

Ingeborg Gaisbauer /
Martin Mosser (Bearb.)

Straßen und Plätze.
Ein archäologisch-historischer Streifzug



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Streets and Roads in Kyiv from the 10th to the 13th Century: Procedure of Identification

Sergiy Taranenko

Archaeological analysis of street and road networks is a complex issue that requires knowledge about the site, its geomorphology, historical topography, and interpretation of the written sources and maps. Analysis of the medieval streets and roads must be done step by step. We will discuss this statement based on street and road network in Kyiv dating from the 10th to the 13th century.¹

According to the reconstruction of the historical topography of Kyiv, proposed by P. P. Tolochko, Kyiv was divided in “Gora” (Vladimir’s city, Yaroslav’s city and Iziaslav’s city), “posads” (Podil and Kopyriv Kinets) and suburbs (Kyryliv monastery, Dorogozhychy, Predslavyno village, Klov, Ugorske tract, Berestove village, Pechersk monastery, Vydubychi village, the Eastern bank of Dnipro) (Fig. 1).² Podil (lower town) and the Upper city (“Gora”) are the best investigated parts of the city as of today. The earliest excavations were organized at the known historical places. Then most of the excavations were done by the Cultural Resource Management expeditions, which deal with emergency excavations, related to large scale building projects. Building boom was typical for the central city at the territory of the preservation area “Ancient Kyiv”. According to the Ukrainian law, archaeological investigations are mandatory before building. Therefore our research is based on archaeological data from the Upper city and Podil.

Geomorphology (Fig. 2)

The Upper city

Landscape began to take its modern shape at the end of the ice age. The modern soils were formed at the border of Steppe and Forest-Steppe at that time. Ancient Kyiv was located near the watersheds between the valleys of the Dnipro and the Lybid at the northern part of the Dnipro Plateau (the Kyiv Plateau), formed by loess and loess loams. This part of the Plateau is marked by strong vertical and horizontal division. Numerous gulches, parts of the basin structure of the Dnipro and the Lybid, have a ramified dendritic configuration with outliers that have the excess level of 100 m above the Dnipro and a dozen meters above the Lybid. This division of territory resulted in an overload of the area with slopes compared to the high level areas of the Plateau.³

This location requires links between the Upper city and suburbs through a transport network. Borychev uzviz (= descent), the road between the Upper city and Podil known from the written sources, is the most interesting for our case study. Discussions about its location have continued for over a hundred years. Some scholars argue that this road has the same location as modern Andriivsky uzviz, but archaeological data disprove this idea⁴. According to O. Komar, Borychev uzviz could be located in the southern part of Podil, at the area of the Mykhailovsky department,⁵ however this idea is not yet confirmed by archaeological data.

¹ All Ukrainian and Russian titles are transcribed and were translated by the author.

² P. P. Tolochko, *Istorychna topografiia starodavnogo Kyieva* [Historical Topography of Ancient Kyiv] (Kyiv 1972) 208.

³ S. P. Romanchuk, *Istoryko-landshaftnozhnavcha rekonstruktsiia terytorii suchasnogo Maidanu Nezalezhnosti ta iogo dovkillia na davnoruskii period* [Historic and Landscape Reconstruction of the Area of Modern Independence Square and its Surrounding Area in Ancient Kyiv Time]. *Kyivskii geografichnyi shchorichnyk* 2002, 98–120.

⁴ M. S. Sergeeva/V. G. Ivakin/S. P. Taranenko, *Zvit pro arheologichni doslidzhennia Podilskoi ekspeditsii IA NANU za adresou vul. Andriivskii Uzviz in 2011–2012* [Report about the Archaeological Investigations of the Podil Standing Expedition at Andriivskyj Uzviz in 2011–2012 (in preparation).

⁵ O. V. Komar, “Borychev” i “Borychev uvoz” Drevnego Kieva [“Borichev” and “Borichev uzviz” of Ancient Kyiv]. V: *Starodavnii Iskorohysten I slovianski grady* [Ancient Iskorosten and the Slavic Cities] (Korosten 2008) 192–225.



Fig. 1: Historical topography of Kyiv with the “Gora” uphill and the two settlements Podil and Kopyriv Kinets on the right and left riverside in the foreground (P. Tolochko [footnote 2]).

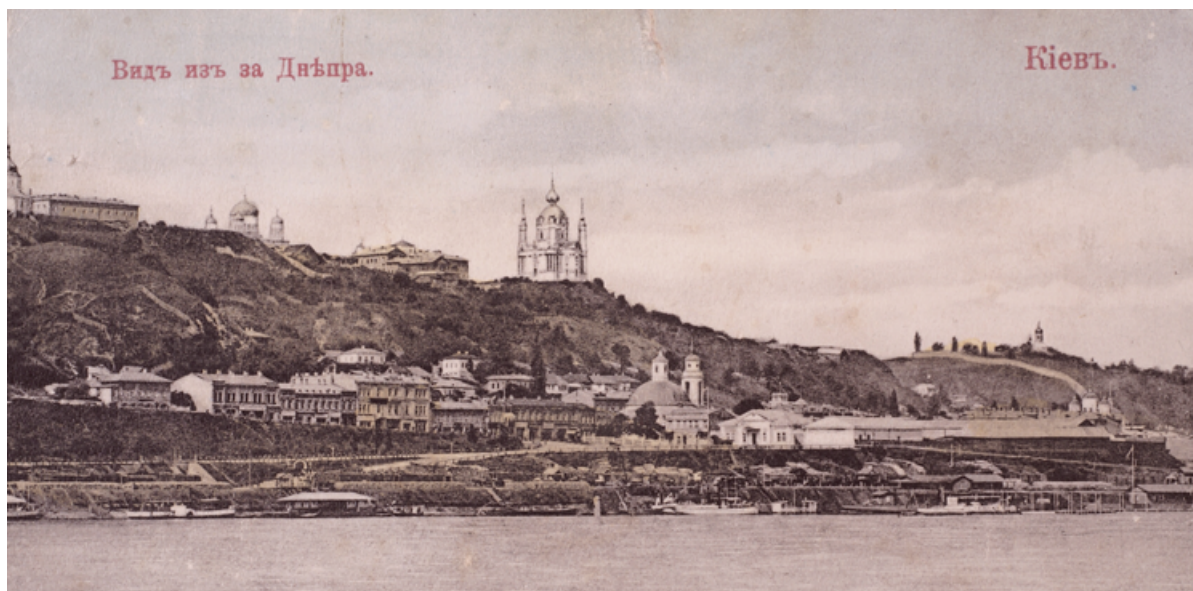


Fig. 2: Picture postcard with Upper City and site of Podil on the right riverbank of Dnipro (beginning of the 20th century).

Podil

Podil is located at the floodplain terrace of the western bank of the Dnipro between the high bank and the river itself. This territory is a part of the Kyiv-Dnipro floodplain characterized by the relatively high location over the river (5–7 m) and the light texture above the floodplain sediments. The upper cultural layers were found

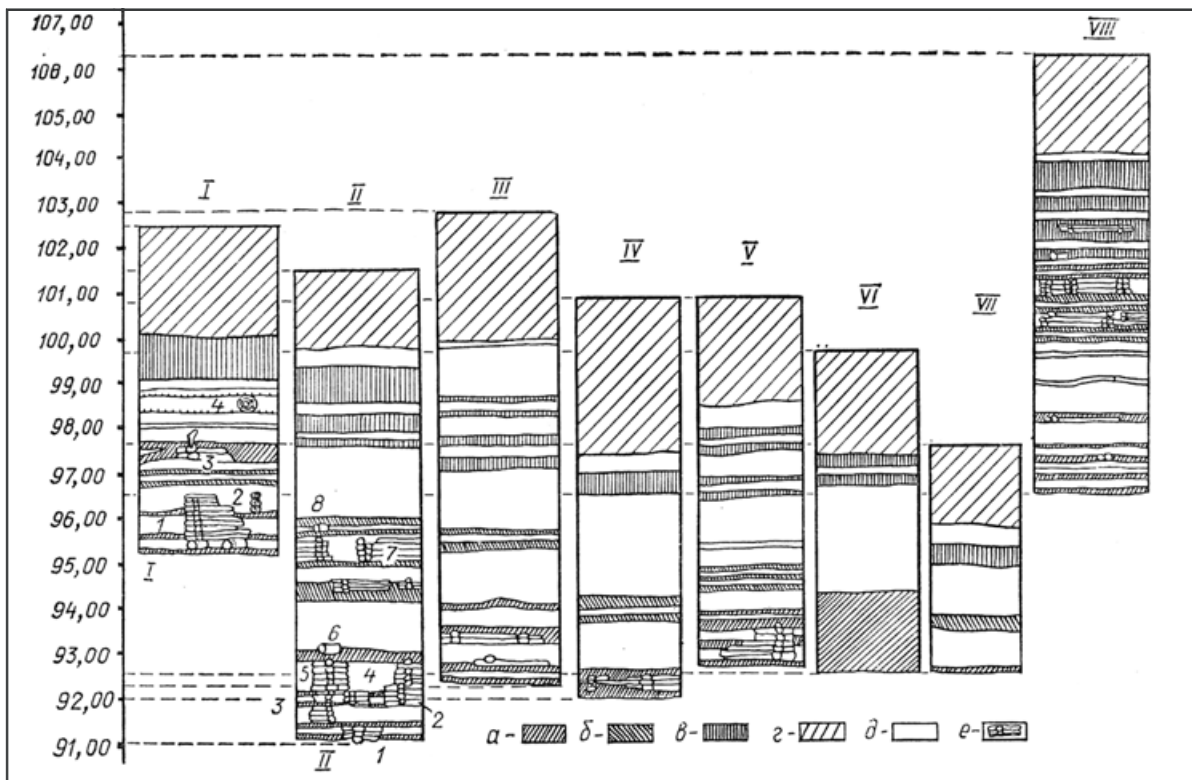


Fig. 3: Combination of stratum profiles in Podil basing on the Baltic height reference system (M. Sahaidak). I – Sagaydachnogo St. 6–8, 1975: 1. Blockhouse 4; 2. Blockhouse 3; 3. Blockhouse 2. II – Kontraktova square, 1971–1973: 1. Frame 7; 2. Frame 2a; 3. Frame 1; 4. Frame 4; 5. Frame 2; 6. Fundamental lining under a frame 2; 7. Frame 9; 8. Frame 8. III – Geroiv Trypillia – Khoryva St., 1972. IV – Verhniy Val St., 1975. V – Nyzhniy Val St., 1974. VI – Yaroslavskaya St., 1974. VII – Shchekavitskaya St., 1973. VIII – Zhytniy market, 1973: 1. Blockhouse 21; 2. Blockhouse 20; 3. Blockhouse 17; 4. Blockhouses 12, 12a, 17, 18, 19; 5. Blockhouses 7, 8; 6. Support of entrance steps of frame 7; 7. Blockhouse 3. a – fourth tier of the cultural layer; b – third tier of the cultural layer; c – second tier of the cultural layer; z – first tier of the cultural layer; d – alluvial-diluvial layers; e – wooden buildings.

above the layers (up to 30 m) of the alluvial sands. Composition and structure of the Podil cultural layers confirm the dynamic natural processes, contemporaneous to the inclusion of this area into economic activity. Influence of the other factors that formed the Podil layers was not equal everywhere. Humus layers were formed gradually as the result of everyday life, and sand layers covered all the area in short periods of time. Therefore the cultural layers are deposited in parallel to each other; it is easy to identify the borders between cultural and sand layers (Fig. 3). The cultural layers are about a half or more than the third part of the Podil superposition. The thickest cultural layers were found at Kontraktova square and the Zhytniy market (about 52%), but at Nyzhniy Val street it is about 38.3% of the superposition and at Shchekavitska street it is about 32%.

The similarities in the cultural layer formation in the different parts of Podil are confirmed by the distribution of the archaeological materials. Even the relative chronology of finds confirms contemporaneous changes in the deposition of the cultural layers at each excavated area. Therefore it is important to understand the formation of Podil as a process. Thickness of the alluvions in the lower layers (12–8 m) dating from the 11th to the 12th century is varied between 0.1 and 1.1 m. Thickness of the alluvions in the upper layers reaches over 2 m. The thickest sand layers are probably dating from the first quarter of the 12th century. At least, they are absent in the layers dating from the second quarter of the 12th century. This layer has a depth of 2–2.5 m below the modern surface.

All the above mentioned makes it possible to identify oscillatory motions (the new tectonic motions) as the most influential factors of the geomorphology of Podil. Most probably, the territory of the foundation of the Posad of Ancient Kyiv in the 11th respectively in the first part of the 12th century was impacted by the new tectonic motions and it caused the specific structure of the Podil sediments. For some time Podil was sagged by

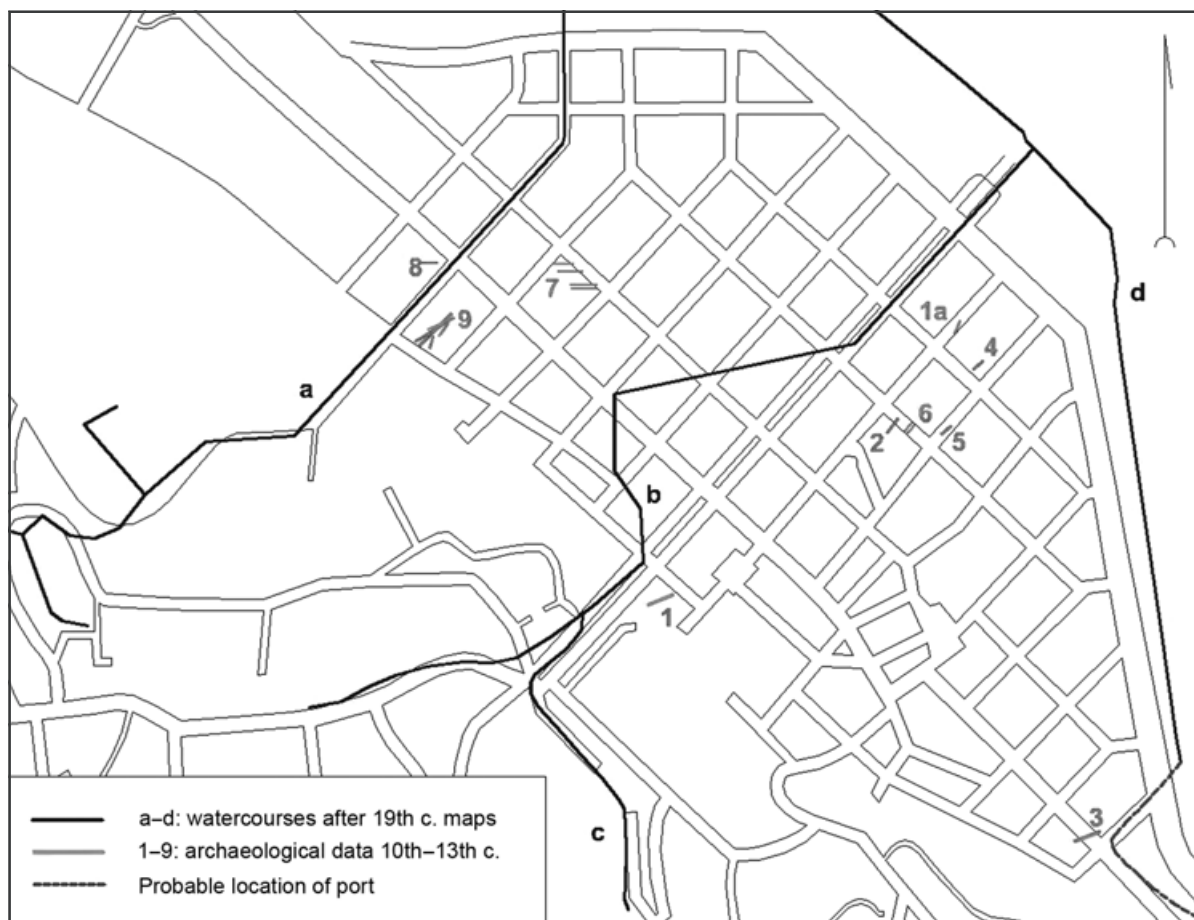


Fig. 4: Contemporary map of Podil with medieval watercourses and the location of settlement relicts (S. Taranenko). a – Nizhneyurkovskiy brook; b – Glybochica river; c – Kyyanka river; d – Dnipro river. 1. Zhitniy market, 1973; 1a. Khoryva St. 40, 1984; 2. Voloska St. 17–19, 1974; 3. Sagaydachnogo St. 6–8, 1975; 4. Pochaininska St. 18, 1985; 5. Geroiv Trypillia St. 21, 1987; 6. Voloska St. (trench), 1987; 7. Mezhygirska St. 43, 1989; 8. Yurkivskaya St. 12/59, 1992; 9. Obolonska St. 5, 1992.

the different rates of this process. When the sag was slow the area could develop, when the sag was fast the area was flooded. This territory could also rise.

It is widely known that the movements of the crust and the earthquakes change the slopes of rivers, influence the intensity and directions of erosions, the accumulation and soils sliding. Ledges of the floodplains are often corresponding to the landscape and structure of the bedrock. The raised blocks correspond to the positive forms of a landscape and the drooped blocks correspond to the negative forms. Erosion-accumulation processes were the strongest at the rifts that are reflected in profiles of the riverbeds, morphology of the floodplains and its geological structure.⁶ The typical feature of the settlement structure should be the location of the homesteads along the small watercourses. It provides the possibility to model the street locations in parallel to the creeks (Fig. 4).⁷

⁶ M. A. Sahaidak, *Davnokievskii Podil: problemy topographii, stratygraphii, hronologii* [Podil in Ancient Kyiv: Problems of Topography, Stratigraphy, Chronology] (Kyiv 1991) 52–54.

⁷ S. P. Taranenko, *Gidrologiia davnorusskogo Podolu Kyeve za arheologichnymi dannymi* [Hydrology of Ancient Rus Podil by Archaeological Records]. V: *Problemy istorii ta arheologii Ukrainy* [Problems of the History and Archaeology of Ukraine] (Harkiv 2012) 73.

Historic topography

The Upper city

The “Upper city” was formed at the time of Vladimir’s principdom at the end of the 10th century/beginning of the 11th century. Detinets (citadel) grew up from 2 to 10 ha during that time. Temples and the palace complex with Desiatinnaya Church were the core of the city formation. Streets with the homestead structure were formed around this complex. The city was fortified with ramparts and ditches. These constructions were partly investigated at the Velyka Zhytomirska street 2, near Mykhailovska square. Remains of the stands of the rampart base dating from the 10th century were found during the excavations. The ditch was located in front of the rampart. It was 5 m in depth and 10–12 m in width.

As most of the European medieval cities, Kyiv had a high density of buildings. This is confirmed by the excavations at Velyka Zhytomirska street 2 and 2a. An area of 1000 square meters was excavated at the place of a pagan kurgan cemetery location. Most of the graves had been ransacked earlier or destroyed by the 20th century buildings. The complexes that were preserved allowed the reconstructions of the kurgan shapes and the details of obsequies.

A new phase of the “Upper city” development started with the period of Yaroslav Mudryj principdom (1019–1054). After the death of his brother, Mstislav Khorobryj, in 1036 Yaroslav Mudryj concentrated the power over the Kyiv Rus. He started large scale building activities at Kyiv in 1037. The new part of the city, “Yaroslav’s city”, was about 80 ha wide that is ten times more than “Vladimir’s city”. The Dnipro banks and ravines were the city borders. With the building of fortifications in the first half of the 11th century almost all the surroundings of “Vladimir’s city” were included in “Yaroslav’s city”. Investigations at Vladimirska and Lysenko street showed that the fortifications consisted in two ditches and a rampart with a wooden wall. The first ditch was 15 m in width and 8 m in depth. The second ditch was located near the rampart. It was 7 m in width and 3 m in depth. The distance between the two ditches was about 14 m, where the small rampart, fastened with wooden constructions, was located. Some parts of this fortification system were found in the West of the Golden Gates by I. M. Samoilovskij in 1947–1948.

The main construction of “Yaroslav’s city” started after the construction of the fortification system. Fortifications of the seigniorial manors were destroyed. New streets with homesteads covered all the area. They were partly investigated in the modern streets Reitarska, Zolotovoritska, Velyka Zhytomirska and Rylskij lane.⁸

Podil

Reconstructions of the street network of the Ancient Rus Posad require the correct location of its borders. There are different ideas about the Posad area and the logic of its development. According to P. P. Tolochko, Podil was 180 ha in size.⁹ In 1982, K. M. Gupalo estimated Podil to cover 200 ha during the 11th to 13th century.¹⁰ According to M. A. Sahaidak’s opinion, Podil was 150 ha in size from the fourth quarter of the 9th century till the end of the 10th century; and 180 ha in size from the 11th to the 13th century.¹¹

The reconstruction of the city size should be based on archaeological evidence. However we do not know exact borders of Posad. Let us reconstruct the borders of Podil based on the last data (Fig. 5).

The South/the South East:

We will start with the point of the probable location of the port. It was in the natural harbour, formed by Pochaina river. We may locate the harbour between modern Borychev uzviz and Poshtova square. This assumption was made possible by the analysis of the written sources and archaeological evidence. It is

⁸ V. V. Ianchenko, Proekt Parka “Kievskaia Rus”. Istoriia ozhyvaet [The Project of “Kyiv Rus” Park. History Revived] (forthcoming).

⁹ P. P. Tolochko, Kiev i Kievskaia zemlia v epokhu feodalnoi razdroblennosti XII–XIII vv [Kyiv and Kyiv Land at the Epoch of Feudal Disunity from the XIIth to the XIIIth Century] (Kyiv 1980) 173.

¹⁰ K. N. Gupalo, Podol v drevnem Kieve [Podil in Ancient Kiev] (Kyiv 1982) 107–108.

¹¹ M. A. Sahaidak, Aktualni pytannia zarozhennia ta formuvannia ranogo Kyeva [The Actual Problems of the Origin and Formation of Early Kyiv. V: Magisterium 6. Arheologichni studii (Kyiv 2001) 6–18; idem, O nekotoryh tipologicheskikh osobennostiah obrazovaniia drevnerusskogo goroda [About some Typological Features of the Ancient Rus City Formation]. V: Arheologiiia drevnerusskogo goroda XI–XV vekov [Archaeology of the Ancient Rus City from the XIth–XVth century] (Moskva 2011) 60.

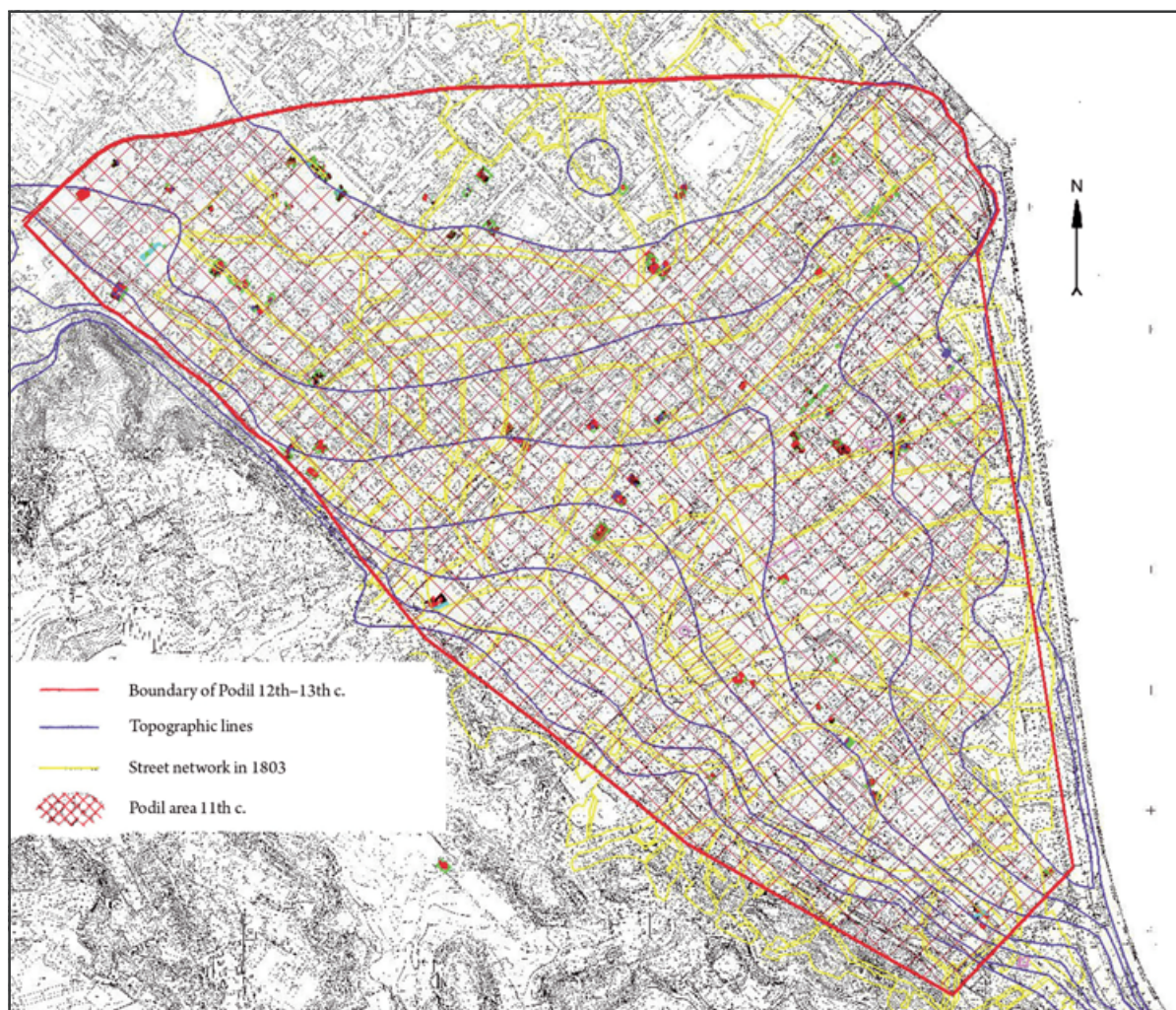


Fig. 5: Archaeological map of Podil with the boundaries of settling from the 11th to the 13th century (S. Taranenko).

confirmed by the excavations at Sagaydachnogo street 6 (1974), Poshtova square (1988), Sagaydachnogo street 15 (2004–2005) and Naberezhno-Khreshchatytska street 1a (2007).

The South/the South West:

Podil is bounded by Starokyivska, Zamkova, Shchekavytsa and Yurkovitsa mountains.

The West/the North West:

The border at this side must be identified with the “stovp’e”, a single fortification construction at Podil that is mentioned in the written sources. We proposed to locate it on a map based on archaeological data.¹² It did not cross modern Olenivska street near the bottom of the mountain. Then it crossed Yurkivska street and turned east where it crossed Mezhygirska and Obolonska street, located in parallel to Turovska street and coming close to the Pochaina river. Of course, this is just a hypothesis. We hope that future excavations will help to locate “stovp’e” better.

The North/the North East:

Podil was bounded by the Pochaina river from this side. The cultural layers were found at Naberezhno-Khreshchatytska street, starting from crossing with the “stovp’e line” and finishing with crossing the Borychev uzviz.

¹² S. P. Taranenko, Do pytannia pro litopysne “stovp’e” na Kyivskomu Podoli [To the Issue of the Annals “stovp’e” at Kyiv Podil]. Lavrskii Almanah 22 (Kyiv 2008) 12–19.

Taking into account these borders we may calculate the size of Podil. At least from the second half of the 12th century on it was about 150 ha. We assume that this is the largest size of Podil in Kyiv Rus time.

Of course, Posad was much smaller in size at the beginning of its formation and probably had some phases in its development. An attempt to identify one of the phases was made with mapping the Kyiv Rus cemeteries. One of the groups included cemeteries located on territory considered as unpopulated because of the high water level. Elements of the homestead structures and street network were not found there: Shchekavytska street 25–27, Mezhygirska street 43, Naberezhno-Khreshchatytska street 1a, Frunze street 23–25, Naberezhno-Khreshchatytska street 9. With the growth of the city these cemeteries disappeared and new blocks were built. These objects are characterized by the term “periphery cemeteries”. Cemeteries of the 11th century in the north-west part of Podil are the most important for us. They were found at Shchekavytska street 25–27, Mezhygirska street 43, Nyzhnij Val and Pochaininska crossroad. Comparative analysis of these cemeteries showed that they were located at a single isoline, 98 m according to the Baltic scale. One may conclude that the cemeteries of one single chronological period were located at one line of the landscape and then disappeared with the growth of city. The cemeteries were located outside the Kyiv Rus cities. Therefore this territory in the North-West of Podil was not a part of the city.¹³ This means that in the second half of the 11th century Podil had a size of about 130 ha.¹⁴ Using this chronological data we may analyse the genesis of the street network from its origin till the formation of the well-developed network.

The written sources and historiography

Unfortunately, we do not have enough written sources with descriptions of Kyiv street network and construction of the pavements. The existing sources are rather consultative than informative.

Historiography of the Kyiv Podil street network is poorly developed, first of all because of the lack of archaeological data. That is why the scholars were very careful about it before the last quarter of the 20th century: “Of course, there were streets, because people had to ride and walk; there were squares also. But nobody knows how they looked like”¹⁵. “The streets had so small width that it was difficult to ride for two wagons. It seems unlikely that the streets were wider before Mongols’ time”¹⁶. The papers that summarized the research of the city in the 1970ies were dealing with the homesteads and streets also. On one hand scholars proposed to reconstruct the city planning based on a scheme dating from 1695.¹⁷ On the other hand, they were careful with the reconstructions. “The question of the preservation of Ancient Rus traditions of the Podil planning in the 17th–19th century is still open”¹⁸. P. P. Tolochko characterized the Kyiv Rus streets and roads system as “lively system supported by state and local authorities rather than an abstract way web”¹⁹. P. P. Tolochko wrote about the transport arteries between the cities and the country; however this analogy might be useful for our case study. M. A. Sahaidak reconstructed the location of the “first street of Podil” dated by the early phase of the existence of the city²⁰.

Archaeological finds in the layers of the 10th century confirm that the building areas were planned according to the roads directed from the North West to the South East and from the bottom of the Zamkova mountain to the Dnipro river. The first direction reflects the edge of a floodplain. The second is located in parallel to the watercourse of a small river. The crossroads of these directions are characterized by the large thickness of the cultural layers at the place of the market square location. It was mentioned in the annals in 1068.²¹

¹³ V. G. Ivakin/S. P. Taranenko, *Davnoruski mogyl'nyky Podolu Kyeva v iogo planuvannii strukturi* [The Ancient Rus Cemeteries of Kyiv Podil in its Planning Structure]. *Bolkhovytynovskiy shchorichnyk* 2009, 2010, 259.

¹⁴ S. P. Taranenko, *Do pytannia pro ploshchu Podolu Kyeva v davnorusskii chas* [To the Issue of the Kyiv Podil Size in the Time of Ancient Rus]. V: *Tserkva – Nauka – Suspilstvo: pytannia vzaemodii. Materialy IX Mizhnarodnoi konferentsii* [Church – Science – Society: the Issues of Collaboration] (Kyiv 2010) 23–24.

¹⁵ I. A. Ivantsov, *Starodavniy Kyiv* [Ancient Kyiv] (Kyiv 2003) 277.

¹⁶ M. Tikhomirov, *Drevnerusskie goroda* [Ancient Rus cities] (Moskva 1956) 246.

¹⁷ G. V. Alferova/V. A. Kharlamov, *Kiev vo vtoroi polovine XVII veka* [Kiev in the Second Half of the XVIIth Century] (Kyiv 1982) 93.

¹⁸ Gupalo (footnote 10) 51.

¹⁹ P. P. Tolochko, *Puti-dorogi Kievskoi Rusi* [Ways – Roads of Ancient Rus]. V: *Kyiv i Rus. Vybrani tvori 1998–2008* [Kyiv and Rus. Selected papers of 1998–2008] (Kyiv 2008) 316.

²⁰ M. Sahaidak, *Medieval Kiev from the Perspective of an Archaeological Study of the Podil District*. *Ruthenika* 4, 2005, 157.

²¹ Sahaidak 2010, 399.

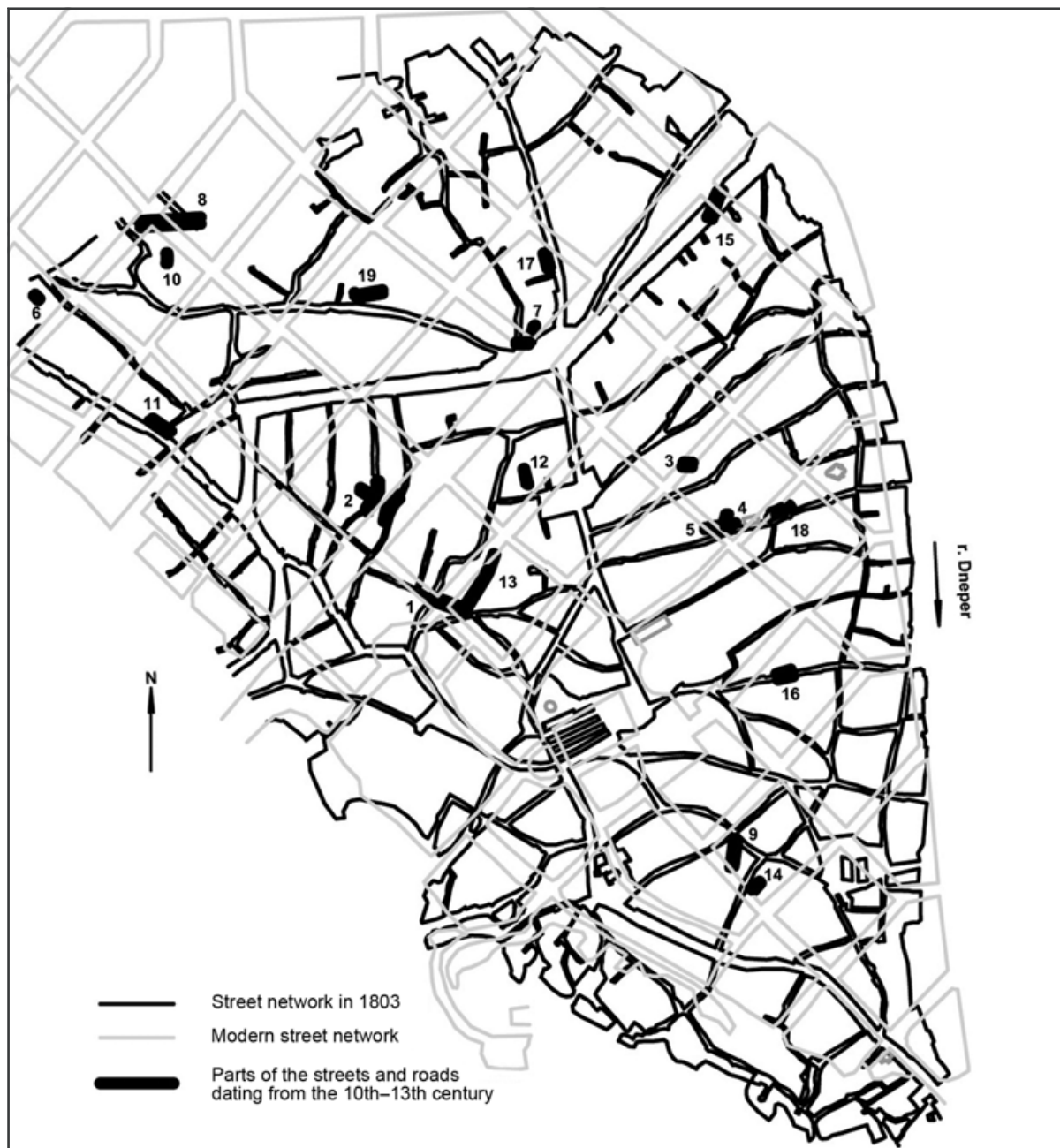


Fig. 6: Plan of Kyiv Podil (contemporary map and the street network in 1803) with the parts of streets and roads dating from the 10th to the 13th century (S. Taranenko): 1. Geroiv Trypillia St. – Khoryva St., 1972–1973. 2. Verhniy Val and Nizhniy Val St., 1974–1975. 3. Investigations at the heating main building at Geroiv Trypillia St., 1983. 4. Voloska St. 14–16, 1987. 5. Voloska St. 14–16, 1988. 6. Obolonska St., 1988. 7. Nyzhniy Val St. 43, 1989. 8. Mezhygirska St. 43, 1989. 9. Sagaydachnogo St. 18, 1991. 10. Obolonska St. 12 (P-2), 1993. 11. Shchekavytska St. 7/10, 1998. 12. Khoryva St. 27, 1999. 13. Mezhygirska St. 3/7, 2004. 14. Sagaydachnogo St. 16–18, 2004. 15. Verhniy Val St. 68, 2004. 16. Illinska St. 8, 2005. 17. Pochaininska St. 27/44, 2006. 18. Skovorody St. 14–16, 2006. 19. Shchekavytska St. 30, 2007.

A transport network, somewhat different from the one located in the Upper city, was found in Podil. It is characterized by some streets located nearby, sometimes in parallel. Transverse streets were rare and usually were of minor importance. This type of structure developed because of the settlement formation near the river, when equal access to the water communications was required. The directions of the streets were determined by the bank line and landscape that went down to the river.

The lower part of the city started to form along the main street, located at the bank line. The ends were connected by ancient ways going up – the main streets to the Upper city.²²

The latest excavations of the Podil street network proved direct links between the Kyiv Rus street network and the planning network of Podil before the “fire”, reflected in the 1803 map (see below). Since the excavated parts of the Ancient Rus streets are correlated with the streets on this map, one may conclude that the street network did not change much from the Kyiv Rus time until the fire in 1811²³ (Fig. 6).

The conservatism in the planning structure during some centuries is not rare in archaeology of the Ancient Rus cities. The excavations in Ancient Novgorod where wooden pavements were found²⁴ are widely known as well as the excavations in Riazan²⁵, Suzdal²⁶, Vitebsk²⁷, Minsk²⁸ and other cities. Archaeological investigations confirmed that location and direction of streets at those cities were not changed during a long time.

Maps

Together with the large-scale excavations scholars paid more and more attention to the other sources of the history of Podil, including the maps. V. O. Kharlamov and G. V. Alferova proposed to analyse Podil planning structure based on the 17th century data, i. e. the plan made by colonel Ushakov in 1695. They came to this conclusion using the method of step by step reconstructions. Plans, maps, schemes etc. are brought to the modern topographic map of a city. The paper was based on plans made in 1745, 1750–1752 and 1803. Brought to the same scale, chronologically different plans show the development of the city construction.²⁹ The work by Alferova and Kharlamov may be introduced as one of the first good attempts to analyse the Kyiv planning structure. However the plan made in 1695 did not have a scale. Therefore it cannot be used for the analysis of Kyiv street network from the 10th to the 13th century.

One of the first good plans of Kyiv was made in 1803. It is very important for us because it was created before the reconstruction of the Podil planning network after the fire in 1811. This plan became a part of the interactive map and it hypothetically reflects the main features of the street and homestead network.

A digital map of Kyiv Podil with the data from 62 excavation sites is already existing. It contains the data on the planning structure of the city from the 10th to the first half of the 13th century and its elements: buildings, household buildings, fences, streets and roads. It also contains the other important elements of the historic topography of Ancient Kyiv: churches, hydro-technical constructions, creeks and cemeteries.

The proposed map is the first example in Ukrainian urban archaeology when archaeological sites were mapped on a common plan of the Posad (city) (Fig. 5).³⁰ The proposed map may be used for the streets and roads identification in Medieval Kyiv.

Archaeological sources

The Upper city

The Upper city database is much poorer than the Podil one. There are only a few cases of streets and roads identification.

²² Sahaidak 2010, 410.

²³ S. P. Taranenko, *Davnoruski dorogy ta vulytsi z rozkopok Podolu Kyeve* [Ancient Rus Streets and Roads from the Excavation of Kyiv Podil]. *Bolkhovytynovskii shchorichnyk* 2010, 250.

²⁴ Kolchin 1956.

²⁵ V. P. Darkevich/G. V. Borisevich, *Drevniaia stolitsa riazanskoi zemli: XI–XII vv* [The Ancient Capital of the Riazan Land: XIth–XIIth Century] (Moskva 1995) 223.

²⁶ M. V. Sedova/D. A. Belenkaia, *Okolnyi gorod Suzdalia* [The Suburbs of Suzdal]. V: *Drevnerusskie goroda* [Ancient Rus Cities] (Moskva 1981) 98.

²⁷ T. S. Bubenko et al., *Istoriia i materialnaia kultura Vitebska (X–XVIII vv.)* [History and Material Culture of Vitebsk (Xth–XVIIIth Century)] (Vitebsk 2004) 21.

²⁸ E. M. Zagorulskii, *Vozniknovenue Minska* [Formation of Minsk] (Minsk 1982) 187.

²⁹ Alferova/Kharlamov (footnote 17).

³⁰ S. P. Taranenko, *Elektronna arheologichna karta Kyevo-Podolu, iak dzherelo vyvchennia planovalnoi struktury davnorusskogo posadu* [Digital Map of Kyiv Podil as a Source of Studying the Posad's Planning Structure]. V: *Sivershchina v istorii Ukrainy/Natsionalnyi Zapovidnyk "Glukhiv"* 5 [Sivershchyna in a History of Ukraine/National Preservation Area "Glukhiv"] (Kyiv-Glukhiv 2012) 129–132.

Parts of the main street (about 85 m) were found at the north-western part of the “Yaroslav city” during excavations in 1981–1982. The main street linked the central square with the St Sofia Cathedral and Western (“Jewish”) gates of the city.³¹

Four streets were found at excavations at the “Vladimir’s city”. The main street, directed from the North to the South, was located near the modern Volodymyrska street that was 6 m wide in ancient times. Another street, located parallel to the first one, started near the modern Desiatynna street and did not cross the modern Velyka Zhytomirskaya street and two streets located parallel to it in the eastern part of “Vladimir’s city”. An artisan quarter related to black and non-ferrous metallurgy was located along the main street. It was excavated by V. K. Goncharov in 1955.

A part of the street dating from the 11th century was found during the excavations at Velyka Zhytomirskaya street in 2002. Thirteen buildings were excavated there. Twelve of them were timber-framed and one had a block-house structure.

Parts of two streets were excavated at the Independence square (Maidan Nezalezhnosti) in 2001. Both started from the Liadskie gates and were directed to the center of the city. The one, directed to the St Sofia Cathedral, was 6–7 m wide. The other one, directed to the “Vladimir’s city”, was 3.5 m wide. It should be noted that the borders of streets and homesteads were stable despite the numerous reconstructions.³²

Podil

25 parts of streets and roads from 19 excavation sites are known from the history of Podil investigation.

Table 1: The streets and roads in Podil.

Excavations	Depth/m	Width/m	Length/m	Construction	Details	Date/century
Geroiv Trypillia – Khoryva St., 1972	9.40–10.78	6	13.70	Dense soil	With fences	10th–11th
Geroiv Trypillia – Khoryva St., 1972	9.40–10.78	~3	20.90	Dense soil	With fences	10th–11th
Verkhniy and Nyzhniy Val St., 1974–1975	6.40–8.55	~3	1.30	Dense soil	With fences	10th–11th
Verkhniy and Nyzhniy Val St., 1974–1975	6.40–8.55	~3	1.60	Dense soil	With fences	10th–11th
Geroiv Trypillia, 1983	3.25	3.55	3.50	–	With fences	12th–13th
Voloska St. 16, 1988	2.23–2.30	2.40	4.00	Tracks 2.50; 0,15 in depth	With fences	12th
Obolonska St. 7, 1988	3.40–3.50	2.78	2.00	Wooden coverage	4th level of the 7-layers pavement	Second half of the 12th–13th
Voloska St. 14–16, 1988	2.30–3.85	2.5	4.10	Tracks	With fences	11th–12th
Nyzhniy Val St., 43, 1989	2.73–4.10	2.58–3.28	14.00	Tracks and traces of wooden coverage	The trenches from two sides: 0.35 m in width and 0.40 m in depth. 4 layers of a road	11th–13th
Nyzhniy Val St. 43, 1989	3.60–3.80	North part	4.00	Traces of wooden coverage	Trench 0.20 m in width and 0.15 m in depth. 4 layers	11th–13th
Mezhygirska St. 43, 1989	3.80–4.10	3.75–3.85	3.85	Wooden coverage (parallel and transverse logs)	2 layers of pavement and 1 layer (later) of a dirt road	Second half of the 11th–the beginning of the 12th
Mezhygirska St. 43, 1989	2.80–3.30	–	4.80	Tracks	With fence	Second half of the 12th–the beginning of the 13th
Voloska St. 16, 1989	2.40–2.70	2.70	11.10	Tracks	With fences	12th
Sagaydachnogo St. 18, 1991	3.30–4.35	4.50	up to 6.00	Alluvial sand	With fences	12th
Obolonska St. 12, 1993	3.20–3.70	–	5.50	Tracks	Found in 2 horizons	11th–12th

³¹ Borovskii/Sahaidak 1985, 51–52.

³² Sahaidak 2010, 409.

Excavations	Depth/m	Width/m	Length/m	Construction	Details	Date/century
Shchekavytska St. 7/10, 1998	2.80	6.80 (3.90)	9.90	Tracks	2 layers, with fences	12th
Khoryva St. 27, 1999	3.00	2.00	2.00	Tracks	With fences	12th
Mezhirska St. 3/7, 2003 (2)	2.72	3.30	9.00	Tracks	With fences	12th
Mezhirska St. 3/7, 2003 (4)	4.19	3.00–3.50	10.30	Tracks	With fences	12th
Sagaydachnogo St. 16/18, 2004	2.60	3.00–3.20	9.60	Tracks	With fences	12th
Verhniy Val St. 68, 2004	3.40–3.86	3.80	14.80	Tracks	Found in 3 horizons	11th–12th
Illinska St. 8, 2005	2.24–2.38	3.60	4.20	Tracks	Trenches (fences)	13th
Pochaininska St. 27/44, 2006	4.21	3.10	5.30	Sandy loam with geological nodules	With fences, found in 3 horizons	11th–12th
Skovorody St. 14, 2006	1.88	5.25	10.25	Tracks	With fences and drainage ditches	11th–13th
Shchekavytska St. 30, 2007	4.70–4.90	2.50	6.00	Tracks (high amount up to 9)	Numerous horse-shoe traces	12th

Archaeological indicators of streets and roads

Morphology of the carriageway

Pavement

The first level of identification of the carriageways includes the correlation between the data from historic topography, geomorphology, the written sources and archaeology. We are talking about the identification of paved carriageways where some wooden constructions were preserved.

We should note that the state of preservation of wooden constructions in Kyiv cannot be compared with the state of preservation of wooden constructions in Novgorod as an example. 28 layers of pavement were found at the Nerevsk excavation site. Layers 13–28 are contemporaneous to the pavements in Kyiv (mid-10th century–1220s–1240s) (Fig. 7).³³ The preservation of wood in Novgorod made it possible to analyse tree species. Pine is dominating among pavement constructions at Probojnaya street, it was found in 70% of cases, including 91% of the coverage. Spruce was found in 28% of cases. Its lumbers were used for the street coverage, logs and lining. Using of oak, birch and aspen in covering the streets was noted for the early layers of pavement: layers 25–28 (10th century) and layer 22 (11th century).³⁴

Let us analyse some examples of the pavements in Kyiv.

“Yaroslav’s city”, 1981–1982: Wooden pavement was found. The traces of logs, 1.5–2 m in length and 0.3 m in width, were found. Six logs were lying across the road width and were covered with transverse logs. The common road width reached 6 m. Sidewalks, 0.4–0.5 m in width, were located on both sides. They were represented by remains of wooden slabs. Two coverage layers were found in the profile. The road was bounded by a wooden fence.³⁵

Obolonska St. 7, 1988: Seven layers of the pavement dating from the second half of the 11th to the first part of the 19th century were excavated. The remains of the fourth level can be related to the second half of the 12th until the beginning of the 13th century. It turned north 0.75 m compared to the upper layers. Fragments of three logs with horizontally hewn outer side were found. Their remains, 2 m in length, were orientated from the West to the East. Their width reached 0.15–0.2 m. One of them was lying on a base parallel to the lag. Coverage was

³³ Kolchin 1956.

³⁴ O. A. Tarabardina, *Stroitelnaia drevesina v srednevekovom Novgorode (po materialam Troitskikh XI i XII raskopov)* [Timber Frame Construction in the Middle Age Novgorod (by the materials of the XIth and XIIth Troitskyj excavation sites)]. *Arheologiya i istoriya Novgoroda* 19, 2005, 138–139.

³⁵ Sahaidak 2010, 409.

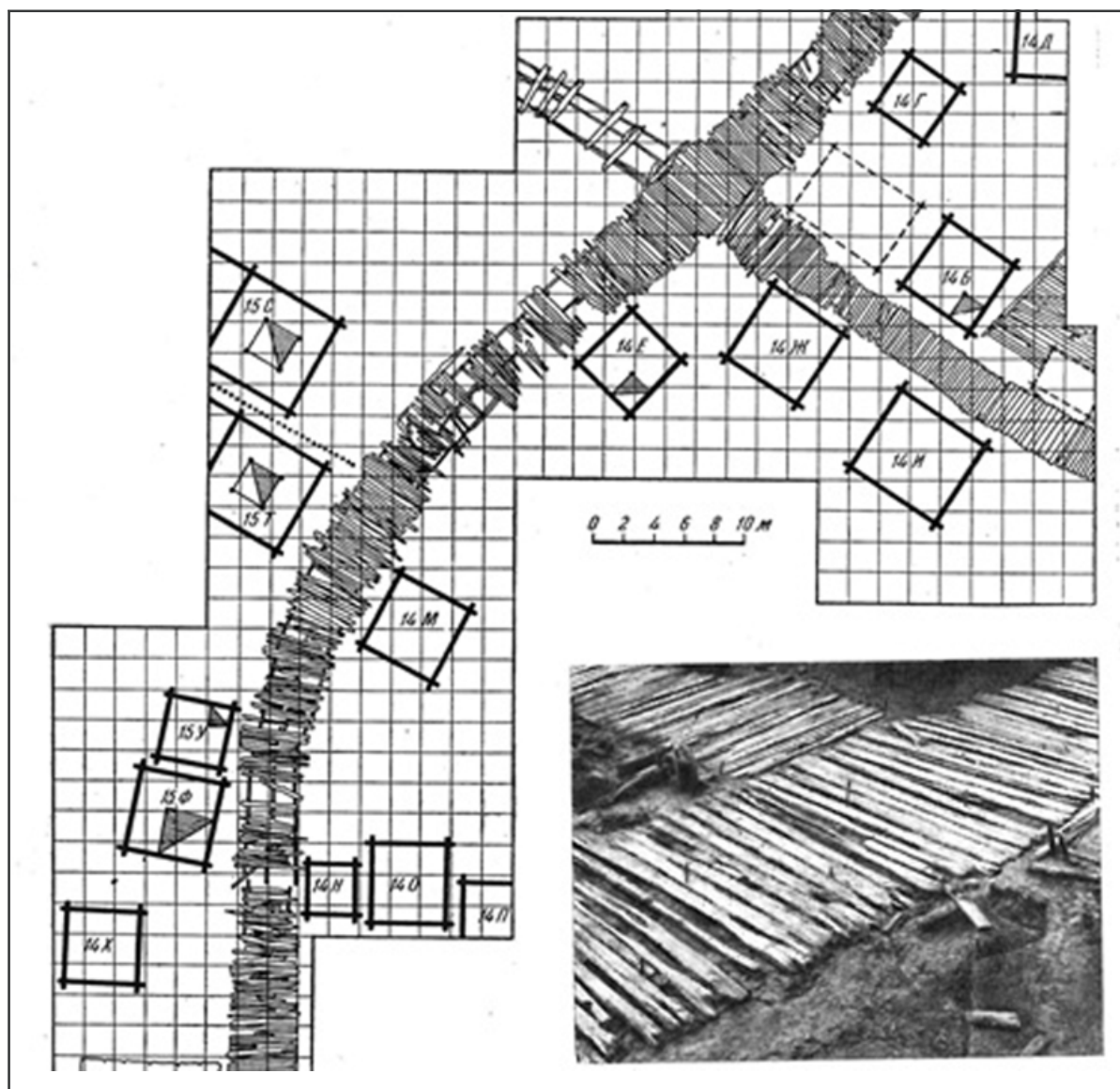


Fig. 7: Pavement of the 14 tier in Ancient Novgorod (Kolchin 1956, Fig. 29).

destroyed by a fire. Coverage, logs and soil below them were burned. The common width may be reconstructed with the bases and traces of tracks located to the North. It reached 2.78 m.³⁶

Nyzhniy Val St. 43, 1989: Two parts of roads were excavated. At least four layers of the road were found in the profile. They are represented by layers of dense soil with remains of wood, charcoals and traces of burned logs. The road was 3.28 m in width. This layer was lying on alluvial and diluvial layers, 0.15–0.25 m in depth. The surface was uneven and had traces of tracks with fragments of burned wood across the entire road. Three groups of stakes that were crossing the coverage were found in the northern part of the excavated part of this street. Two groups were located close to the roadside and one was located in the center of the street. The stakes were represented by the remains of wood with inclusions of charcoal. The roadsides were marked by the ditches of fences and were 0.25–0.35 m in width and 0.3–0.4 m in depth.

³⁶ F. A. Androshchuk/T. A. Bobrovskii/V. M. Zotsenko, *Otchet ob issledovaniiah Pochaininskogo otriada Podolskoi ekspeditsii IA AN USSR 1988* [Report about the Investigations of the Pochaininskyi Department of the Podil Standing Expedition of the IA NAN USSR in 1988]. Nauchnyi Arhiv Instytutu Arheologii NAN Ukrainy [Scientific Archive of the Institute of Archaeology of the UNAS] 1988/25A (Kyiv 1988) 65–70.

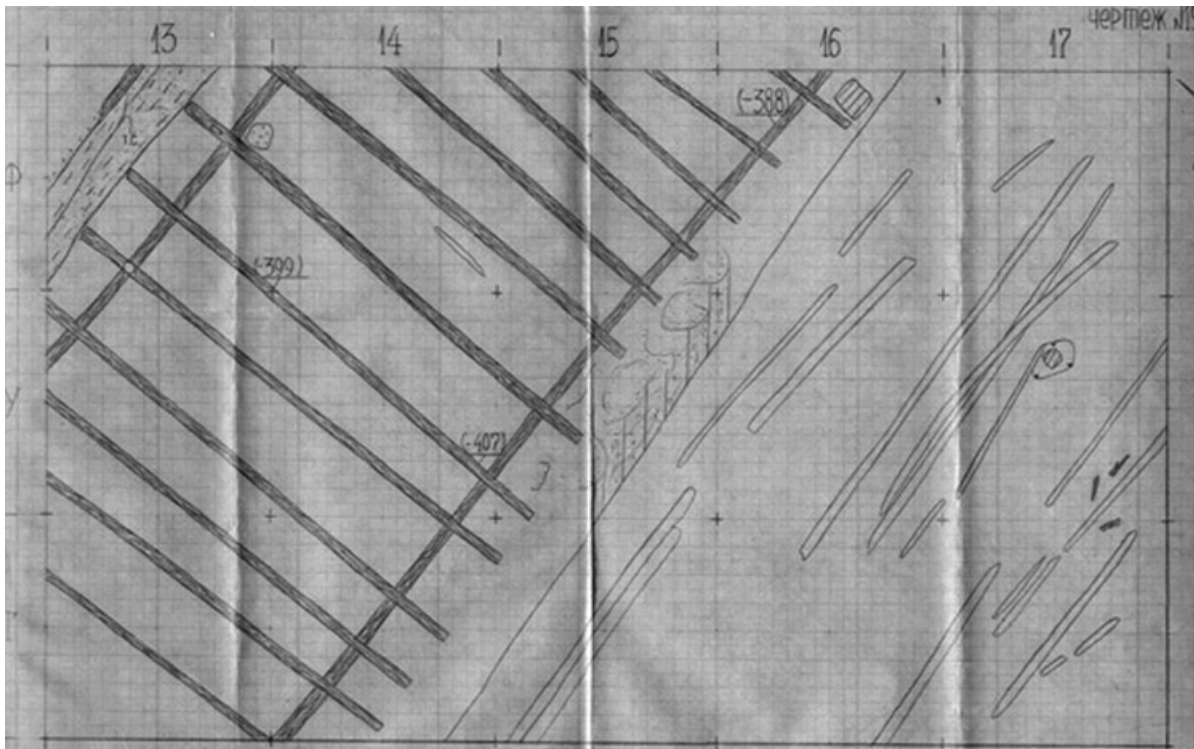


Fig. 8: Pavement from the excavations at Mezhygirska St. 43 in 1989 (drawing by I. Dopira).

A fragment of a strengthening of the coverage was found at the northern part of the road, at the base of ditch (4.2 m from the modern surface). Strengthening is represented by the remains of two wooden slabs. Traces of similar constructions were found at the other side of the road as well. It confirms the existence of a platform or any other wooden street construction that was functioning during a short period of time. This view may be confirmed by the traces of tracks.

The second street was perpendicular to the first one. The layers had similar fillings. The second street was only partly excavated in profile, but the traces of wooden platforms were found as well.³⁷

Mezhygirska St. 43, 1989: The road had wooden constructions that were not well preserved. It had two layers. Two rows of logs were lying at a distance of 3.75–3.85 m from each other. The other logs were lying above, perpendicular to them at a distance of 0.5–0.75 m from each other. Transverse logs, 0.13–0.18 m in width, were found as well. It was not possible to analyse the mechanics of the logs mount. However the remains of wooden sticks were found at the places where longitudinal and transverse logs crossed each other. Another layer of longitudinal logs was found at the upper layer, but it was not possible to understand the system in their location. Intervals between the logs were tamped with sand and re-deposited cultural layers.

The upper layer of the road was identical with the lower one. The road was covered with clay from both sides. This pavement belonged to the layer dating from the second half of the 11th to the beginning of the 12th century.

Rows of lines, 0.12–0.18 m in width, were found above the upper layer of this road. They were orientated in the same way as the road. These lines were ditches with sandy fillings. Therefore we may interpret them as tracks over the pavement. The dirt road belongs to the cultural layer dating from the second half of the 12th to the beginning of the 13th century (Fig. 8).³⁸

³⁷ T. A. Bobrovskii/V. N. Zotsenko/A. P. Trukhan, *Otchet ob arheologicheskikh issledovaniiah Pochaininskogo otriada Podolskoi ekspeditsii IA AN USSR za 1989 god po ulitse Nyzhnij Val, 43 in 1989* [Report About the Archaeological Investigations of the Pochaininskyi Department of the Podil Standing Expedition of the IA NAN USSR at the Nyzhnij Val, 43 in 1989]. Nauchnyi Arhiv Institutu Arheologii NAN Ukrainy [Scientific Archive of the Institute of Archaeology of the UNAS] (Kyiv f. e. 1990) (manuscript).

³⁸ A. B. Zankin, *Istorychna topografia i geomorfologiya starodavnego kyivckogo Podolu v IX–XVIII st. (istoryko-pryrodopoznavchy aspekt)* [Historical Topography and Geomorphology of Ancient Kyiv Podil from the IXth to the XVIIIth Century (historic and environmental aspects)]. *Arheologiya* (Kyiv) 2, 2009, 31–74.

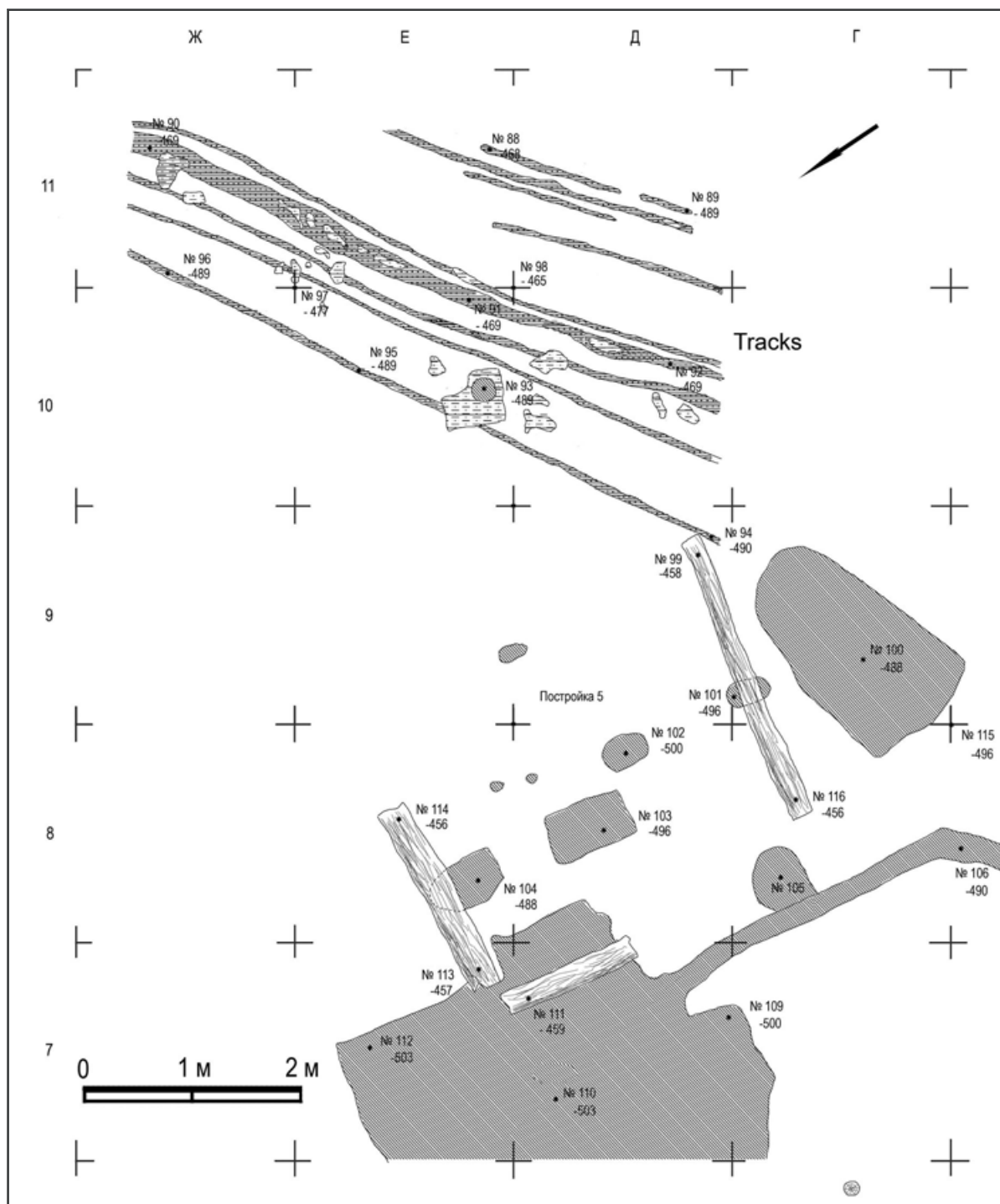


Fig. 9: Dirt roads in Podil, Shchekavytskaya St. 30, 2007 (drawing by D. Peftits).

The construction of pavements was identical in Kyiv and Novgorod. It consisted of two to four layers perpendicular to a carriageway. We know only one example of a pavement made of six ones.³⁹ They were connected with wooden piles. The lags were 0.2–0.35 m thick. The bases of the logs were found at Podil. They were stitched together with wooden sticks.

Dirt roads

If remains of wooden constructions of the pavements are not found, the researchers may indicate the road by finding dense soil with tracks, 0.05–0.15 m in width and 0.1 m in depth. The tracks were formed by carriages. The depth of tracks shows the continuation of using the road.

Mezhygirska St. 3/7, 2003, excavation site 2: The road was found at the depth of 2.72 m below the modern surface. It was preserved as a light grey dense soil with numerous tracks, 0.02–0.05 m in width. The road was directed from the North to the South and turned to the West. The excavated part was 9 m in length and 3.25–3.3 m in width. The border was indicated by the remains of ditches left from the fences.

Excavation site 4: The road was found at the depth of 4.19 m below the modern surface. It was preserved as a dense humus soil with clay inclusions. The road was solid because it was trampled by people and transport. It was 3.0–3.5 m in width. A trace of a foot (or shoe since the remains of organics were preserved) was found at the depth of 4.32 m. It is interesting to note that the road was covered with an alluvial layer. It allows the assumption of a man who lost his shoe during a flood when the high water level was just covering the road. The tracks were well indicated in the profile. These tracks were 0.05–0.1 m in width and 0.1 m in depth. The length was different in different parts of the excavation site.⁴⁰

Verhnyi Val St. 68, 2004: The first level of the road was found at the depth of 3.40–3.47 m from the modern surface. The filling of the ditches that was different in some cases allowed the reconstruction of different phases during the existence of the road. Two tracks with grey sandy loam in their fillings were better indicated than others. The tracks were 0.12–0.15 m in width and 0.05–0.1 m in depth. The distance between central axes was 1.70 m. These two tracks crossed all the other tracks. It confirms that these traces are the later ones.

The other two tracks had light grey sand with different inclusions in their fillings near the bottom. The filling of the first track had more inclusions of white sand, while the filling of the second track had small pieces of charcoal. One of the tracks was straighter, 0.25 m in width and 0.10–0.15 m in depth. The second track was extended in its southern part. Its width varied from 0.18 to 0.50 m, and its depth was 0.05–0.06 m.

The other row of tracks was found below the row described above. The profile showed a change in the road direction of 15° to the East. The earlier layer of the road was only fragmentarily preserved. It was found at the depth of 3.68–3.74 m from the modern surface. The tracks, 0.1–0.2 m in width and 0.05–0.1 m in depth, had sandy loam in their fillings. The fillings did not contain any finds apart from flint flake.

The third layer of the road was found at the depth of 3.80–3.86 m from the modern surface. It was represented by some ditches, 0.10–0.15 m in width and 0.07–0.10 m in depth. The filling was composed of sandy loam without indicative inclusions. The excavated road may be dated from the 11th to the 12th century.⁴¹

We also know some cases of tracks located in parallel that confirm translocation of a road during a long-term usage. This may be caused by local reconstruction of a city quarter or fixing after a flood.

Let us take the example of the road excavated at Shchekavyska St. 30, 2007. This road was directed from the East to the West and did not show traces of fences or ditches. Its surface was represented by sand with numerous tracks (9) and traces of the horse-shoes. The excavated part was 6 m in length, 2.5 m in width. It was found at the depth of 4.7–4.9 m below the modern surface. According to the stratigraphy this street may be dated in the first half of the 12th century. This part of the street is located in a different place compared to the street on a 1803 plan, but has the same orientation (Fig. 9).⁴²

³⁹ Borovskii/Sahaidak 1985, 51–52.

⁴⁰ M. A. Sahaidak et al., *Zvit Mezhygirs'kogo zagonu Podil'skoi arheologichnoi ekspeditsii za adresou vul. Mezhygirska, 3/7 u 2002–2004* [Report of the Mezhygirs'kyj Department of the Podil Standing Expedition at Mezhygirska, 3/7 in 2002–2004. Naukovyi Arhiv Instytutu Arheologii NAN Ukrainy [Scientific Archive of the Institute of Archaeology of the UNAS] 2004/236 (Kyiv 2004).

⁴¹ M. A. Sahaidak/N. V. Khamaiko, *Zvit pro ohoronni arheologichni doslidzhennia na terytorii Kyiv'skogo Podolu po vul. Verhnyi Val, 68 u veresni–grudni 2004* [Report about the Excavations at Kyiv Podil, Verkhniy Val, 68 in September–December 2004]. Naukovyi Arhiv Instytutu Arheologii NAN Ukrainy [Scientific Archive of the Institute of Archaeology of the UNAS] 2004/257 (Kyiv 2005).

⁴² M. S. Sergeeva, *Arheologichni doslidzhennia na vul. Shchekavyskaia, 30* [Archaeological Researches in Shchekavyskaia Street, 30 (forthcoming)].

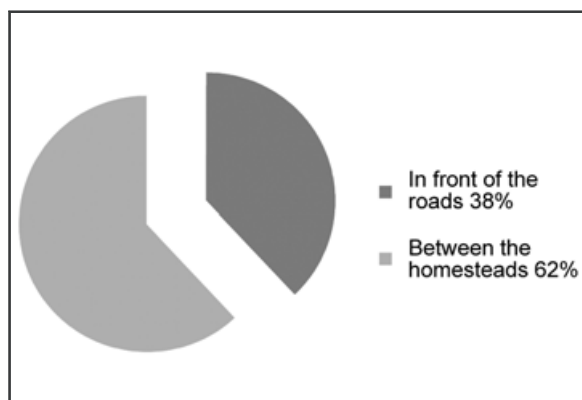


Fig. 10: Allocation of fences in Podil in the 10th century.

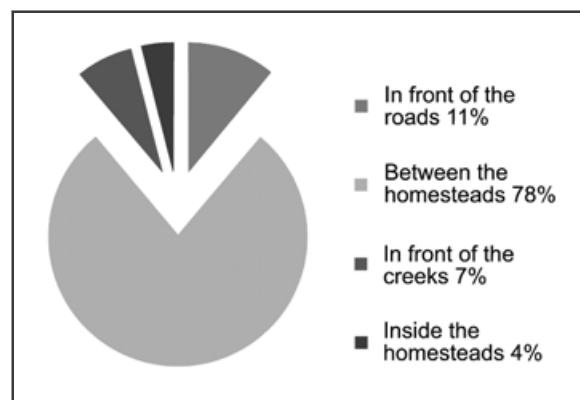


Fig. 11: Allocation of fences in Podil in the 11th century.

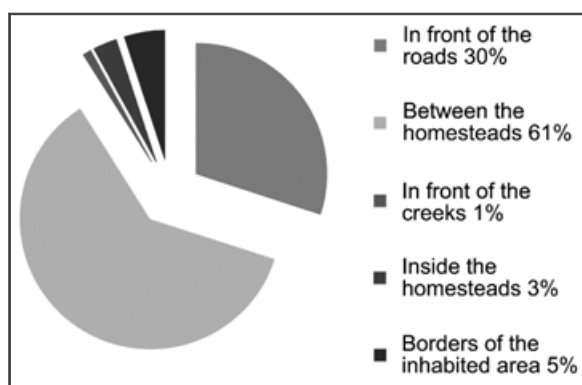


Fig. 12: Allocation of fences in Podil in the 12th century.

Street as an engineering complex

The fences

Another important indicator of streets is the localization of fences along the roadsides. A fence is one of the main elements of the planning structure of Kyiv Rus streets. The mapping of fences does not only prove the existence of homesteads and street systems at Kyiv Podil, but also gives information about the building traditions. Unfortunately studying the “ordinary” objects did not receive enough attention from the scholars.

We analysed data from 62 excavation sites at Kyiv Podil where over 160 fences were found. Let us analyse them in chronological development.

10th century: We did not have enough objects dating from this time. Only eight excavation sites contained material dating from the 10th century. Fences were found in five of them: Nyzhniy and Verhniy Val St., 1974; Nyzhniy and Verhniy Val St., 1975; Geroiv Trypillia – Khoryva St., 1973; Chervona (Poshtova) square, 1972; Zhytniy market, 1973. Thirteen fences were found at these places.

Fences marked the homestead borders in eight cases; in five cases they additionally were located in front of the road (Fig. 10). Six fences made of boards and two fences made of half-decks (lengthwise split logs) are known. The bottoms of the fences made of boards were sharpened in three cases, the bottoms of the fences made of half-decks in two.

11th century: Our database contains 21 excavation sites with 66 fences. They marked the homestead borders in 35 cases. In five cases fences were located in front of the roads, marking the area of the homesteads. Fences were located along the creeks in three cases and were used as hedges inside the homesteads in two cases (Fig. 11). The fences were made of boards in 30 cases, of half-decks in nine cases, and planks in seven cases. The other four cases represent combined constructions. The fences were made of half-decks and boards. The boards were pointed in 14 cases and straight in five cases. The half-decks were sharp in four cases and straight in four cases as well.

12th to the first half of the 13th century: Our database contains 33 excavation sites with 87 fences. They marked the borders of the homesteads in 47 cases. In 23 cases they were located in front of the roads marking the area of the homesteads. In one case the fence was located along the creek, in two cases the fences were used as hedges within the homesteads. Four fences found in two horizons at Obolonska St. 12 marked the border between the homestead and unpopulated territory (Fig. 12). Fences were made of boards in 21 cases, of half-decks in 23 cases, of plates in four cases. Two cases represent the combined construction. These fences were made of half-decks and boards. Only one fence made of boards had a sharp bottom. In the other seven cases it was straight. The half-decks were pointed in seven cases and straight in ten cases.



Fig. 13: Fragment of an upper part of a fence post found in Podil, Spaska St. 35, 2011 (foto: M. Sahaidak).



Fig. 14: Drawing of the fences in Radzivilovskaya annals (*Radzivilovkaia letopis. Complete collection of the Russian chronicles. T. 38. L: "Nauka". 1989. – P. 72. L. 199).*

Analysis of the location of fences in city's planning structure allows the conclusion that constructions made of half-decks and boards were used for bounding the homesteads from each other and marking the borders between homesteads and streets. Plates were used for the economic needs within the homesteads. The idea about a rounded shape of the fences lines⁴³ was not confirmed. Few cases of the planning of this type cannot be taken for the main practice. We also came to a similar conclusion about the boards and half-deck location overlapping each other.

The excavated fences may be divided into three types according to their construction. Fences made of boards are represented in 52% of cases of the total number. 32% of them are fences with sharpened bottoms (i. e. the board was hammered into the ground). 78% of the fences were embedded into the ground.

The fences made of half-decks are represented in 32% of cases of the total number. 38% of them are fences with sharpened bottoms.

Plates are represented in 10% of the cases of the total number.

Combined constructions are represented in 6% of cases of the total number. These fences were made of boards and half-decks.

The proportion of board and half-deck constructions was almost the same in the 12th and 13th century. However fences made of boards were predominating in the 10th and 11th century. This disproportion cannot be explained at the moment.

We found a very similar picture concerning the lower parts of the fences. Constructions dating back to the 10th and 11th century mostly have the sharpened bottoms. Fences dating from the 12th and 13th century mostly have straight bottoms.⁴⁴

For the upper parts of the fences it is complicated to reconstruct their height. In most cases fences were found in fragments in the layers below the ancient surface. A whole fragment of a fencepost was found in 2011 at Spaska St. 35 (Fig. 13).⁴⁵ The top of the fence was found in the layer dating from the first half of the 11th century. It was 2.6 m in length. The bottom was sharpened and the upper part, 0.45 m in length, formed a rhombus shape. It is important to note that similar fences were drawn in Radzivilovskaya annals⁴⁶. Two copies of the annal, written in the beginning of the 13th century, were done in the 15th century (Fig. 14).

Drainage

Skovorody St. 14–16, 2006: The excavated road was 5.25 m in width. It had tracks with a distance from 2–2.10 m between them. The excavated length of the road was 10.25 m. It was bounded by a fence from the northern part. The fence had two lines of ditches that confirm the reconstruction. Three outfalls, 0.8 × 4.5 m in size, were found in front of the fence. According to the excavator's opinion, it is a case of drainage.

⁴³ Zankin (footnote 38) 61–74.

⁴⁴ S. P. Taranenko, *Davnoruski parkany Podolu Kyeve* [Ancient Rus Fences of Kyiv Podil]. V: *Arheologiiia ta fortyfikatsiia Serednogo Podnistrovia* [Archaeology and Fortification of the Middle Dnistr Region] (Kamianets-Podilskii 2012) 82–84.

⁴⁵ Sahaidak et al., *Ohoronni doslidzhennia v Kyevi na vul. Spaskii, 35* [The Emergency Excavations in Kyiv at Spaskaya, 35] (in preparation).

⁴⁶ *Radzivilovkaia letopis* [Radzivilovskiy annals]. Complete collection of the Russian chronicles. T. 38. L: "Nauka" 1989, P. 72. L. 199.

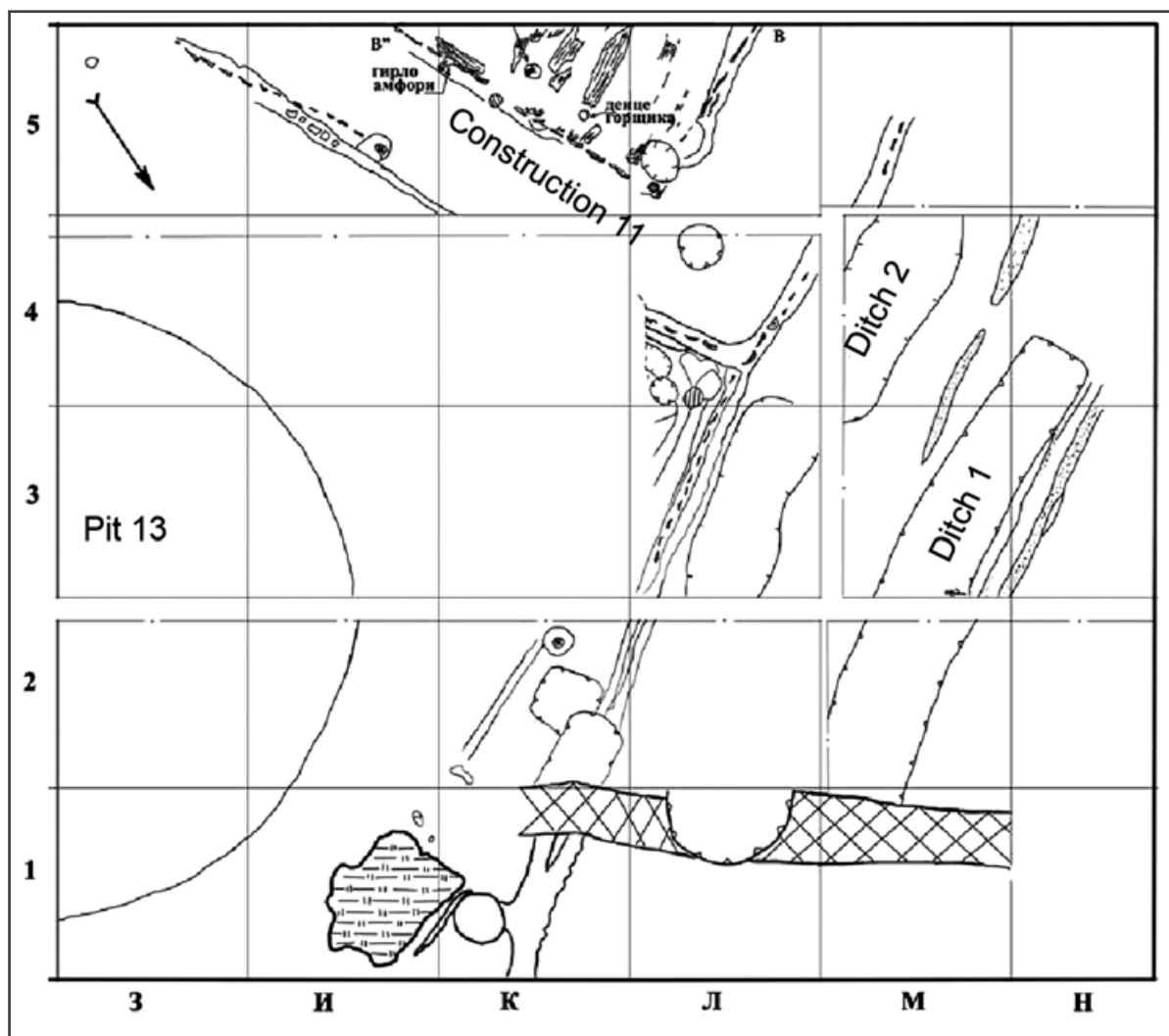


Fig. 15: Dirt road excavated at Skovorody St. 14 in Podil, 2006 (drawing by D. Pefits).

Outfall 1 was 5 × 1 m in size and 0.37 m in depth. The skeleton of a cat was found in the filling consisting of light sandy loam.

Outfall 2 was 4.5 × 0.8 m in size and 0.36 m in depth. The filling consisted of light sandy loam with humus inclusions.

Outfall 3 was overlapped by the building. The outfall was 1.5 × 0.7 m in size and 0.51 m in depth. The lower part of its filling consisted of mixed humus soil with numerous inclusions of charcoal. The upper part of the filling consisted of light sand (Fig. 15).⁴⁷

“Yaroslav’s city”, 1981–1982: The drainage outfalls were found along the road. They were 0.7–1 m in width and 0.6–0.8 m in depth. They lined the road and turned at the crossroad of the street and the lane with a carriageway that was 3 m in width.⁴⁸

⁴⁷ V. G. Ivakin/D. M. Pefits, Pro arheologichni doslidzhennia Podilskoi ekspeditsii vlitku–voseny 2006 r. za adresou: Kyiv, vul. Skovorody, 14 [About the Archaeological Investigations of the Podil Standing Expedition from Summer to Autumn 2006 at Kyiv, Skovorody, 14]. V: Arheologichni doslidzhennia v Ukraini [Archaeological Researches in Ukraine] 2006–2007 (Kyiv 2009) 14–17.

⁴⁸ Sahaidak 2010, 408–409.

Additional evidence

The level of the ancient surface

Comparing levellings of the ancient surface and those of the homestead from the same chronological period is the other evidence that helps to indicate streets and roads. As a rule, it should be 0.1–0.3 m lower because the carriageways were rammed more than the surface of the homesteads.

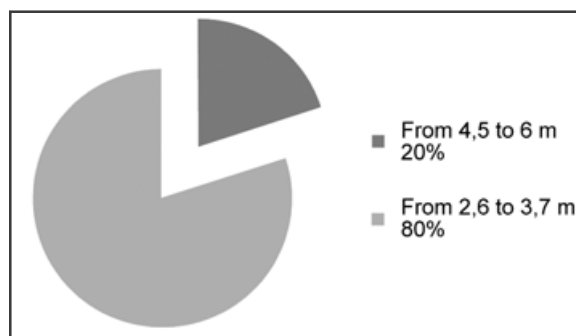


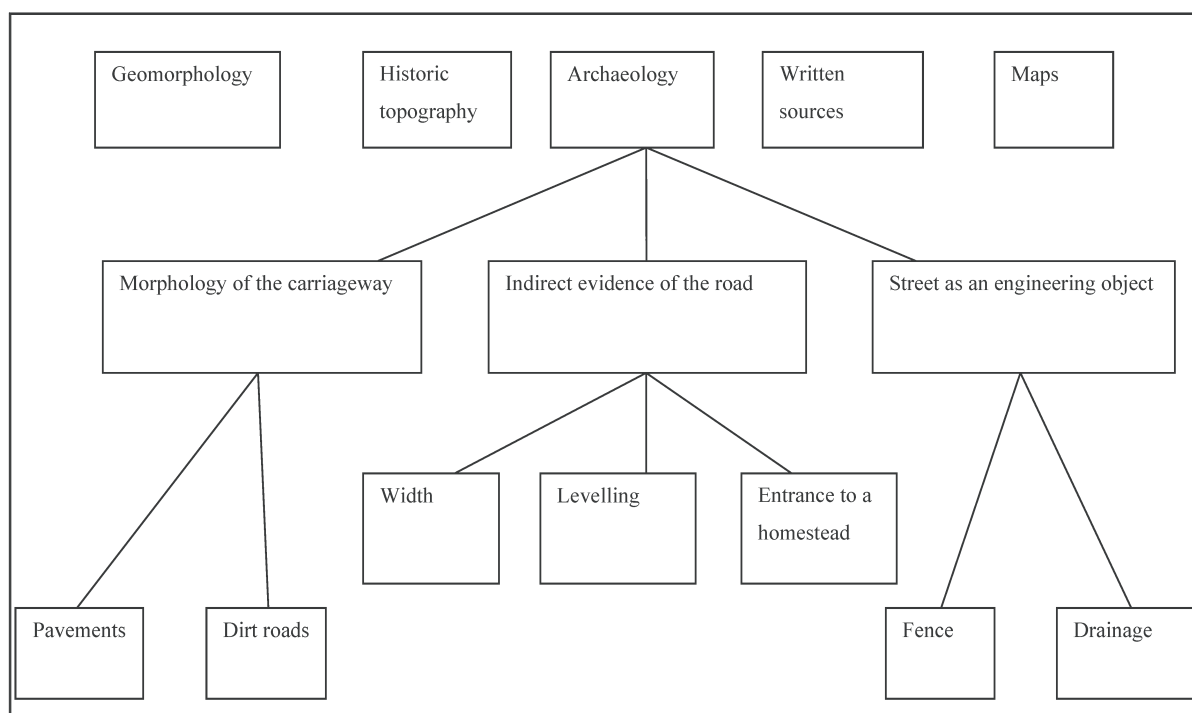
Fig. 16: Widths of the streets in Podil from the 10th to the 13th century.

The roads width

The streets of Kyiv and Novgorod may be divided into main and minor ones. The width of the main streets varied from 4.5 to 6 m, the width of the minor streets from 2.6 to 3.7 m (Fig. 16).⁴⁹ In a case of horizontal discontinuity of the cultural layer over 2.5 m, we may take this part as a probable part of the carriageway. It is very important for the cases when the excavated area is small and we do not have any other data.

The backfilling of the entrance to a homestead

In a case of homestead borders from the one side and a gate entrance (at least the gap in a fence over 2.6 m) from the other side we may reconstruct the location of the street outside the homestead. Sometimes entrances of this kind may be identified better. It may be exemplified with the excavations at “Yaroslav’s city”, 1981–1982. The stone platform, 7 m in length and 4 m in width, was found in a part of the street. It consisted of stones, pieces of slate and animal bones lying on a dense loess base, 0.15 m in thickness.⁵⁰



⁴⁹ Taranenko (footnote 23) 250.

⁵⁰ Borovskii/Sahaidak 1985, 51–52.

The dense soil

When we do not find any evidence mentioned above or it is complicated to indicate them, the only possible way of identifying a street is the analysis of the soil morphology at the place of probable street or road. The soil should be dense and should contain less humus than the soil from other parts of the excavation site.

Conclusions

Analysis of the written sources and archaeological evidence about streets and roads of Ancient Rus were applied to the data from Kyiv. In the result we propose the procedure of the preparation and practical parts of the identification of these objects (see above):

The proposed procedure of the streets and roads identification may be used for the analysis of the street and road networks in other medieval cities. Of course, each archaeological site has its own local features, but they will not impair these main analytical steps.

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Anhang

Abkürzungsverzeichnis

Zitate und Abkürzungen basieren im Allgemeinen auf den Publikationsrichtlinien der Römisch-Germanischen Kommission des Deutschen Archäologischen Institutes. Abkürzungen antiker Autoren und deren Werke erfolgen nach Der Neue Pauly 1 (Stuttgart 1996).

Abt.	Abteilung
ADV	Automationsunterstützte, elektronische Datenverarbeitung, Informations- und Kommunikationstechnologie
AE	L'Année Épigraphique (Paris 1888–)
ALS	Airborne Laser Scanning
ANRW	Aufstieg und Niedergang der Römischen Welt (Berlin, New York)
AnzWien	Anzeiger der philosophisch-historischen Klasse der Österreichischen Akademie der Wissenschaften
BDA	Bundesdenkmalamt Österreich
Bef.-Nr.	Befundnummer
BEV	Bundesamt für Eich- und Vermessungswesen
BMC	British Museum Catalogues (London)
CCAA	Colonia Claudia Ara Agrippinensium
CIL	Corpus Inscriptionum Latinarum
CSIR	Corpus Signorum Imperii Romani
DenkschrWien	Denkschriften der Österreichischen Akademie der Wissenschaften, phil.-hist. Klasse
DNP	Der Neue Pauly – Enzyklopädie der Antike (Stuttgart, Weimar 1996–2003)
EDH	Epigraphische Datenbank Heidelberg (http://edh-www.adw.uni-heidelberg.de/home)
FA	Fundakten des Wien Museum Karlsplatz
FK	Fundkomplex
FMRÖ	Die Fundmünzen der römischen Zeit in Österreich
Fnr.	Fundnummer
FP	Fundprotokolle des Wien Museum Karlsplatz
Fst.	Fundstelle
FT	Fundtagebücher des Wien Museum Karlsplatz; verfasst von J. H. Nowalski de Lilia und F. v. Kenner
FWF	Fonds zur Förderung der wissenschaftlichen Forschung
FWien	Fundort Wien
GC	Grabungscode der Stadtarchäologie Wien
HMW	Historisches Museum der Stadt Wien – jetzt Wien Museum Karlsplatz
ILS	Inscriptiones Latinae Selectae (Berlin)
indet.	indeterminabel (unbestimmbar)
Inv.-Nr.	Inventarnummer
IScM	Inscriptiones Scythiae Minoris Graecae et Latinae (Bukarest)
KAAG	Kantonsarchäologie Aargau
Kat.-Nr.	Katalognummer
KHM	Kunsthistorisches Museum Wien
KS	Kartensammlung
M	Maßstab
max.	maximal
METI	Ministry of Economy, Trade, and Industry of Japan
mind.	mindestens
MNr.	Maßnahmennummer
MV	Museum Vindobonense – Inventarisationskürzel für Objekte aus der archäologischen Sammlung der Museen der Stadt Wien
MZK	Mehrzweckkarte der Stadt Wien
NASA	United States National Aeronautics and Space Administration
NÖ	Niederösterreich
ÖAI	Österreichisches Archäologisches Institut
ÖAW	Österreichische Akademie der Wissenschaften
OK	Oberkante
ÖStA	Österreichisches Staatsarchiv

Parz.	Parzelle
Pos.	Position
RE	Pauly's Realencyclopädie der Classischen Altertumswissenschaft (Stuttgart)
RIB	The Roman Inscriptions of Britain (Oxford)
RIC	The Roman Imperial Coinage (London)
RLÖ	Der römische Limes in Österreich
röm.	römisch
RZ	Römerzeit
SBWien	Sitzungsberichte der Österreichischen Akademie der Wissenschaften, phil.-hist. Klasse
SoSchrÖAI	Sonderschriften des Österreichischen Archäologischen Institutes
TS	Terra Sigillata
TU	Technische Universität Wien
UK	Unterkante
Univ.	Universität
WAB	Wissenschaftliche Arbeiten aus dem Burgenland
WAS	Wiener Archäologische Studien
WForsch	Wiener Forschungen zur Archäologie
WGBI	Wiener Geschichtsblätter
WM	Wien Museum – vormals Historisches Museum der Stadt Wien
WStLA	Wiener Stadt- und Landesarchiv