are also acceptable. Contents of the plan are defined with mass calculation and condition of working.

On the soil masses plan are shown:

a) construction geodetic network or substituting marking basis;
b) square network to calculate soil masses with project, actual and working grades in the square corners, line of zeroic works, marking groove with hatch and showing the volume of masses within each square or other figure made by planning outline;
c) blocks and structures;
d) fence or conditional area border;
e) slopes, breast walls.

Square network as a rule is inserted into construction geodetic network with 20 meters on a side. It is accepted to snap the network to the red line or a marking basis, and also using the square with 10, 25, 40 or 50 meter on a side depending on relief profile and required accuracy.

It is alos accepted to use in mass calculations figures rather than square. In this cases, figure dimensions are shown on the drawing.

Under each column of soil masses plan the table of form 6 is stated, with consecutive values in consecutive columns, also with columns of total values.

In case of situating the soils to be removed on the planning area (fertile layer, peat, soil not to be used as basement) the removal is carried out before soil masses plan following the formal procedure same to the soil masses plan

On the removal plan project grades are the grades of the bottom of removing soils, and in further consideration this grades are used as actual grades.

When there is different types of soils within project area it is possible to make separate plans for each type of soil with coinciding names

In the case of removing soils are laying in a single layer the removal plan may not be executed. At that actual grades a re the grades of bottom of soils to be removed, and calculated volume is inserted in coinciding column in the list according to the form 7.

On the soil masses plan are shown:

a) list of volumes of soil masses on the form 7;

b) text notes to correct working grades in sites of making lawn, road covers, sites for railways.

5. Summary plan of engineering service;

Summary plan of engineering service is carried out on the base of layout drawing but without absolute grades of blocks, structures, snap of gates and coordinate axis of blocks.

If it necessary the external foundations outlines of existing and projected blocks could be shown.

On the drawings of roads and railways only the coordinates or axis snaps are shown.

Engineering networks are drawn according to the graphical legend in GOST 21.204.

On the summary plan of engineering service are shown and marked:

a) communication structures for pipe laying;

b) underground, surface and over ground networks;

c) storm water screens, piers and pole of communication networks.

Engineering services are drawn according to working drawings of coinciding sets with coordinate or linear snap of network axis on each characteristic site, drawing jacks, niches, chambers and with its legend.

6. Area accomplishment plan;

Area accomplishment plan is made on the basis of layout drawing without marking coordinate axis, coordinate and dimension snaps, absolute grades of blocks and structures.

On the drawings of roads and railways only the coordinates or axis snaps are shown

On the area accomplishment plan are shown and marked:

a) pavements, paths and their width;
b) grounds of different use and their dimensions;
c) small architectural objects and portable units for recreation grounds;
d) trees, plants, flower beds, lawns.

Accomplishment elements are snapped to the external edges of blocks (structures, red lines, roads or railways)

For row planting of trees the dimension row snap is carried out.

In case of complicated configuration of paths or in case of free placing of trees and plants it is possible to make additional square network with 5-10 on a side, snapping it to the construction geodetic network, marking basis, blocks, structures, roads and railway instead of dimension snap.

Accomplishments elements are given position marking. Position marking of small architectural objects and portable units are shown in the offset line on a circle with diameter of 6 mm. Greenery elements are shown with offset line in circles with diameter of 8-12 mm in a form of proportion with position marking in nominator and quantity or square (for flower beds) – in denominator..

On the area accomplishment plan are shown:

a) list of small architectural objects and portable units by form 8 (see the filling example in appendix H);
b) Greenery list by form 9 (see the filling example in appendix П);
c) List of pavements, paths and grounds by form 10 (see the filling example in appendix P.)
d) sections, and units of pavements, paths and grounds. see the filling example in appendix C;
e) List of roads, drives, passages by GOST 21.511 (form 1) – for civil and residential objects see the filling example in appendix P (fig. P.2);
f) corresponding text notes e.g. on trees planting, making flower beds and lawns

9.7 Lists named in 9.6 are accepted to be placed in the drawing with general data

9.8 See the examples of area accomplishment plan in: appendix T - «Greenery plan»; appendix У - «Plan of placing the small architectural objects and portable units»; appendix Ф - «Plan of pavements, drives, paths, grounds ».

7. Remote elements (details, units) by GOST 21.101.**

10.1 Draft drawing defines construction of atypical unit, contains simplified figure, main parameters and technical requirements for the unit in the volume of initial data (task), needed to design construction documentation.

10.2 Draft drawings are made for units (construction, devices) that are out of serial manufacturing, typical drawings (documentation of mass use), standards, and other documents.

10.3 Each atypical unit has its own draft drawing. As an exception could be a number of units, which have similar features and on which a group draft drawing could be made.

10.4 Draft drawing has its own name, that consists of the name of basic set of working drawings by GOST 21.101, in a dot code H and of number of the drawing.