

ТОВАРИСТВО З ОБМЕЖЕНОЮ ВІДПОВІДАЛЬНІСТЮ
«ДНІПРОВСЬКИЙ ПРОЕКТНО-
ВИШУКУВАЛЬНИЙ ІНСТИТУТ

«ДПВІ»

Limited Liability Company "Dniprovskiyi proektno-vyshukuvalnyi institut "DPVI"

Customer: Regional Office of Water Resources in Mykolaiv Region

**«Reconstruction of the Kazankiv group water supply system to provide water to settlements of the Sofiivska hromada of Mykolaiv region». Adjustment
First phase of construction**

Working draft

Volume 5.1

DRAWINGS

922-07/25- ГП1 (General Plan)
922-07/25- АБ1 (Architectural and Construction Drawings)
922-07/25-3В1 (External Water Supply)
922-07/25-ТХ1 (Production Technology)
922-07/25-ЕТП1 (Electrical Engineering Solutions)

ТОВАРИСТВО З ОБМЕЖЕНОЮ ВІДПОВІДАЛЬНІСТЮ
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922-07/25-ЕТП1 (Electrical Engineering Solutions)

Director



Chief Engineer of the Project

Melnyk M.O.



Khyzhnyakova O.V.

List of drawings of the ГП1 brand set

Sheet	Name	Notes
1	General data. Situational diagram	
2	Network plan M1:500 (beginning)	
3	Network plan M1:500 (continued)	
4	Network plan M1:500 (final)	

List of reference and attached documents

Designation	Name	Note
	<u>Documents referred to</u>	
DBN B.2.2-12:2019	Planning and development of territories	
DBN V.2.3-5:2018	Streets and roads of settlements	

Situational diagram



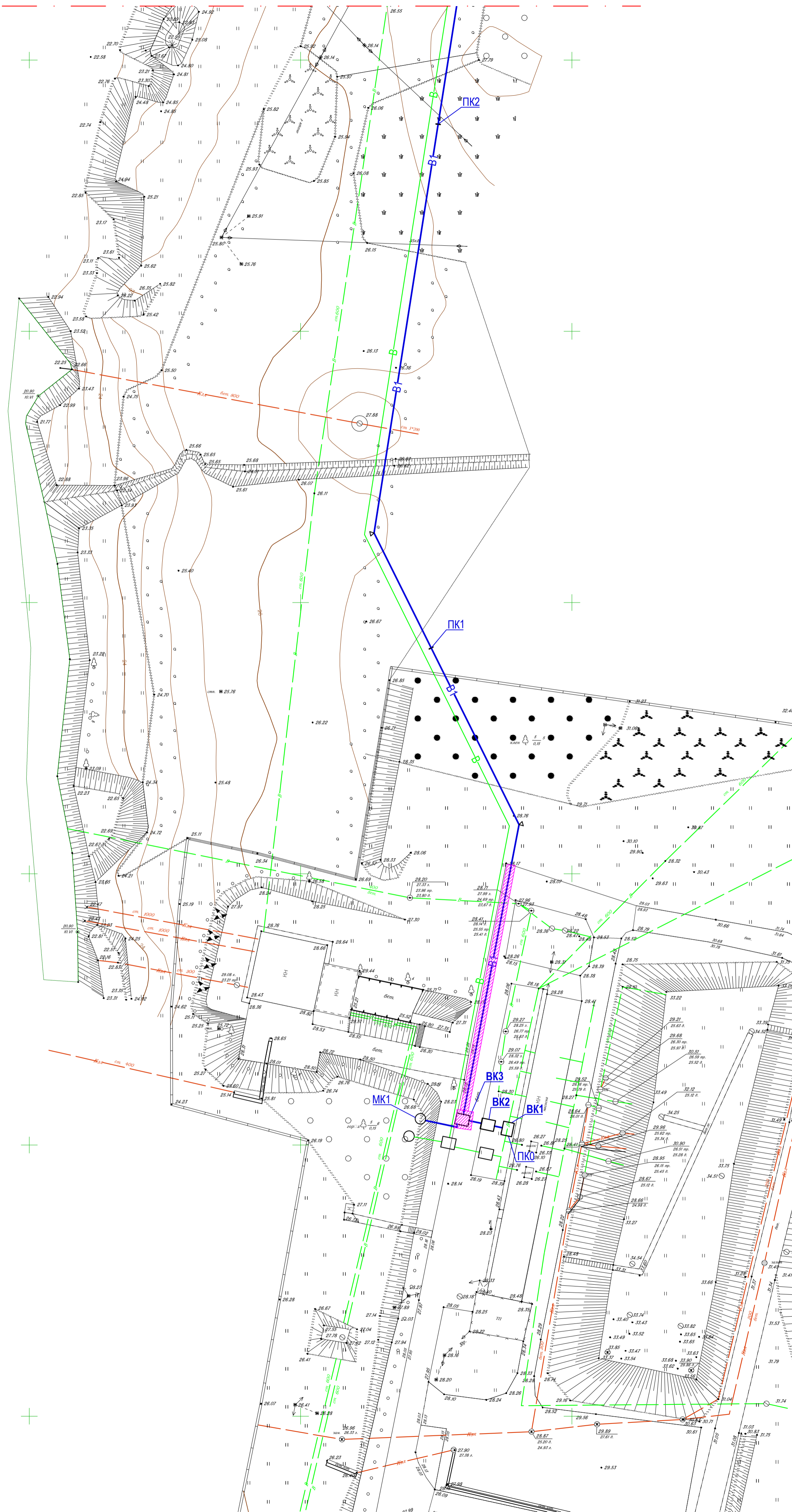
Погоджено:	

Зам. інв. №	
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Підпис і дата	
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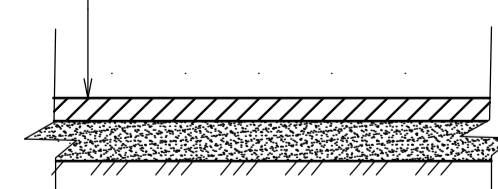
Інв. № об.	
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						922-07/25-ГП1			
						"Reconstruction of the Kazankiv group water supply system to provide water to settlements of the Sofiivska hromada of Mykolaiv region". Adjustment			
<i>Зм.</i>	<i>Кільк.</i>	<i>Лист</i>	<i>№ док.</i>	<i>Підпис</i>	<i>Дата</i>	General data. (First phase of construction)	<i>Stage</i>	<i>Sheet</i>	<i>Sheets</i>
Chief Engineer		Shimanska			04.26		РП	1	4
Developed		Khyzhniakova			04.26				
Verified		Khyzhniakova			04.26				
Control		Valoboiev			04.26	General data. Situational diagram	ТОВ "Дніпровський проектно-вишуквальний інститут "ДПВІ"		



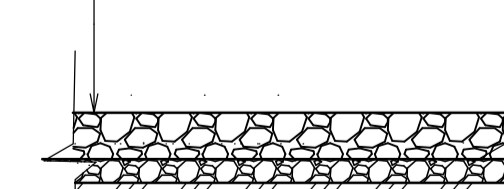
Тип 3 (відновлення)

Цементобетон - $h = 0,1m$
 Щебенево-піщана суміш С7 - $h = 0,2m$
 Ущільнений ґрунт



Тип 4 (відновлення)

Щебенево основа фр. 40-70мм - $h = 0,15m$
 Вирівнюючий шар щебня фр. 20-40мм - $h = 0,05m$
 Ущільнений ґрунт



Умовні позначення

- Відновлення покриття Тип 3
- Відновлення покриття Тип 4
- Проектований водопровід

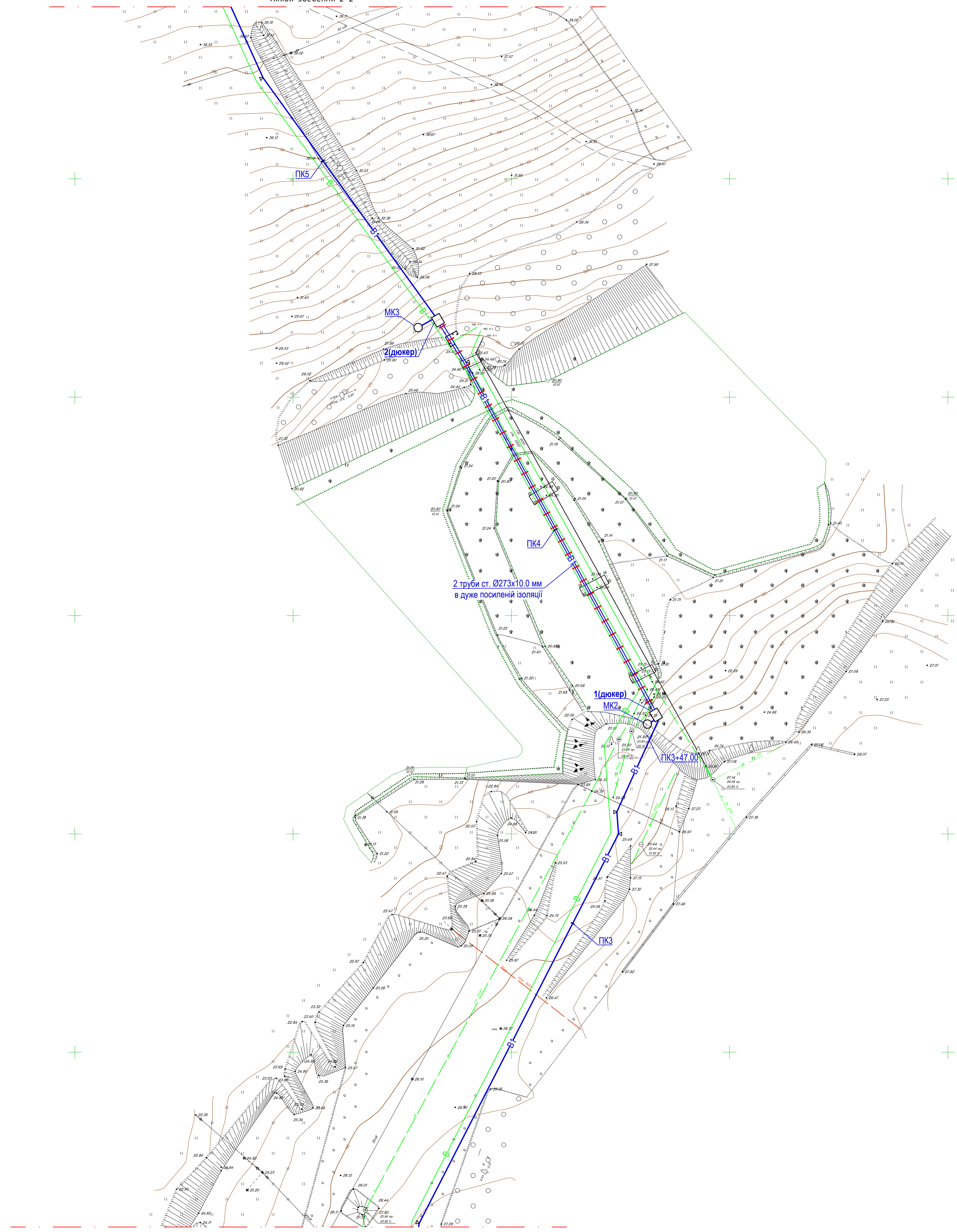
922-07/25-ГП1

Реконструкція Казанівського групового водопроводу з метою забезпечення населених пунктів Софіївської територіальної громади Баштанського району Миколаївської області". Коригування

Зм.	Кільк.	Лист	Відок.	Підпис	Дата	Стадія	Аркш	Аркшів	
Розробив		Шиманська		<i>[Signature]</i>	04.26	Генеральний план (I черга)	РП	2	
Перевірив		Хижнякова		<i>[Signature]</i>	04.26				
Н. контр.		Валодєєв		<i>[Signature]</i>	04.26				
План мереж М1:500 (початок)							ТОВ "Дніпровський проектно-вишукальний інститут "ДПВІ"		

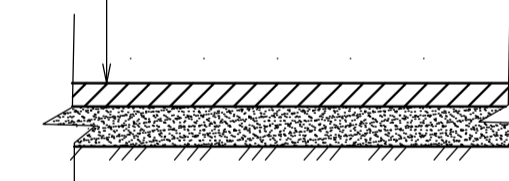
№ в. № об.	Лінійс. і дата	Зам. № в. №	Погодження:

Лінія зведення 2-2



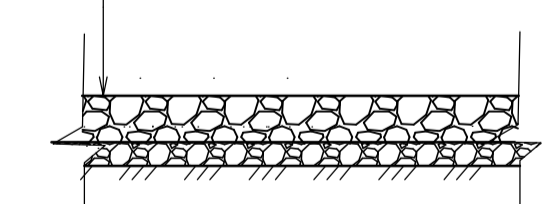
Тип 3 (відновлення)

Цементобетон - h = 0,1м
Щебенево-піщана суміш С7 - h = 0,2м
Ущільнений ґрунт



Тип 4 (відновлення)

Щебенево основа фр. 40-70мм - h = 0,15м
Врівнювальний шар щебня фр. 20-40мм - h = 0,05м
Ущільнений ґрунт



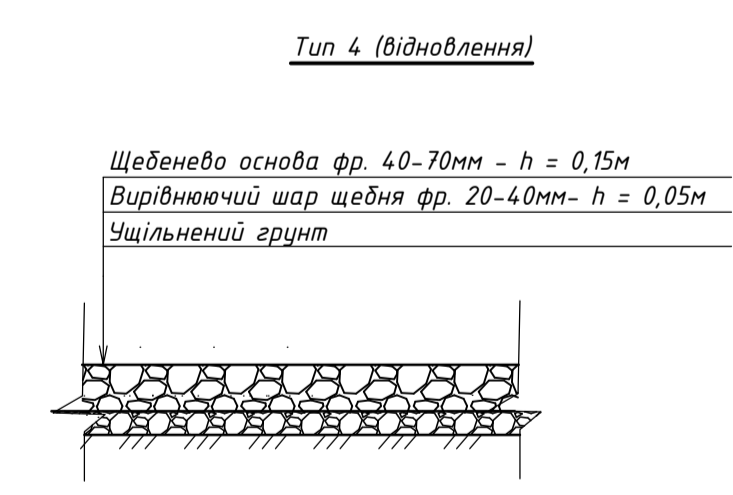
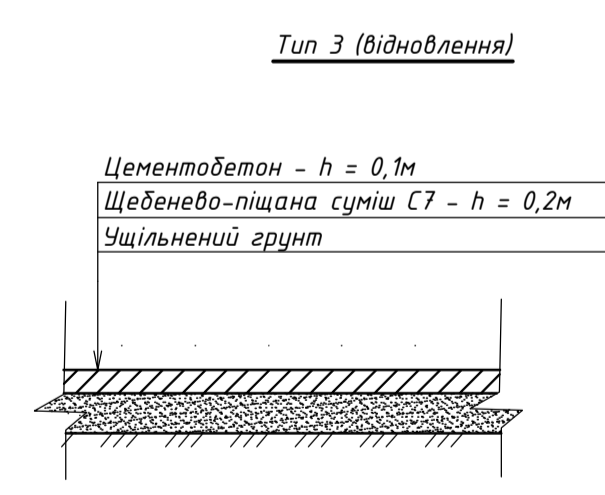
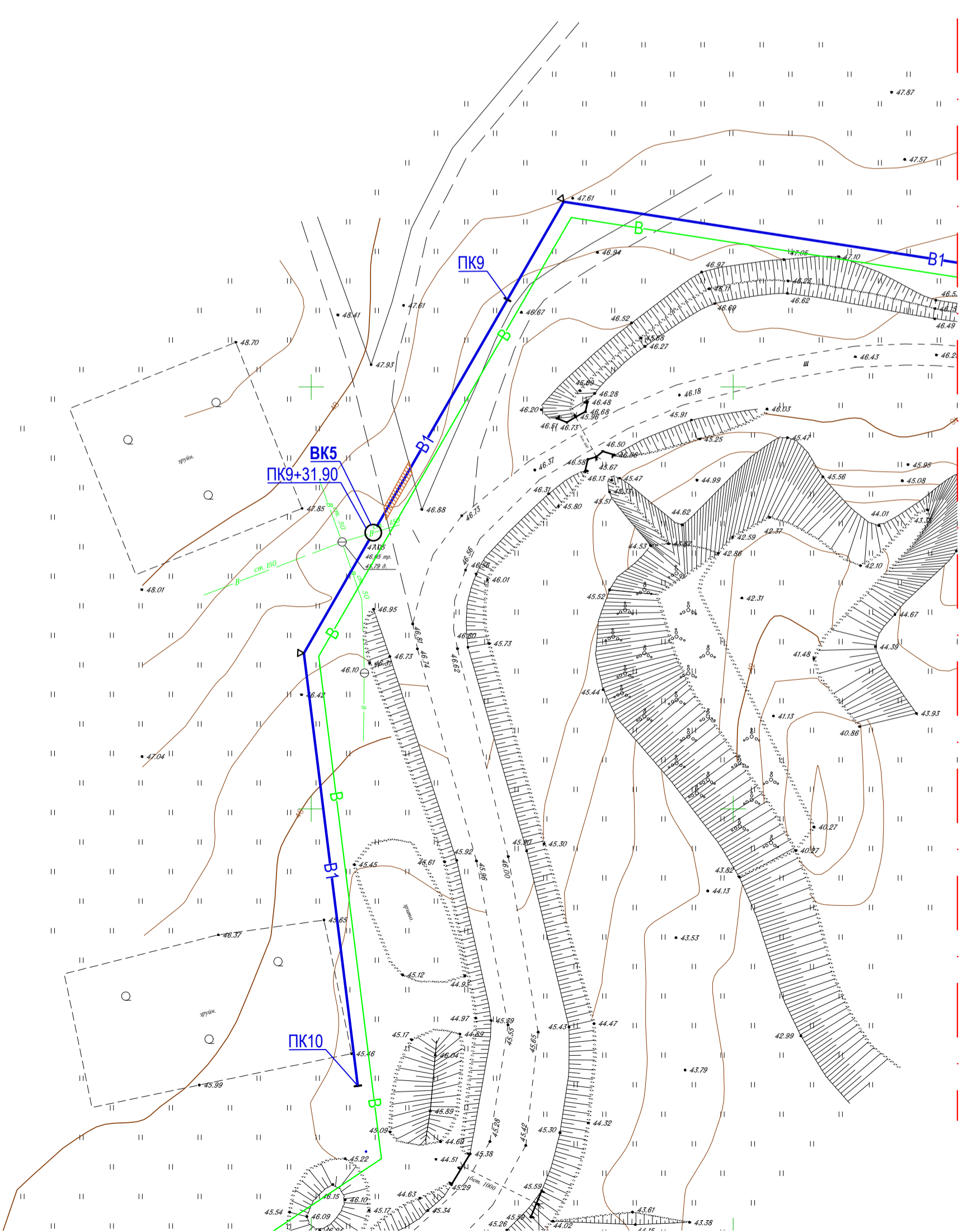
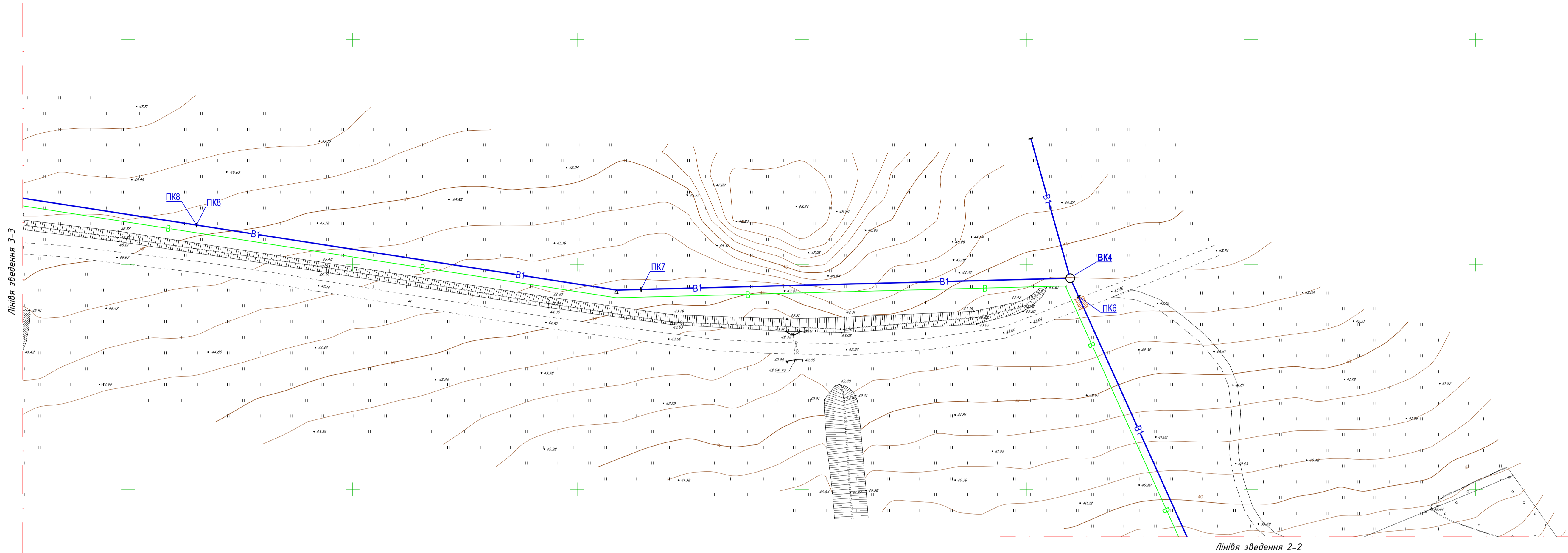
Умовні позначення

- Відновлення покриття Тип 3
- Відновлення покриття Тип 4
- Проектований водопровід

					922-07/25-ГП1					
					"Реконструкція Казанівського ґрунтового водопроводу з метою забезпечення населених пунктів Софіївської територіальної громади Баштанського району Миколаївської області". Корсезівщина					
Зм.	Кільк.	Лист	Маск.	Підпис	Дата	Генеральний план (I черга)	Стадія	Аркуш	Аркушів	
Розробив	Шиманська				04.26		РП	3	4	
Перевірив	Хижнякова				04.26					
Н. контр.	Валодєєв				04.26					
					План мереж М1:500 (продовження)			ТОВ "Дніпровський проектно-вишукальний інститут "ДІВІ"		
								Формат А1		

Лінія зведення 1-1

№ в. № об.	Лінійс. і дата	Зам. № в. №	Погодження:



- Умовні позначення**
- Відновлення покриття Тип 3
 - Відновлення покриття Тип 4
 - Проектований водопровід

922-07/25-ГП1				
Реконструкція Казанівського групового водопроводу з метою забезпечення населених пунктів Софіївської територіальної громади Баштанського району Миколаївської області". Корозубиня				
Зм.	Кільк.	Лист	№ док.	Підпис
Розробив	Шиманська	М.В.	04.26	
Перевірив	Хижнякова	С.В.	04.26	
ГП	Хижнякова	С.В.	04.26	
Н. контр.	Валодєєв	В.М.	04.26	
Генеральний план (I черга)				Стартя
План мереж М1:500 (закінчення)				Аркшв
				Аркшв
ТОВ "Дніпровський проектно-вишуквальний інститут "ДІВІ"				4
Формат А1				4

№ в. № об.	Лінійс. і дата	Зам. № в. №	Погоджено:

List of drawings of the main set

Sheet	Name	Notes
1	General data	
2	Water chamber BK1	
3	Water chamber BK2	
4	Water chamber BK3	
5	Water chamber 1 (duker)	
6	Water chamber 2 (duker)	

Marking	Name	Note
ДБН В.2.5-74:2013	Water supply. External networks and structures	
ДСТУ Б В.2.5-26:2005	External networks and structures. Inspection manhole covers and rainwater collectors of storm water wells. Technical conditions	
ДСТУ Б В.2.6-107:2010	Inspection well and rain gutter hatches	
ДБН В.2.5-75:2013	Sewerage. External networks and structures	

General information:

These drawings were developed in accordance with DBN V.2.5-74:2013, DSTU B V.2.5-26:2005 and other applicable standards.

The project provides for the installation of typical water supply chambers from prefabricated reinforced concrete elements for servicing pipelines with a diameter of up to 600 mm.

The designs of the chambers are unified, typical, adapted to local conditions, taking into account the requirements for operation and maintenance. The installation of the chambers is carried out within the red lines in accordance with the section of the general plan and the profile of the water supply.

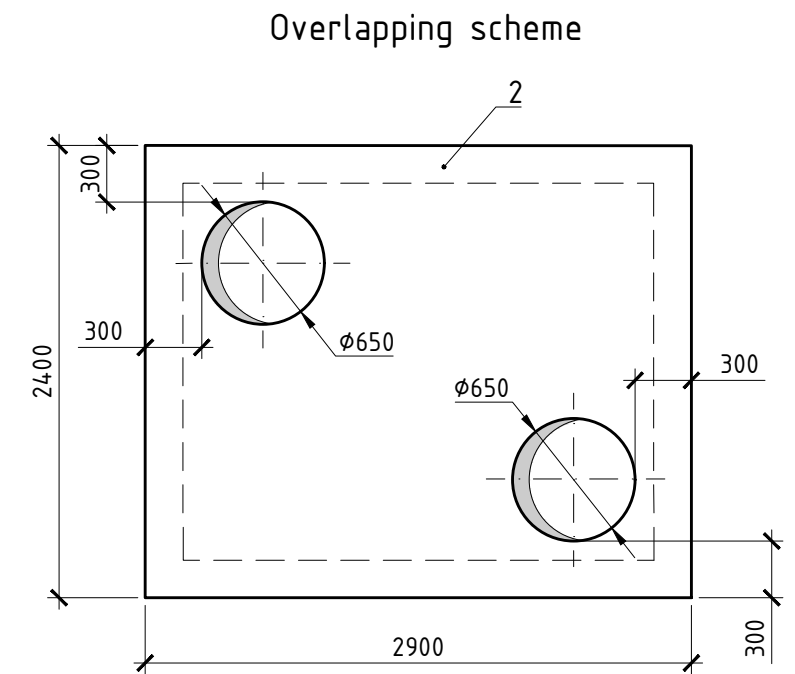
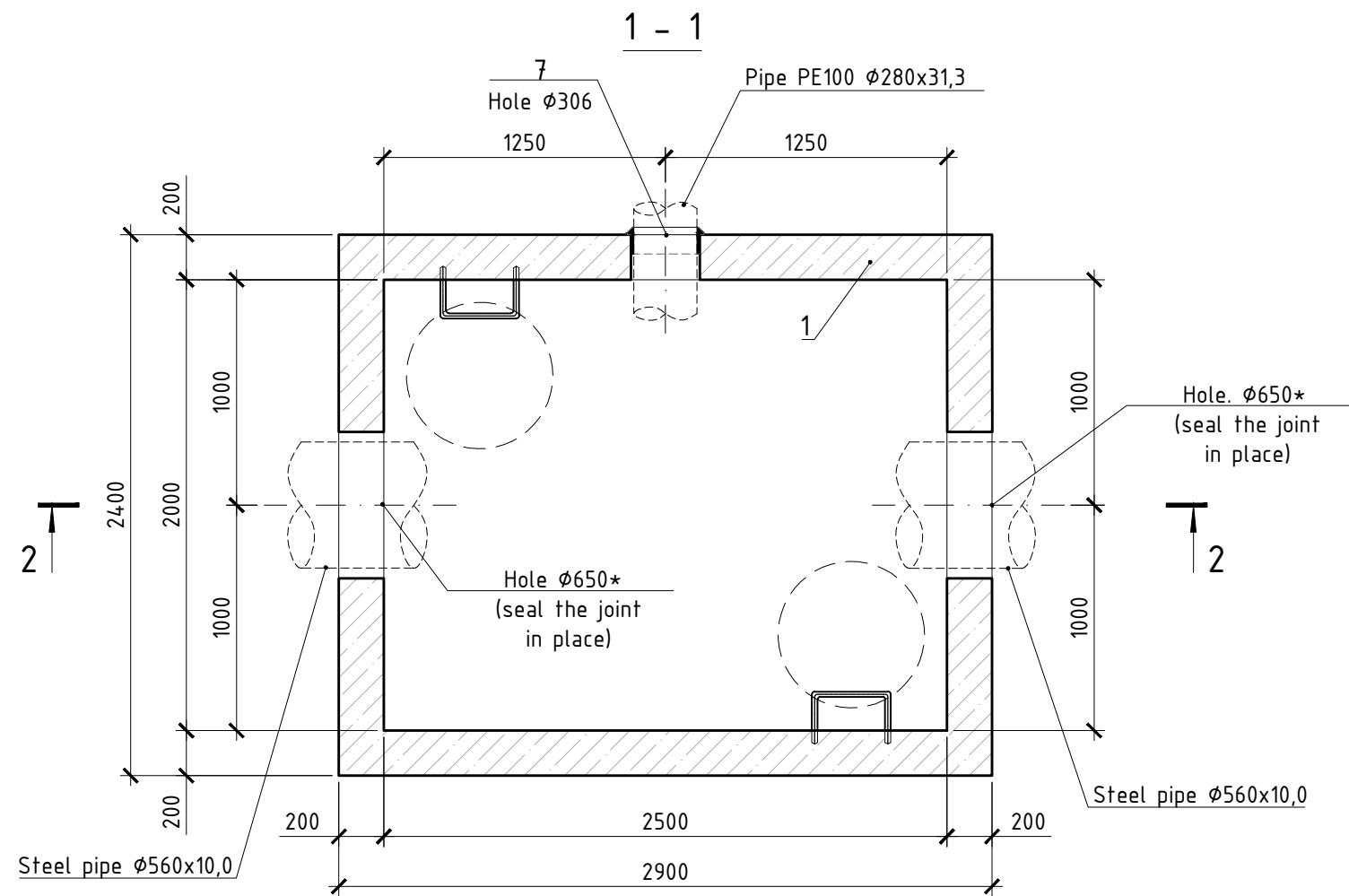
Structural elements (floor slabs, rings, base plates) are factory-made, according to the serial products of the manufacturer Grosslit/IDA. Sealing of pipe entries is provided on site using BS type sealing elements and lubricant.

All dimensions are given in millimeters.

When carrying out construction and installation work, it is necessary to use the rules of the relevant chapters of DBN A.3.2-2-2009 SSSB "Occupational health and industrial safety in construction. Basic provisions" and safety regulations in force at the enterprise.

Погоджено:	
Зам. інв. №	
Підпис і дата	
Інв. № об.	

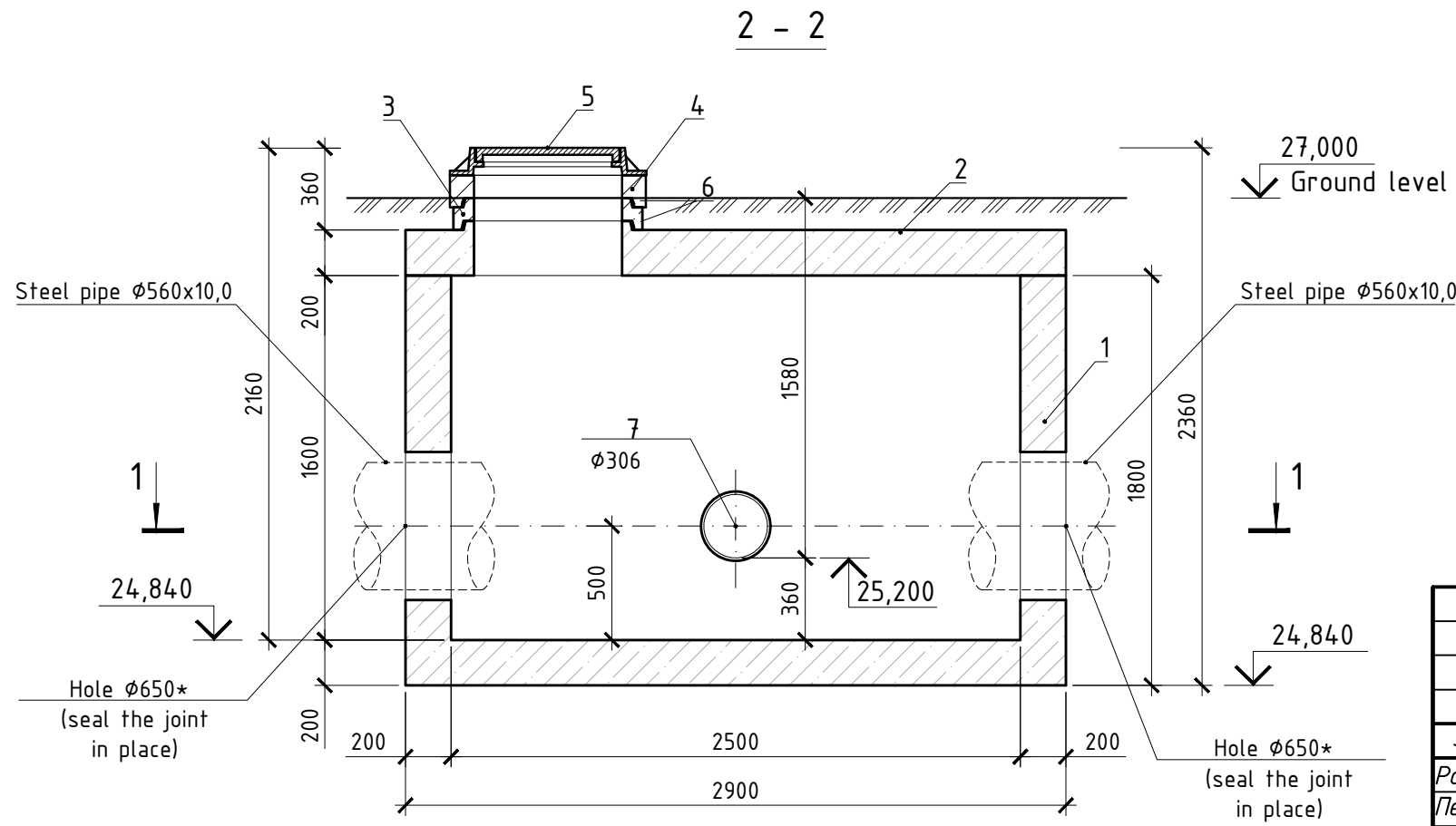
						922-07/25-АБ1			
						<i>"Reconstruction of the Kazankivskyi group water supply system to supply settlements in the Sofiivska territorial community, Bashtanka district, Mykolaiv region". Adjustment</i>			
<i>Зм.</i>	<i>Кільк.</i>	<i>Лист</i>	<i>№ док.</i>	<i>Підпис</i>	<i>Дата</i>	Architectural and Construction Solutions. Water Supply Chambers	<i>Стадія</i>	<i>Аркуш</i>	<i>Аркушів</i>
Розробив		Шиманська			04.26		РП	1	6
Перевірів		Хижнякова			04.26				
ГІП		Хижнякова			04.26				
Н. контр.		Валодоев			04.26				
						Загальні дані	ТОВ "Дніпровський проектно-вишуквальний інститут "ДПВІ"		



Specification per element

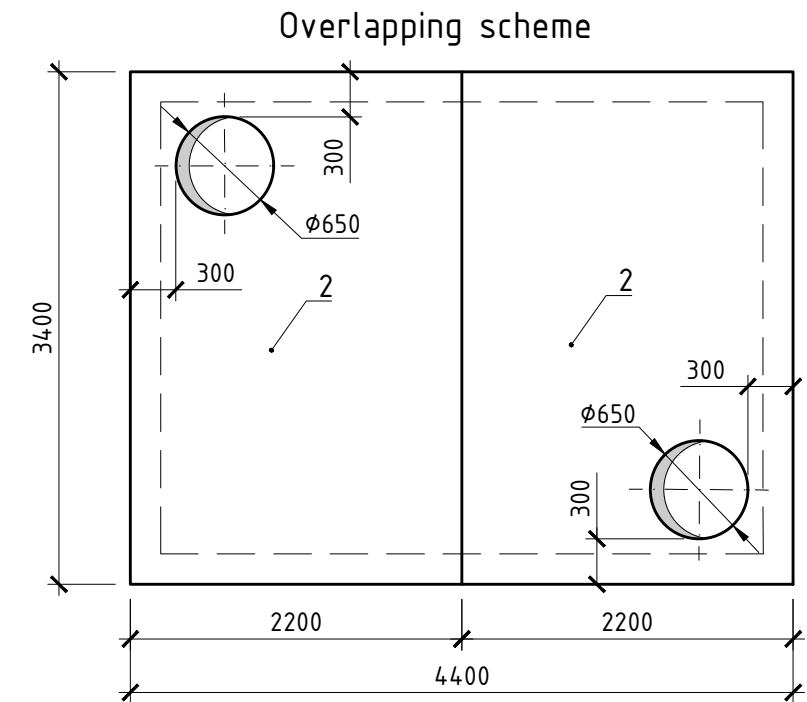
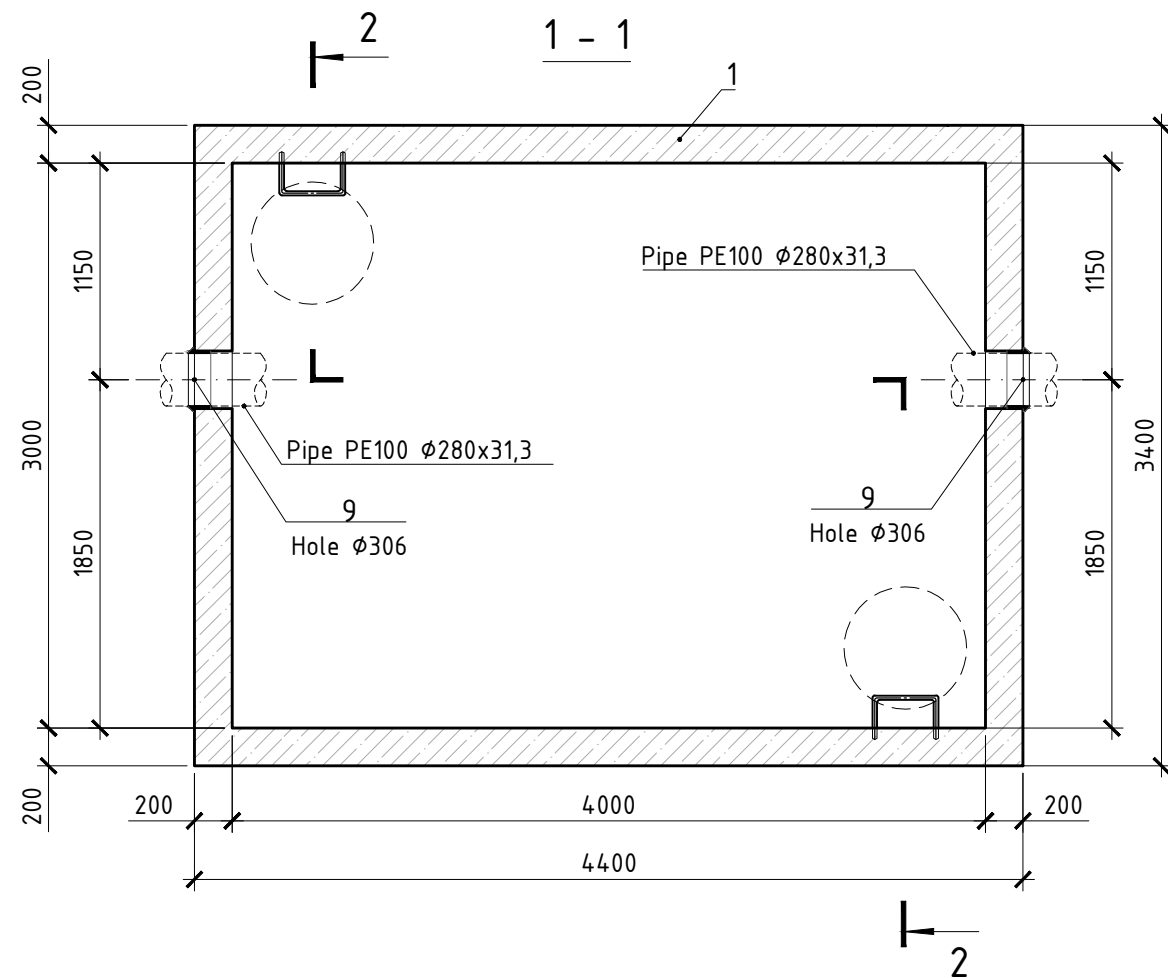
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<u>Assembly units</u>					
1	087155	Chamber Grosslit K 25.20.16 ABeton	1	10950	
2	087156	Floor slab ПЧ 29.24.2.2 E300 X300 IDA	1	3150	
3	001544	Adjusting ring IDA КЧЮ-6,5.1	2	50	
4	082802	Support plate ПО-6,5.1	2	77	
5		Cast iron hatch type "T" (C250) h=120mm	2		
6	078192	Sealing ring for well DN650	4		
7	084372	Seal BS 280/306	1		
	000042	Grip for ball anchor 4,0/5,0 †	4		
	076893	Oil ABetonLub 5 kg			0,6 kg

1. Dimensions with * require clarification.
 2. The design solution provides for the use of reinforced concrete elements of chambers manufactured by ABeton under order or an analogue in compliance with the dimensions of the chamber.



Погоджено:	
Зам. інв. №	
Підпис і дата	
Інв. № ор.	

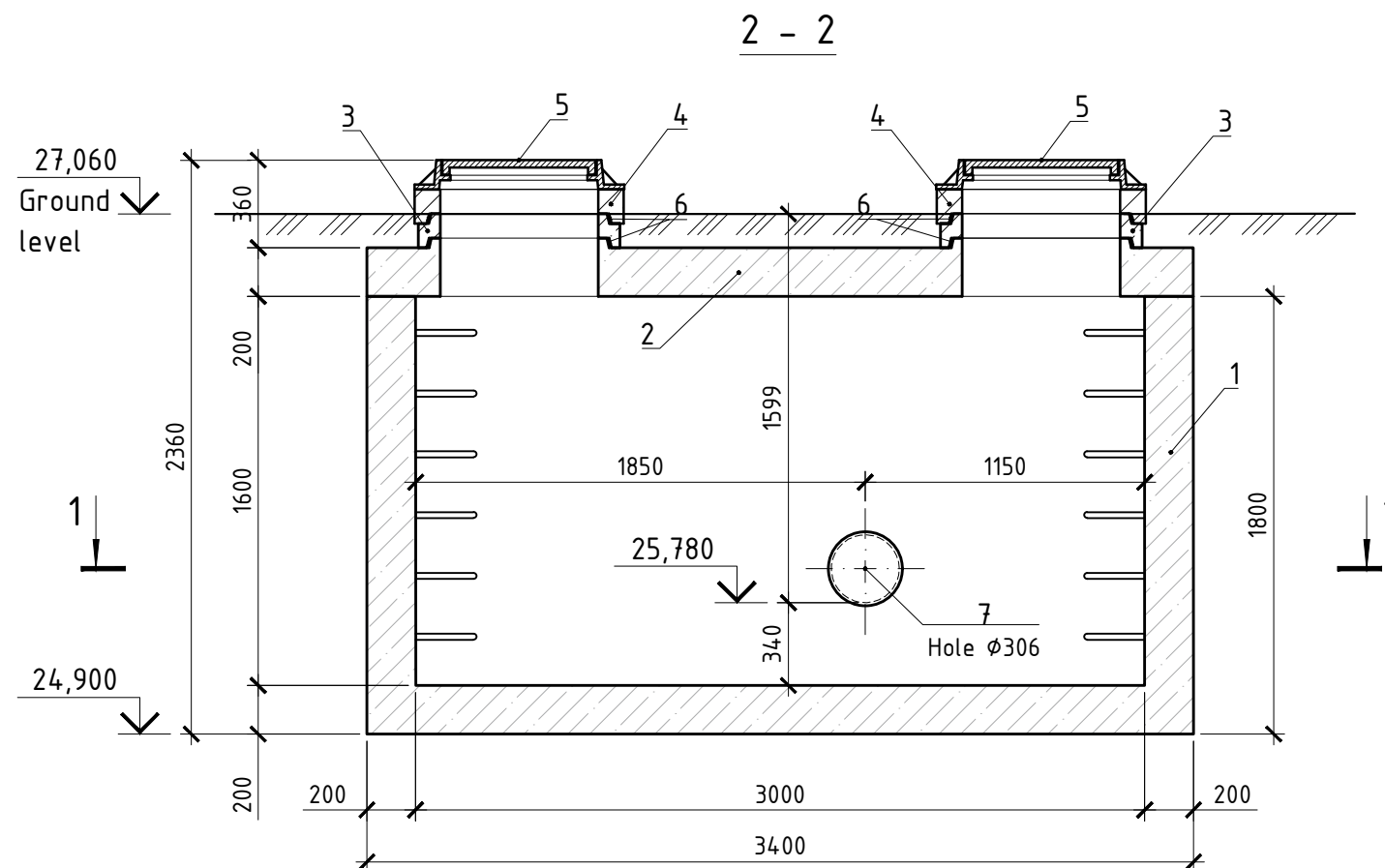
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<i>"Reconstruction of the Kazankivskiyi group water supply system to supply settlements in the Sofiivska territorial community, Bashtanka district, Mykolaiv region". Adjustment</i>							
Зм.	Кільк.	Лист № док.	Підпис	Дата			
Розробив	Шиманська		<i>[Signature]</i>	04.26	Architectural and Construction Solutions. Water Supply Chambers		
Перевірів	Хижнякова		<i>[Signature]</i>	04.2			
ГП	Хижнякова		<i>[Signature]</i>	04.2			
Н. контр.	Валодоев		<i>[Signature]</i>	04.26			
Камера водопровідна ВК1 (I черга)					Стадія	Аркуш	Аркушів
					РП	2	6
					ТОВ "Дніпровський проектно-вишуквальний інститут "ДПВІ"		



Specification per element

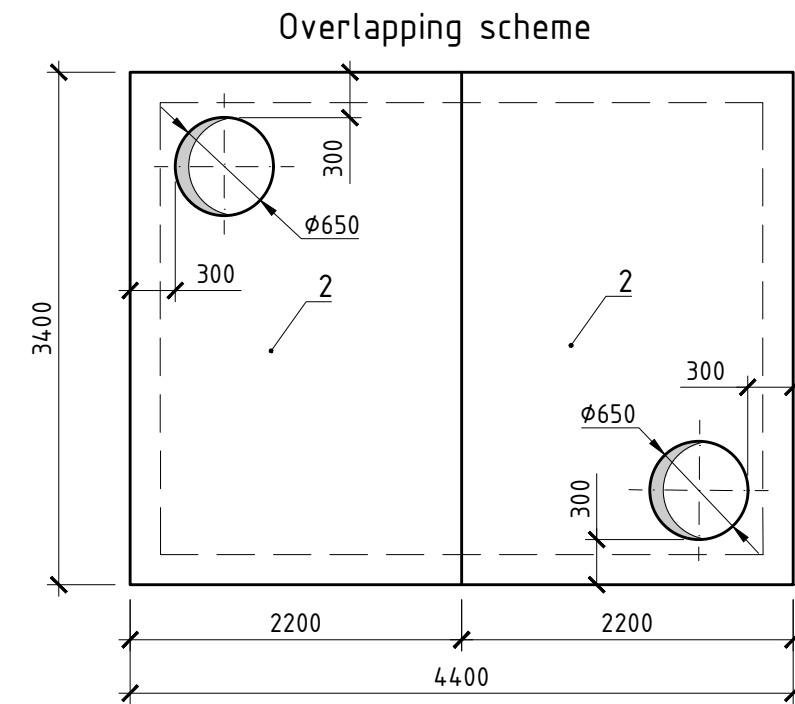
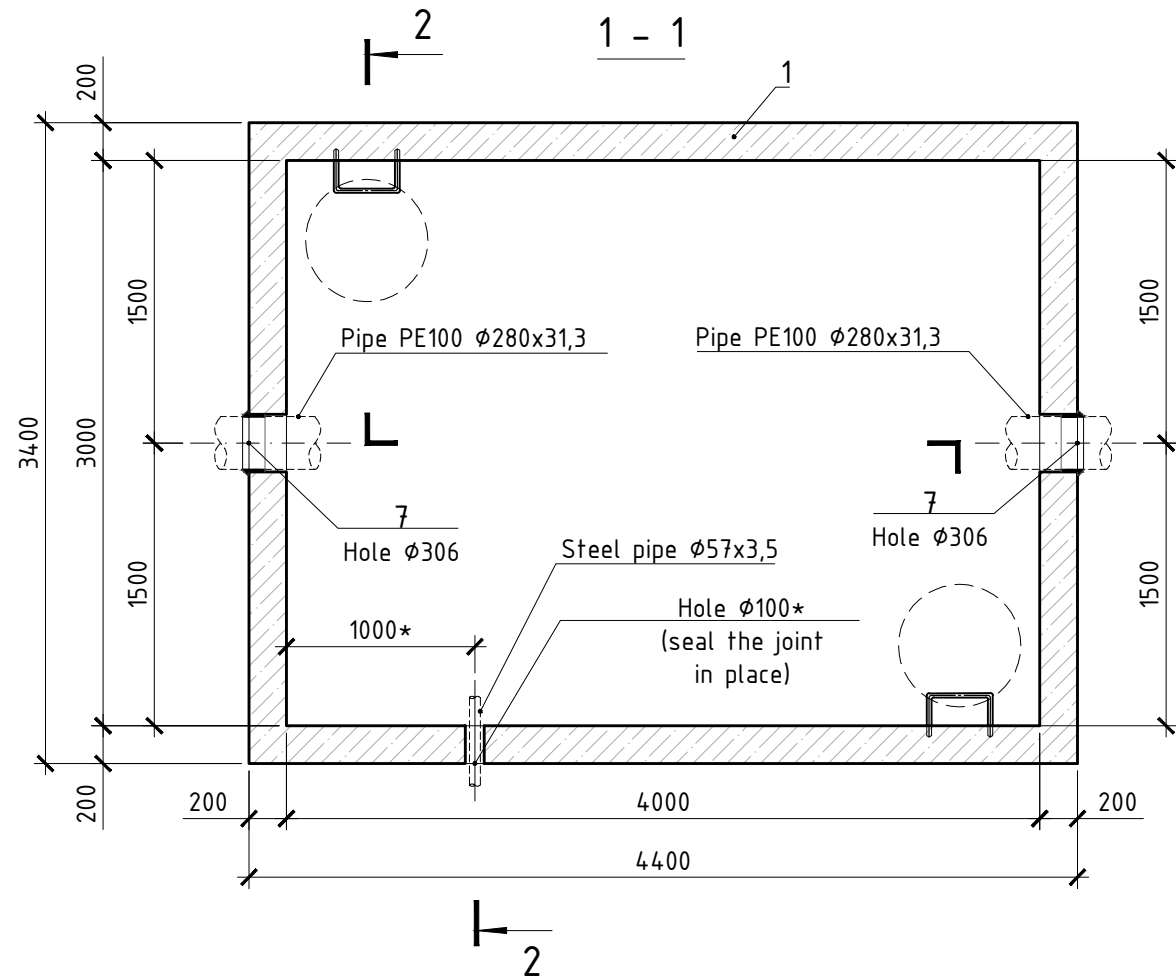
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<u>Assembly units</u>					
1	087153	Chamber Grosslit K 40.30.16 ABeton	1	19320	
2	087154	Floor slab ПТ 34.22.2.1 E300 X300 IDA	2	3570	
3	001544	Adjusting ring IDA КЧЮ-6,5.1	2	50	
4	082802	Support plate ПО-6,5.1	2	77	
5		Cast iron hatch type "T" (C250) h=120mm	2		
6	078192	Sealing ring for well DN650	4		
7	084372	Seal BS 280/306	2		
	000043	Grip for ball anchor 7,5/10,0 t	4		
	076893	Oil ABetonLub 5 kg			0,6 kg

1. Dimensions with * require clarification.
2. The design solution provides for the use of reinforced concrete elements of chambers manufactured by ABeton under order or an analogue in compliance with the dimensions of the chamber.



Погоджено:	
Зам. інв. №	
Підпис і дата	
Інв. № ор.	

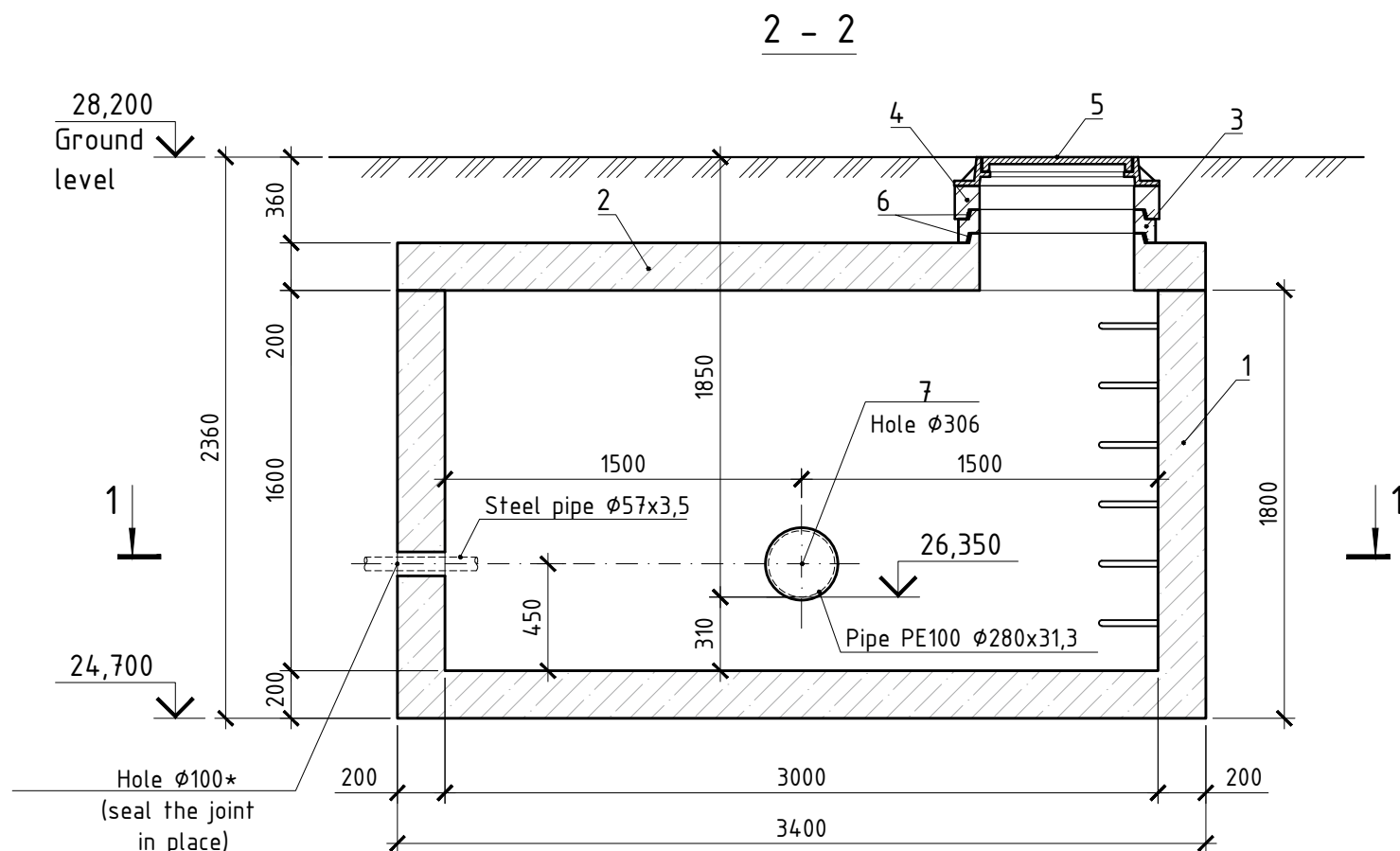
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"Reconstruction of the Kazankivskiyi group water supply system to supply settlements in the Sofiivska territorial community, Bashtanka district, Mykolaiv region". Adjustment							
Зм.	Кільк.	Лист № док.	Підпис	Дата			
Розробив	Шиманська			04.26	Architectural and Construction Solutions. Water Supply Chambers		
Перевірів	Хижнякова			04.26			
ГП	Хижнякова			04.26			
Н. контр.	Валодоев			04.26			
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					ТОВ "Дніпровський проектно-вишуквальний інститут "ДПВІ"		



Specification per element

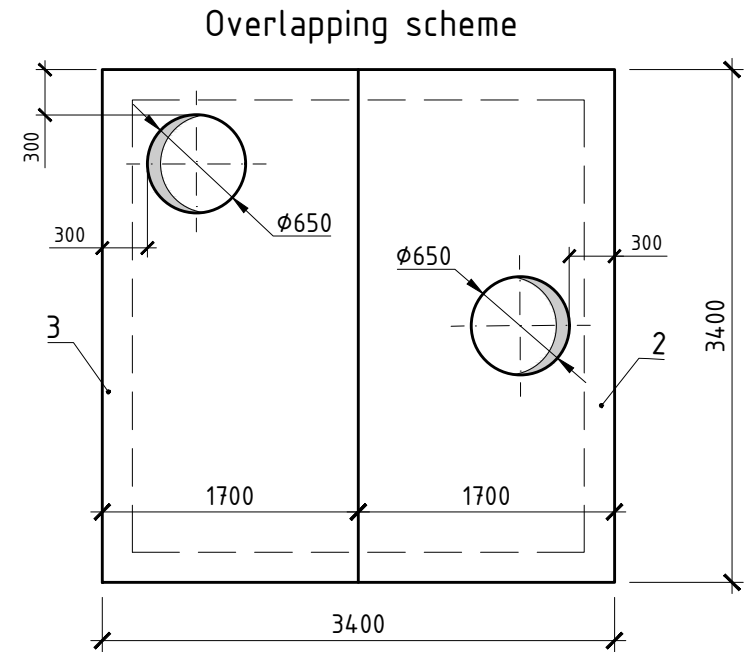
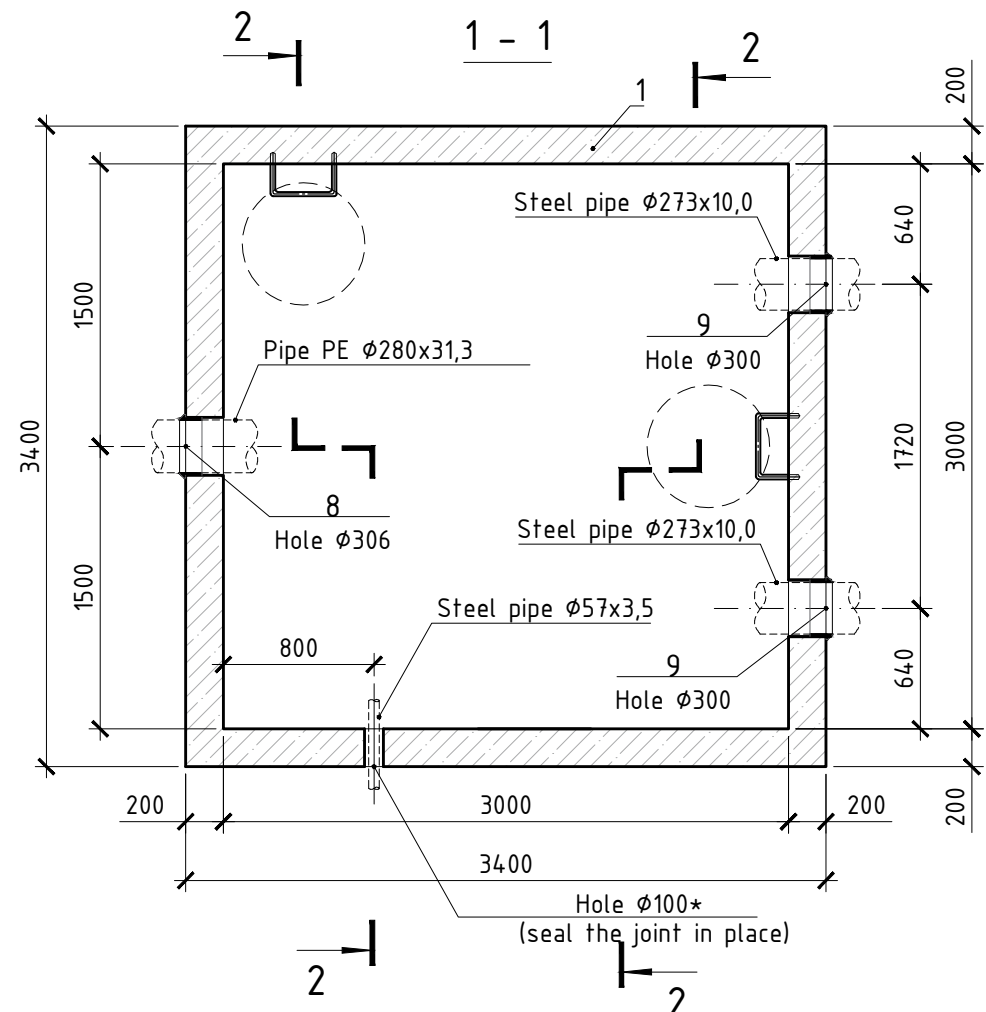
Item	Code	Name	Quantity	Weight unit, kg	Note
<u>Assembly units</u>					
1	087153	Chamber Grosslit K 40.30.16 ABeton	1	19320	
2	087154	Floor slab ПТ 34.22.2.1 E300 X300 IDA	2	3570	
3	001544	Adjusting ring IDA КЧЮ-6,5.1	2	50	
4	082802	Support plate ПО-6,5.1	2	77	
5		Cast iron hatch type "T" (C250) h=120mm	2		
6	078192	Sealing ring for well DN650	4		
7	084372	Seal BS 280/306	2		
	000043	Grip for ball anchor 7,5/10,0 t	4		
	076893	Oil AbetonLub 5 kg			0,6 kg

1. Dimensions with * require clarification.
 2. The design solution provides for the use of reinforced concrete elements of chambers manufactured by ABeton under order or an analogue in compliance with the dimensions of the chamber.



Погоджено:	
Зам. інв. №	
Підпис і дата	
Інв. № ор.	

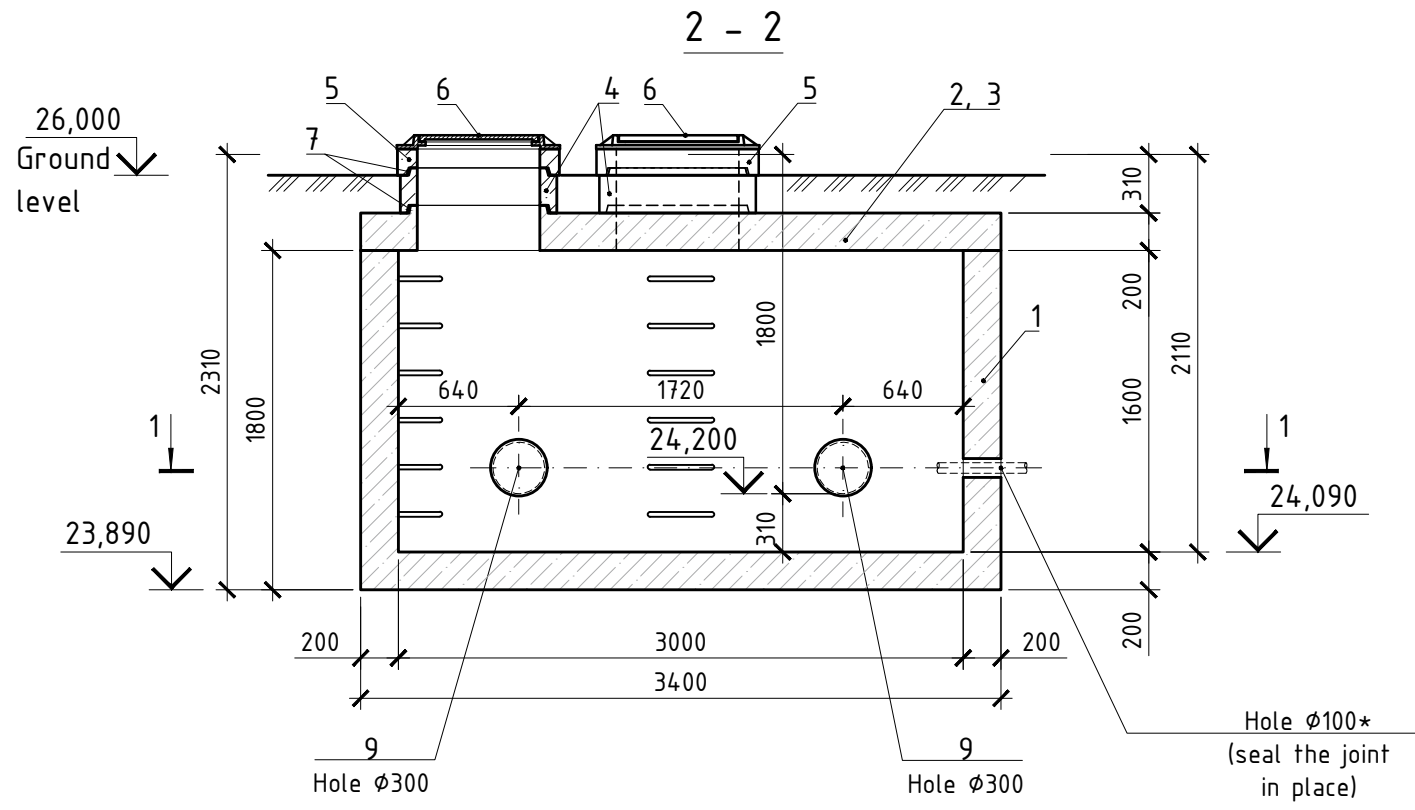
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<i>"Reconstruction of the Kazankivskiy group water supply system to supply settlements in the Sofiivska territorial community, Bashfanka district, Mykolaiv region". Adjustment</i>											
Зм.	Кільк.	Лист № док.	Підпис	Дата							
Розробив	Шиманська		<i>[Signature]</i>	04.26							
Перевірів	Хижнякова		<i>[Signature]</i>	04.26							
ГП	Хижнякова		<i>[Signature]</i>	04.26							
Н. контр.	Валодоев		<i>[Signature]</i>	04.26							
Architectural and Construction Solutions. Water Supply Chambers					<table border="1"> <tr> <td>Стадія</td> <td>Аркуш</td> <td>Аркушів</td> </tr> <tr> <td>РП</td> <td>4</td> <td>6</td> </tr> </table>	Стадія	Аркуш	Аркушів	РП	4	6
Стадія	Аркуш	Аркушів									
РП	4	6									
Камера водопровідна ВКЗ (I черга)					ТОВ "Дніпровський проектно-вишуквальний інститут "ДПВІ"						



Specification per element

Item	Code	Name	Quantity	Weight unit, kg	Note
<u>Assembly units</u>					
1	087163	Chamber Grosslit K 30.30.16 ABeton	1	16000	
2	087164	Floor slab ПТ 34.17.2.1 E300 IDA	1	2750	
3	084450	Floor slab ПТ 34.17.2.1 E300 X300 IDA	1	2750	
4	077538	Adjusting ring IDA КСЮ-6,5.2	2	114	
5	082802	Support plate ПО-6,5.1	2	77	
6		Cast iron hatch type "Л" (A15) h=72mm	2		
7	078192	Sealing ring for well DN650	4		
8	084372	Seal BS 280/306	1		
9	084371	Seal BS 274/300	2		
	000043	Grip for ball anchor 7,5/10,0 t	4		
	076893	Oil ABetonLub 5 kg			0,7 kg

- Dimensions with * require clarification.
- The design solution provides for the use of reinforced concrete elements of chambers manufactured by ABeton under order or an analogue in compliance with the dimensions of the chamber.



Погоджено:	
Зам. інв. №	
Підпис і дата	
Інв. № ор.	

922-07/25-АБ1					
<i>"Reconstruction of the Kazankivskiyi group water supply system to supply settlements in the Sofiivska territorial community, Bashtanka district, Mykolaiv region". Adjustment</i>					
Зм.	Кільк.	Лист	№ док.	Підпис	Дата
Розробив		Шиманська		<i>[Signature]</i>	04.26
Перевірів		Хижнякова		<i>[Signature]</i>	04.26
ГП		Хижнякова		<i>[Signature]</i>	04.26
Н. контр.		Валодоев		<i>[Signature]</i>	04.26
				Стадія	Аркуш
Architectural and Construction Solutions. Water Supply Chambers				РП	6
Камера водопровідна 2 (дюкер), (I черга)				Аркушів	6
				ТОВ "Дніпровський проектно-вишуквальний інститут "ДПВІ"	

List of working drawings of the main set

Sheet	Name	Note
1	General data (beginning)	
2	General data (end)	
2.1	Situational plan M 1:2000. Water supply scheme	New
3	Plan with water supply networks B1 from ПК0 to ПК3+47.00	
4	Plan with water supply networks B1 from ПК3+47.00 to ПК8	
5	Plan with water supply networks B1 from ПК8 to ПК10	
6	Longitudinal profile of water pipe B1 from ПК0 to ПК2+22.90	
7	Longitudinal profile of water pipe B1 from ПК2+22.90 to ПК6	
8	Longitudinal profile of water pipe B1 from ПК6 to ПК10	
9	Detailing of cameras VK2, VK3	
10	Detailing of chambers 1, 2 (Duker); VK1	
11	Detailing of wells VK4 - VK5	
12	Detailing of the designed well Ø1500	
13	Detailing of the designed well Ø2000	
14	Table of water wells	

List of documents referred to

Marking	Name	Note
ДБН В.2.5-74:2013	Water supply. External networks and structures.	
ДСТУ Б А.2.4-31:2008	Water supply and sewage. External networks. Working drawings	
ДСТУ-Н Б В.2.5-68:2012	Construction, installation and quality control guidelines pipelines of external water supply and sewage networks	
ДБН А.2.2-3-2014	Composition and content of construction project documentation	

List of attached documents

Marking	Name	Note
922-07/25-3B.C	Equipment and materials specification	2 sheets

Погоджено:

Зам. інв. №

Підпис і дата

Інв. № ор.

922-07/25 - 3B

Changes	Quantity	Sheet	No Doc.	Signature	Date			
						"Reconstruction of the water supply system to provide water to settlements of the Sofiivka territorial community of the Bashtansky district of the Mykolaiv region." Adjustment		
Chief Project Engineer	Khyzhniakova	<i>[Signature]</i>	04.26	External water supply. First stage of construction		Stage	Sheet	Sheets
Developed	Simak	<i>[Signature]</i>	04.26			РП	1	14
Verified	Khyzhniakova	<i>[Signature]</i>	04.26	General data (beginning)		LLC "Dniprovskiy proektno-vyshukovalnyi institut "DPVI"		
Regulatory control	Valoboiev	<i>[Signature]</i>	04.26					

GENERAL GUIDELINES

1. This project complies with the design specifications as well as DBN V.2.5-74 2013 "Water Supply. External Networks and Structures."
2. The project was developed based on topographic surveys.
3. To supply drinking water to residents of these communities, the project calls for the construction of a group water main from the Kazankivsky Group Water Main's Pumping Station II to the water treatment facility site near the town of Yelanets.
4. To supply water through the pipeline at the existing second-stage pumping station of the Kazankivskyi Group Water Supply System, two CNS 105-196 pump units (one of which is a backup) will be installed, ensuring a supply of 106.33 m³/h—the design flow rate during peak water demand.
5. The water supply networks have been designed in accordance with the designated phases (Phase I is presented in this section):

Phase I:

- Reconstruction of the filter drainage system in the pre-filter building – 1 unit (to be addressed in a separate section).
- Reconstruction of the existing second-stage pumping station (PS-2) with the installation of pumping and power electrical equipment, specifically the following measures (see Technical Specifications section):
 - Installation of 2 pumps (1 operational and 1 standby). Q=106.3 m³/h; H=195 m;
 - Installation of power electrical equipment for the pumps;
 - Installation of a pump automation system to ensure their safe operation.
- Reconstruction of the outlet manifold of PS-2 by separating it from the part of the manifold that provides the existing water supply, with the installation of a water metering unit at the outlet to the consumer in accordance with the provided technical specifications.
- Laying of the main water pipeline using water pipes, with the installation of manholes along the pipeline route. In accordance with design standards (free head - 195.0-205.0 m; flow rate - 29.5-30.0 l/s; annual water demand - 783,655 thousand m³/year; service life - 50 years).
The length of the water pipeline is 1,000 m (ПК0–ПК10), including the existing crossing over the Ingul River.

Phase II:

- Installation of a main water pipeline using water pipes, including the construction of manholes along the pipeline route. In accordance with design standards (free head - 195.0-205.0 m; flow rate - 29.5-30.0 l/s; annual water demand - 783,655 thousand m³/year; service life - 50 years). Total length of the water pipeline: 1,981 m (ПК10 – ПК29+57.0).
- Construction of a water supply facility site with the installation of two underground clean water reservoirs, each with a capacity of approximately 250 m³.
- Demolition and restoration of the road surface.
- Landscaping of adjacent areas and the reconstruction site.

6. In the wells located downstream of the pumping station on the water main, a differential water meter, a downstream pressure regulator, gate valves, and air release and air lock valves are installed.

7. The planned water supply network will include manholes with branch lines leading to consumers No. 1, No. 2, and No. 3. Shut-off valves will be installed in the manholes.

8. A pressure regulator with a diameter of 200 mm is required. Check valves on the water supply line must have a diameter of 200 mm and be equipped with a controlled shut-off mechanism to prevent direct water hammer in the pipeline.

9. The 3.0-kilometer-long water main has a flow rate of 106.33 m³/h. In accordance with the maximum operating pressure, the pipes are made of steel and polyethylene of appropriate diameters.

10. The water main is equipped with manholes containing shut-off and control valves:

- check valves to reduce water hammer pressure, with valves for venting and trapping air;
- shut-off valves to isolate sections for repair every 3 km;
- air vents for releasing air from the pipeline;
- drains for emptying the pipeline during emergencies or repairs;
- air inlets for filling the pipelines when they are emptied;
- manholes with gate valves installed at branch points leading to populated areas.

11. Air vents are equipped with gravel filters. Water outlets from the pipelines are located in wet wells.

12. Steel pipe culverts (Ø273x10.0 mm) with heavy-duty insulation are provided for crossing the rivers, arranged in two parallel lines, with manholes installed on both sides equipped with gate valves and water discharge outlets.

13. Water flows through the water distribution units into the regulating tanks (clean water reservoirs).

14. The water quality meets the requirements of the standards, with the exception of the dry matter and hardness levels, which may exceed the norm at certain times.

15. The project specifies the installation of prefabricated reinforced concrete round and rectangular water supply wells.

16. The bottom of the well is located 0.25 m below the level of the pipe.

17. Concrete supports are to be installed at the turns in the network.

18. When laying a water main within 2.0 meters of trees, the trees must be removed.

19. The coordinates and elevations of existing pipelines are approximate and will be refined on-site during the course of the work.

20. After flushing the pipes, the water is drained through existing drain valves installed at the lowest point of the existing water supply network, with the drain leading to the surrounding area.

21. Water supply system installation work shall be performed in accordance with the applicable standards and regulations for installation and acceptance as set forth in DBN V.2.5.-64:2012 "Internal Water Supply and Sewerage Networks. Parts 1 and 2," DBN V.2.5-74:2013 "Water Supply. External Networks and Structures," and DSTU-N B V.2.5-40:2009 "Design and Installation of Water Supply and Sewerage Networks Using Plastic Pipes."

List of documents required for the closure of concealed work

Sheet	Name	Note
1	Acceptance of an external water supply system	+
2	Connection of external domestic sewage systems	—
3	Acceptance and Testing of Fire Hydrants	+
4	Soil testing for backfilling trenches	+
5	Determining the level and characteristics of groundwater	+
6	Implementation of protective measures during construction on subsiding soils	—
7	Random inspection of welded pipe joints	+
8	Backfilling and compacting a trench	+
9	Preparing the foundation for the pipelines	+
10	Installation of stops	+
11	Construction of wells and chambers	+
12	Corrosion protection for pipelines	+
13	Sealing of pipe penetrations through the walls of manholes and chambers	+

Note: The "+" symbol indicates those tasks for which it is mandatory to prepare reports on concealed work.

22. A completed domestic and drinking water supply system must be tested hydraulically. Testing at sub-zero temperatures must be conducted using an antifreeze solution.

23. According to DSTU-N B V.2.5-68:2012, clause 10.1.5, the test pressure for leak testing, whether for preliminary or acceptance testing of a pressure pipeline, must equal the internal design pressure plus a value determined in accordance with Table 4 of DSTU-N B V.2.5-68:2012, depending on the upper limit of the pressure measurement, the accuracy class, and the scale division of the pressure gauge. In this case, the leak test pressure must not exceed the acceptance test pressure for the pipeline's strength.

The value of the internal design pressure in the pipeline is from 1.21 to 2.0 MPa;

For technical pressure gauges with accuracy class 0.4:

- upper pressure measurement limit: 2.5 MPa;
- scale division: 0.01 MPa;
- ΔP: 0.1 MPa.

For technical pressure gauges with accuracy class 0.6:

- upper pressure measurement limit: 2.5 MPa;
- scale interval: 0.02 MPa;
- ΔP: 0.14 MPa.

For technical pressure gauges with accuracy class 1:

- upper pressure measurement limit: 4.0 MPa;
- scale interval: 0.05 MPa;
- ΔP: 0.25 MPa.

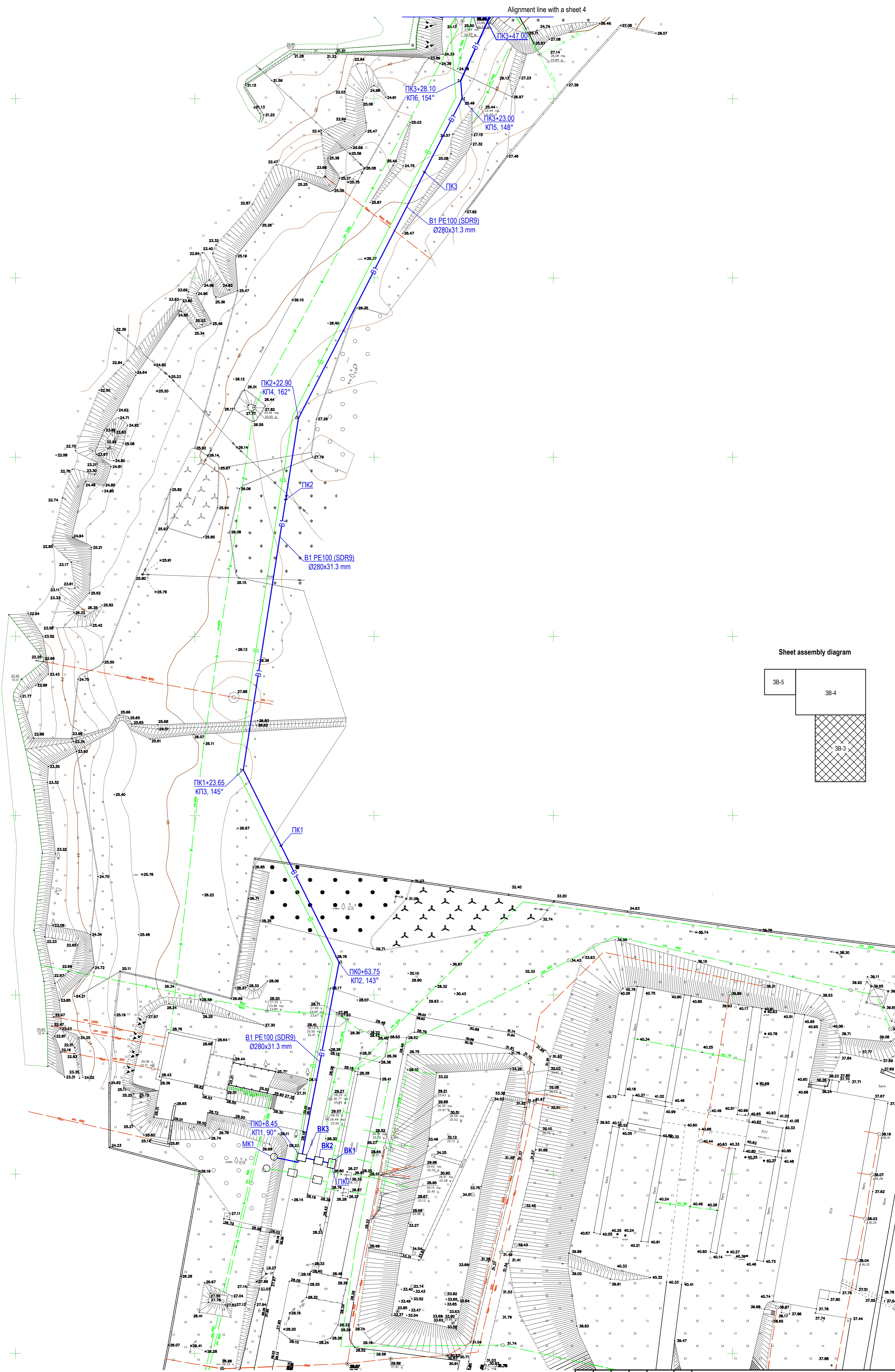
For technical pressure gauges with accuracy class 1.5:

- upper pressure measurement limit: 4.0 MPa;
- scale interval: 0.1 MPa;
- ΔP: 0.5 MPa.

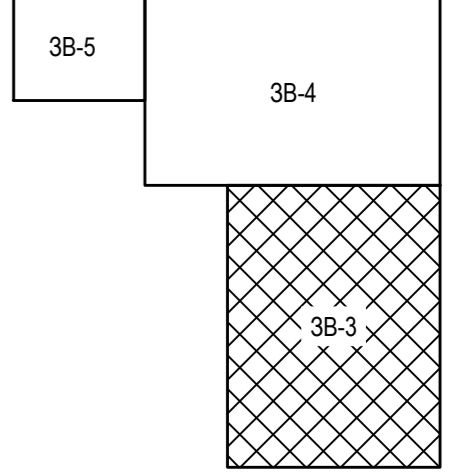
If defects are detected and subsequently corrected (pressure drop, leaks, etc.), the hydraulic tests are repeated in full.

Погоджено: _____
Зам. інв. № _____
Підпис і дата _____
Інв. № ор. _____

922-07/25 - 3B					
"Reconstruction of the water supply system to provide water to settlements of the Sofiivka territorial community of the Bashtansky district of the Mykolaiv region." Adjustment					
Changes	Quantity	Sheet	No Doc.	Signature	Date
Chief Project Engineer		Khyzhniakova			04.26
Developed		Simak			04.26
Verified		Khyzhniakova			04.26
Regulatory control		Valoboiev			04.26
External water supply. First stage of construction				Stage	Sheet
				РП	2
General data (end)				LLC "Dniprovskiy proektno-vyshukovalnyi institut "DPVI"	



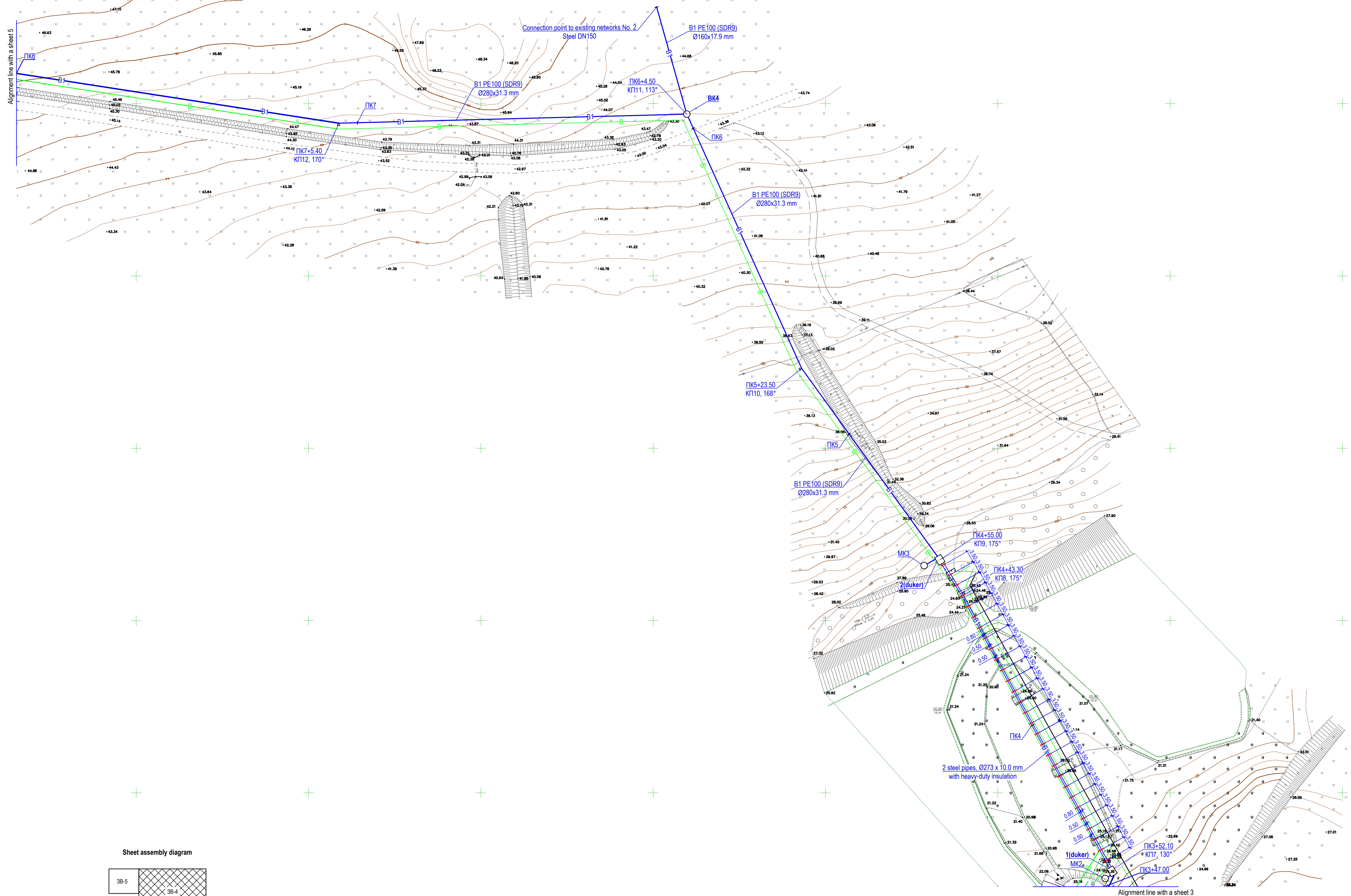
Sheet assembly diagram



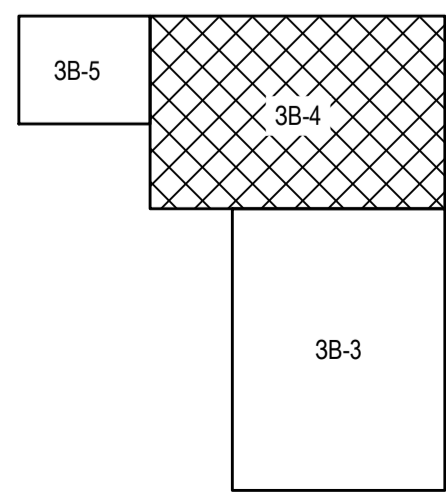
Legend:
 B1 - lanned domestic and drinking water pipeline;
 BK - water supply well;
 ПК - survey point;
 КП - кут повороту;
 МК - wet well.

				922-07/25 - 3B			
				"Reconstruction of the water supply system to provide water to settlements of the Sofiivka territorial community of the Bashtansky district of the Mykolajiv region." Adjustment			
Changes	Quantity	Sheet	No. Doc.	Signature	Date	Stage	
						Sheet	
						Sheets	
Chief Project Engineer		Khyzhniakova		<i>[Signature]</i>	04.26	External water supply. First stage of construction	
Developed		Smak		<i>[Signature]</i>	04.26	Plan of Water Supply Networks B1 from PK0 to PK3+47.00	
Verified		Khyzhniakova		<i>[Signature]</i>	04.26		
Regulatory control		Valobiev		<i>[Signature]</i>	04.26		
						PN	3
						LLC "Dniprovskiy proektno-vyshukovalnyi institut "DPVI"	

Підприємство: _____
 Ім'я, № оп. _____
 Сема, Ім'я, № _____
 Підпис: _____



Sheet assembly diagram



- Примітки:
1. При надземній прокладці трубопроводів по естакаді між анкерними опорами передбачені проміжні опори через кожні 3.5 м.
 2. Анкерні опори передбачені на початку, кінці та через кожні 25 м для компенсації теплового подовження.
 3. При необхідності можна трохи скоригувати проміжки для зручності монтажу.

- Legend:
- B1 - lanned domestic and drinking water pipeline;
 - BK - water supply well;
 - PK - survey point;
 - KP - кут повороту;
 - MK - wet well.

					922-07/25 - 3B			
					"Reconstruction of the water supply system to provide water to settlements of the Sofiivka territorial community of the Bashiynsky district of the Mykolaiiv region." Adjustment			
Changes	Quantity	Sheet	No. Doc.	Signature	Date	Stage	Sheet	Sheets
Chief Project Engineer	Klyzhniakova			<i>[Signature]</i>	04.26	External water supply. First stage of construction	PN	4
Developed	Simak			<i>[Signature]</i>	04.26	Plan of Water Supply Networks B1 from ПК3-47.00 to ПК8	LLC "Dniprovskiy proektno-vyshukovalnyi institut "DPVI"	
Verified	Klyzhniakova			<i>[Signature]</i>	04.26			
Regulatory control	Valobioiev			<i>[Signature]</i>	04.26			

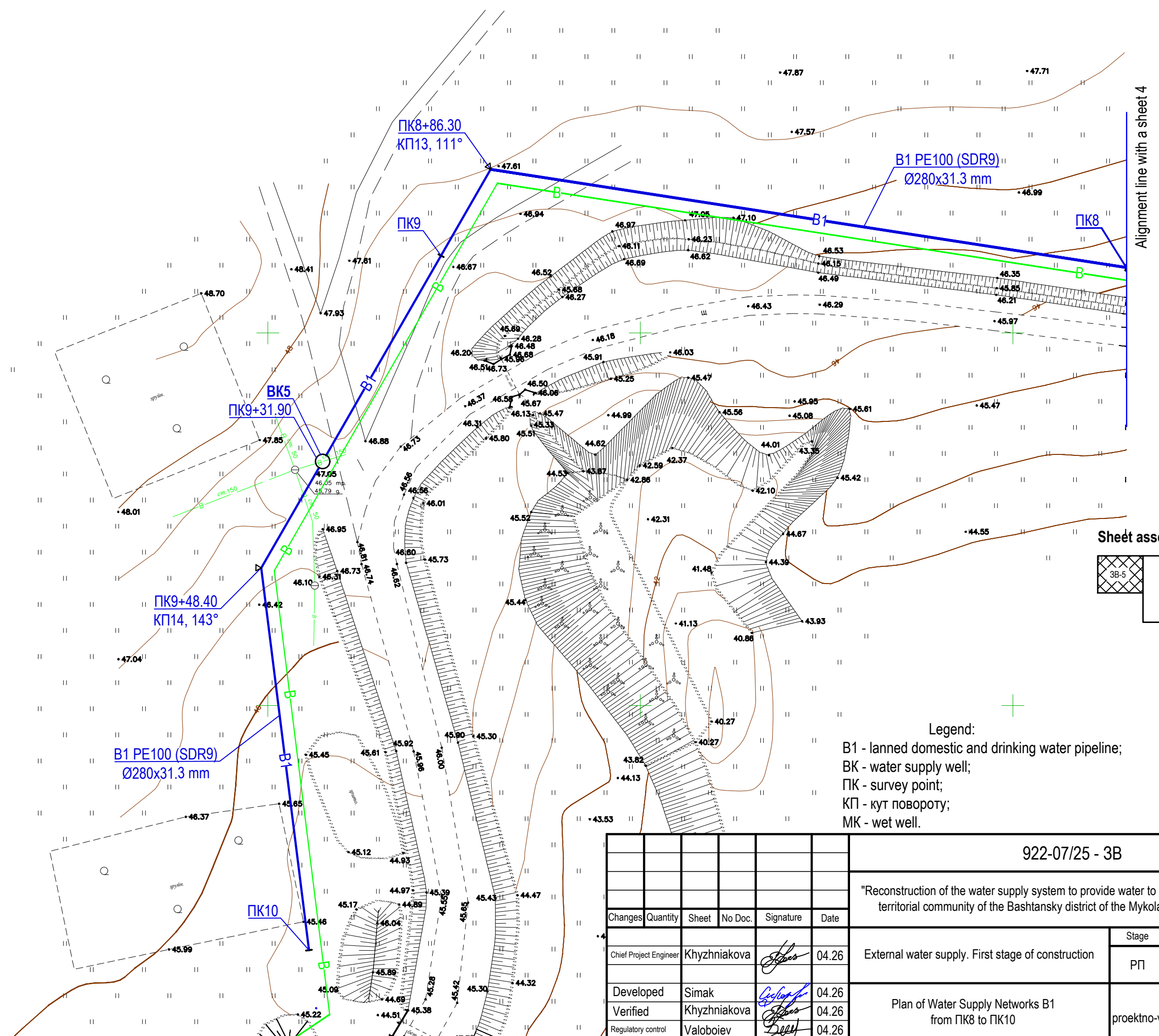
Пояснення:
Лист № оп.
Лист № ар.
Зам. № ар.
Лист № ар.

Погоджено:

Зам. інв. №

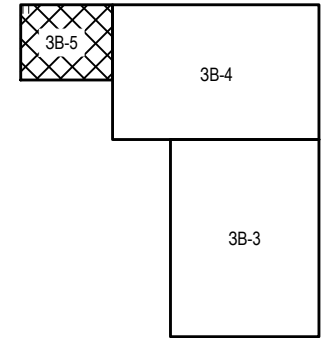
Підпис і дата

Інв. № ор.



Alignment line with a sheet 4

Sheet assembly diagram

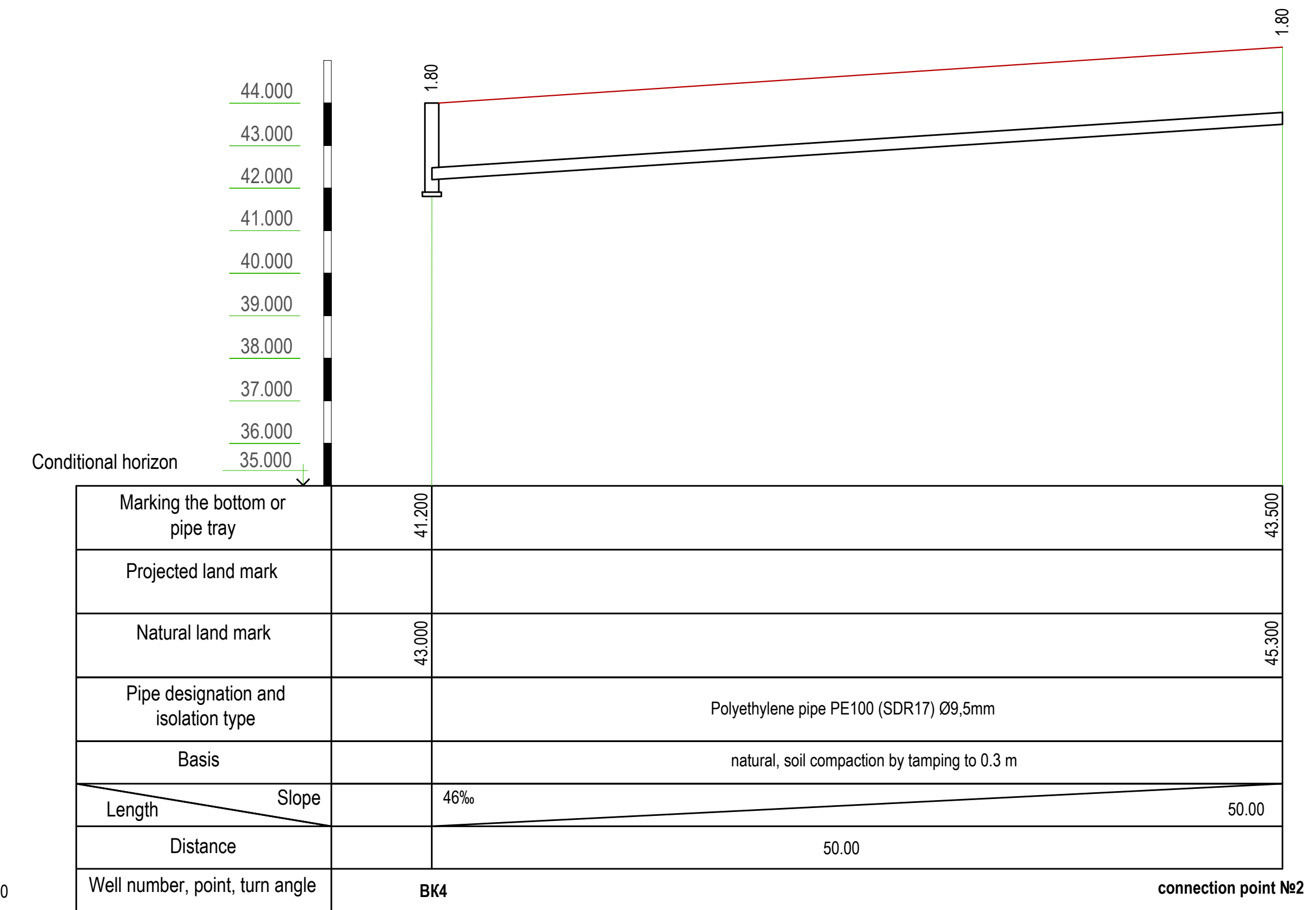
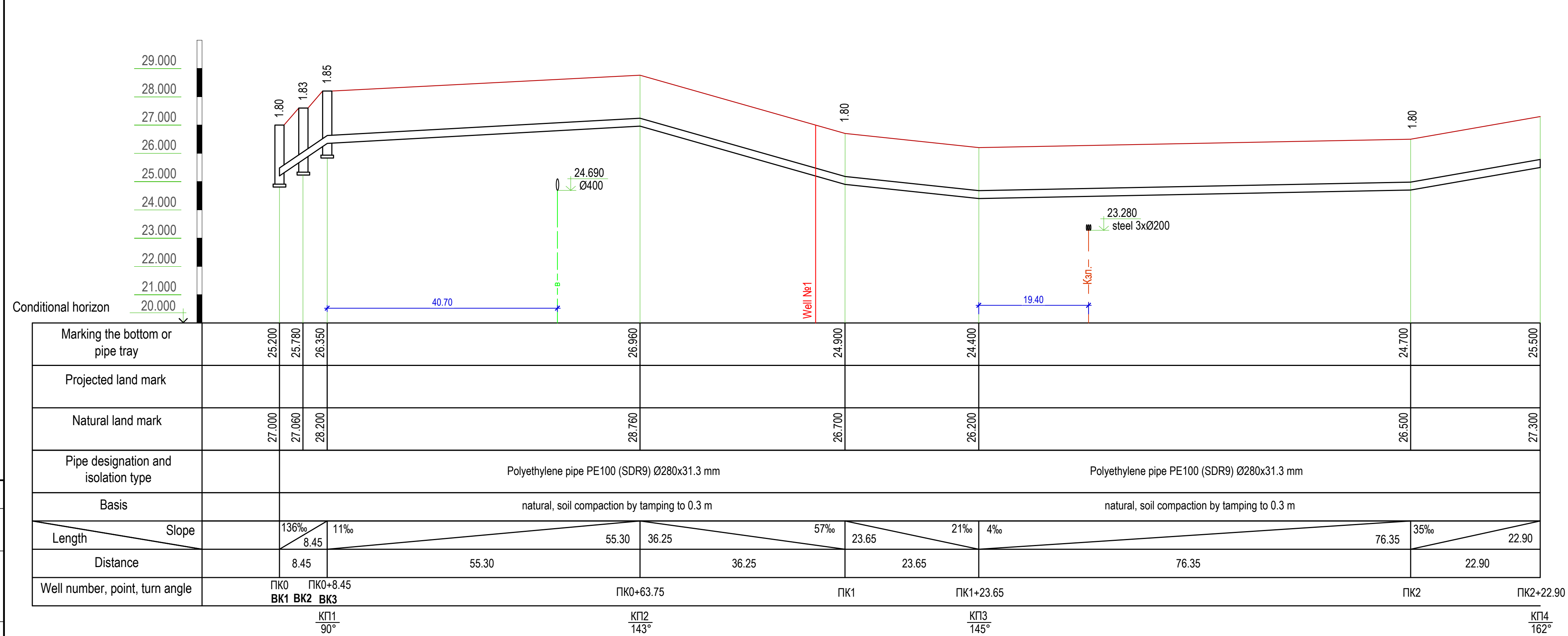


Legend:
 B1 - lanned domestic and drinking water pipeline;
 BK - water supply well;
 ПК - survey point;
 КП - кут повороту;
 МК - wet well.

						922-07/25 - 3B			
						"Reconstruction of the water supply system to provide water to settlements of the Sofiivka territorial community of the Bashtansky district of the Mykolaiv region." Adjustment			
Changes	Quantity	Sheet	No Doc.	Signature	Date	External water supply. First stage of construction	Stage	Sheet	Sheets
Chief Project Engineer		Khyzhniakova		<i>[Signature]</i>	04.26		РП	5	
Developed		Simak		<i>[Signature]</i>	04.26	Plan of Water Supply Networks B1 from ПК8 to ПК10	LLC "Dniprovskiy proektno-vyshukovalnyi institut "DPVI"		
Verified		Khyzhniakova		<i>[Signature]</i>	04.26				
Regulatory control		Valoboev		<i>[Signature]</i>	04.26				

SCALE:
HORIZONTAL 1:500
VERTICAL 1:100

B1



Well No1

№№№	Depth of the layer base, m	Absolute elevation of the layer base, m	Layer thickness, m	Stratigraphic section	Geological age	Brief description of soils	Humidity	Groundwater level
1	0.90	26.10	0.90	M	IQ	Loose soil: light loamy, humus-rich soil mix with construction debris	0.185	There is no water
3	2.50	23.60	2.20	MK	dQ	Light deluvial loam, light brown, hard to stiff, crumbly	0.203	

Legend:
B1 - lanned domestic and drinking water pipeline;
BK - water supply well;
ПК - survey point;
КП - кут повороту;
МК - wet well.

						922-07/25 - 3B		
						"Reconstruction of the water supply system to provide water to settlements of the Sofivka territorial community of the Bashtansky district of the Mykolaiv region." Adjustment		
Changes	Quantity	Sheet	No Doc.	Signature	Date	External water supply. First stage of construction		Stage
Chief Project Engineer	Khyzhniakova				04.26			Sheet
Developed	Simak				04.26	Longitudinal profile of water main B1 from ПК0 to ПК2+22.90		Sheets
Verified	Khyzhniakova				04.26			6
Regulatory control	Valoboev				04.26			
						LLC "Dniprovskiy proektno-vyshukovalnyi institut "DPVI"		
						Формат 420x841		

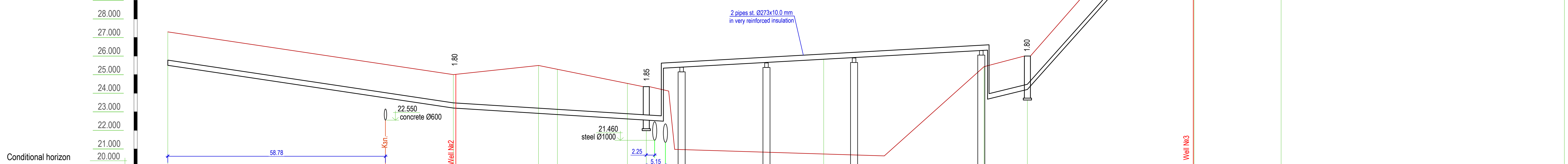
SCALE:
HORIZONTAL 1:500
VERTICAL 1:100



№№	Depth of the layer base, m	Absolute elevation of the layer base, m	Layer thickness, m	Stratigraphic section	Geological age	Brief description of soils	Humidity	Groundwater level
1	0.80	24.20	0.80		tQ	Loose soil: light loamy, humus-rich soil mix with construction debris	0.185	There is no water
3	3.00	21.20	3.00		dQ	Light deluvial loam, light brown, hard to stiff, crumbly	0.203	

B1

№№	Depth of the layer base, m	Absolute elevation of the layer base, m	Layer thickness, m	Stratigraphic section	Geological age	Brief description of soils	Humidity	Groundwater level
1	1.00	35.00	1.00		tQ	Loose soil: light loamy, humus-rich soil mix with construction debris	0.185	There is no water
3	3.00	32.00	3.00		dQ	Light deluvial loam, light brown, hard to stiff, crumbly	0.203	



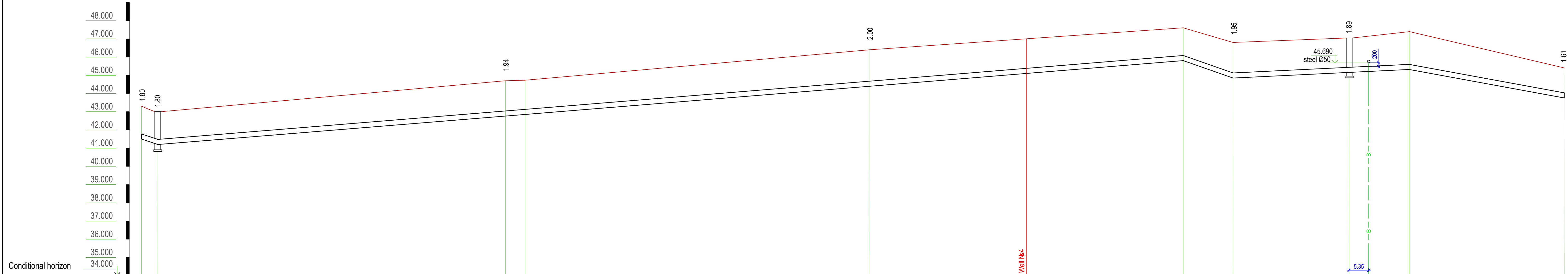
Marking the bottom or pipe tray	25.500	23.200	22.910	22.850	22.610	22.550	25.300	25.830	26.320	23.680	24.200	34.250	35.950	41.500	
Projected land mark															
Natural land mark	27.300	25.000	25.490	25.290	24.550	24.350		20.720	25.430	26.000		36.050	37.700	43.300	
Pipe designation and isolation type	Polyethylene pipe PE100 (SDR9) Ø280x31.3 mm						Straight-seam electric-welded steel pipe, Ø273x10.0, in accordance with DSTU 8943:2019 in strict isolation					Polyethylene pipe PE100 (SDR9) Ø280x31.3 mm			
Basis	natural, soil compaction by tamping to 0.3 m						On existing supports					natural, soil compaction by tamping to 0.3 m			
Length	77.10	52.10	23.00	5.10	18.90	5.10	47.90	43.30	91.20	11.70	45.00	45.00	23.50	76.50	
Slope	77.10	30‰	52.10	13‰	11‰	47.90	43.30	91.20	44‰	223‰	45.00	73‰	23.50	100.00	
Distance	77.10	23.00	5.10	18.90	5.10	47.90	43.30	91.20	11.70	45.00	45.00	23.50	76.50		
Well number, point, turn angle	ПК2+22.90	ПК3	ПК3+28.10 ПК3+23.00	ПК3+47.00 ПК3+52.10	ПК4	ПК4+43.30	ПК4+55.00 2(duker)	ПК5	ПК5+23.50	ПК6					
			КП5 148°	КП6 154°	КП7 130°		КП8 175°	КП9 175°	КП10 168°						

Legend:
B1 - lanned domestic and drinking water pipeline;
BK - water supply well;
ПК - survey point;
КП - кут повороту;
МК - wet well.

922-07/25 - 3B					
1	1				08.25
Changes	Quantity	Sheet	No. Doc.	Signature	Date
Chief Project Engineer	Khyzhniakova		04.26	External water supply. First stage of construction	
Developed	Simak		04.26	Stage	Sheet
Verified	Khyzhniakova		04.26	РП	7
Regulatory control	Valoboev		04.26	Longitudinal profile of water main B1 from ПК2+22.90 to ПК6	
LLC "Dniprovskiy proektno-vyshukovalnyi institut "DPV"					
Формат 420x841					

SCALE:
HORIZONTAL 1:500
VERTICAL 1:100

B1



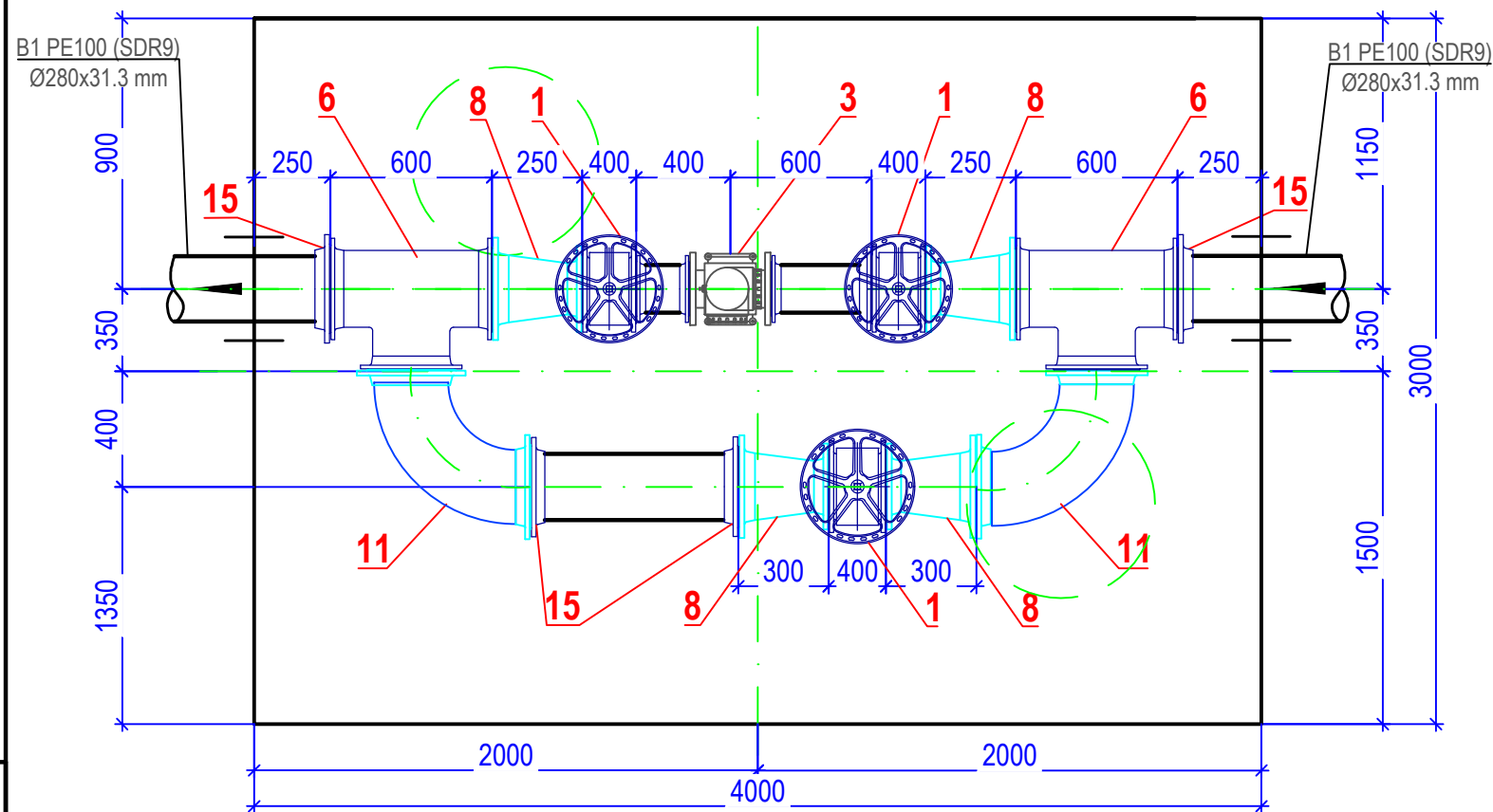
Marking the bottom or pipe tray	41.500	41.200		42.760	42.860		44.400		45.800	44.850		45.160	45.320	43.790														
Projected land mark																												
Natural land mark	43.300	43.000		44.700	44.730		46.400		47.610	46.800		47.050	47.400	45.400														
Pipe designation and isolation type	Polyethylene pipe PE100 (SDR9) Ø280x31.3 mm							Polyethylene pipe PE100 (SDR9) Ø280x31.3 mm																				
Basis	natural, soil compaction by tamping to 0.3 m							natural, soil compaction by tamping to 0.3 m																				
Length	Slope 16‰									281.80		13.70		69‰		10‰		48.40		51.60		37‰						
Distance	4.50		95.50							5.40		94.60							86.30		13.70		31.90		16.50		51.60	
Well number, point, turn angle	ПК6+4.50 ПК6 BK4		ПК7+5.40 ПК7							ПК8							ПК8+86.30		ПК9		ПК9+31.90 BK5		ПК9+48.40		ПК10			
	КП11 113°		КП12 170°														КП13 111°				КП14 143°							

Well №4								
No№	Depth of the layer base, m	Absolute elevation of the layer base, m	Layer thickness, m	Stratigraphic section	Geological age	Brief description of soils	Humidity	Groundwater level
1	0.80	46.20	0.80		tQ	Loose soil, light loamy, humus-rich soil mix with construction debris	0.185	There is no water
3	2.50	43.70	2.50		dQ	Light deluvial loam, light brown, hard to stiff, crumbly	0.203	

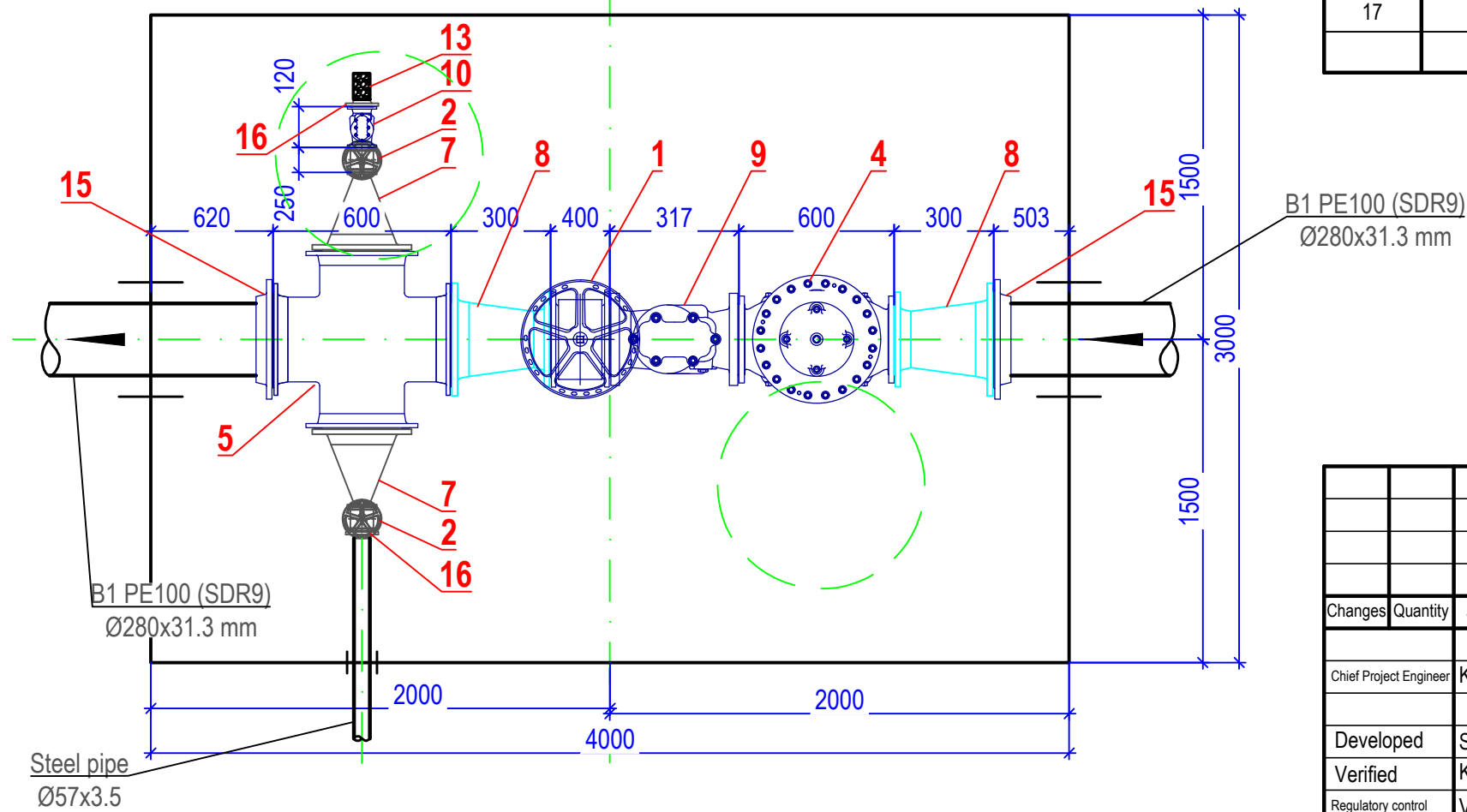
Legend:
B1 - lanned domestic and drinking water pipeline;
BK - water supply well;
ПК - survey point;
КП - кут повороту;
МК - wet well.

						922-07/25 - 3B		
						"Reconstruction of the water supply system to provide water to settlements of the Sofivka territorial community of the Bashtansky district of the Mykolaiv region." Adjustment		
Changes	Quantity	Sheet	No Doc.	Signature	Date	External water supply. First stage of construction		
Chief Project Engineer	Khyzhniakova				04.26	Stage	Sheet	Sheets
Developed	Simak				04.26	PP	8	
Verified	Khyzhniakova				04.26	Longitudinal profile of water main B1 from PK6 to PK10		
Regulatory control	Valoboev				04.26	LLC "Dniprovskiy proektno-vyshukovalnyi institut "DPVI"		

BK2



BK3



Specifications for Products, Equipment, and Materials

Item	Designation	Name	Quantity	Unit weight, kg	Notes
1	AVK 02 /67	Flanged gate valve DN200 Py=2.5 MPa	8	pcs.	
2	AVK 02 /67	Flanged gate valve DN50 Py=2.5 MPa	4	pcs.	
3	MagFlux 7200	Water meter DN200	1	pcs.	
4	Honeywell DR300-200A	Pressure regulator DN200 Py=2.5 MPa	1	pcs.	
5	AVK 712 /2210	Flanged crosspiece DN250 Py=2.5 MPa	1	pcs.	
6	AVK 712 /1010	Flanged tee DN250 Py=2.5 MPa	6	pcs.	
7	AVK	Flanged transition DN250/50 Py=2.5 MPa	4	pcs.	
8	AVK	Flanged transition DN250/200 Py=2.5 MPa	14	pcs.	
9	AVK 903 /20	Check valve DN200 Py=2.5 MPa	1	pcs.	
10	AVK 903 /20	Check valve DN50 Py=2.5 MPa	1	pcs.	
11	AVK	Flanged elbow DN250 Py=2.5 MPa	6	pcs.	
12		Valve d25 for lowering	1	pcs.	
13		Corrugated pipe filter Ø57 mm with crushed stone	1	pcs.	
14		Flat steel flange Py 2.5 for steel pipes DN250	4	pcs.	
15		Weld-on collar for PE pipes DN250, Py=2.5	8	pcs.	
16		Flat steel flange Py 2.5 for steel pipes DN50	3	pcs.	
17					

Погоджено:

Зам. інв. №

Підпис і дата

Інв. № оп.

922-07/25 - 3B

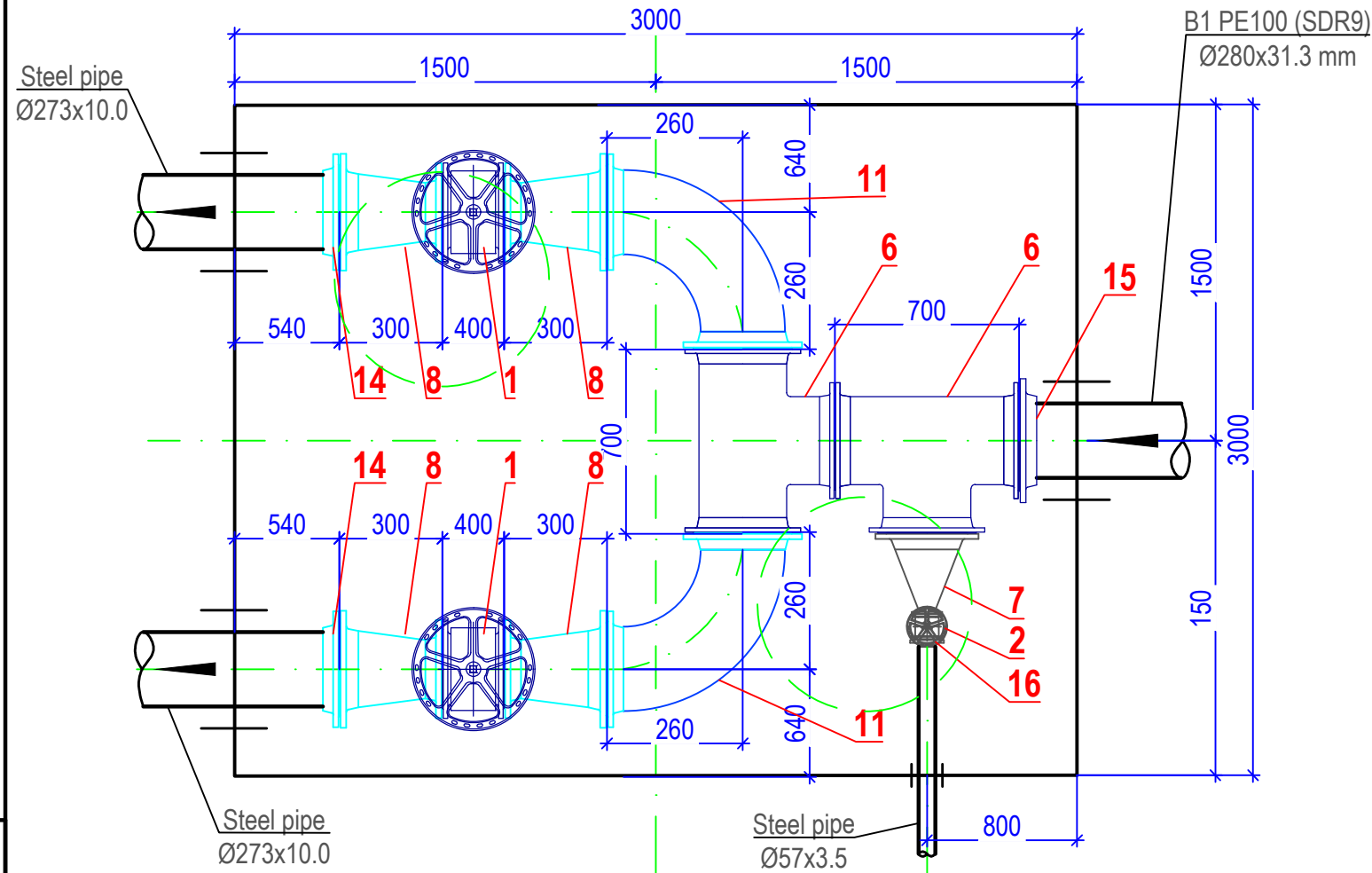
"Reconstruction of the water supply system to provide water to settlements of the Sofiivka territorial community of the Bashtansky district of the Mykolaiv region." Adjustment

Changes	Quantity	Sheet	No Doc.	Signature	Date
Chief Project Engineer				<i>[Signature]</i>	04.26
Developed				<i>[Signature]</i>	04.26
Verified				<i>[Signature]</i>	04.26
Regulatory control				<i>[Signature]</i>	04.26

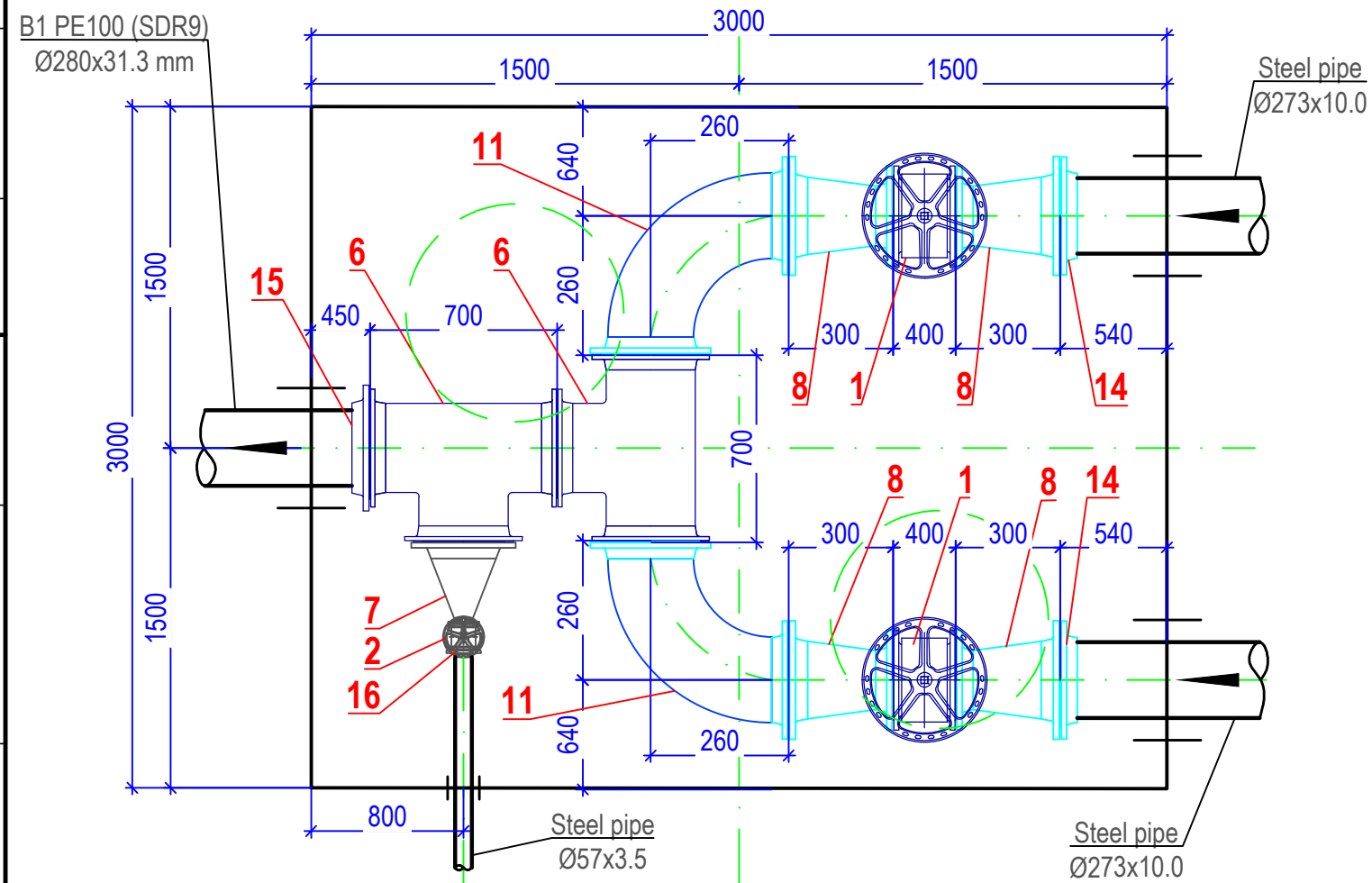
Stage	Sheet	Sheets
External water supply. First stage of construction	РП	9

Detailing the cameras BK2, BK3
 LLC "Dniprovskiy proektno-vyshukovalnyi institut "DPVI"

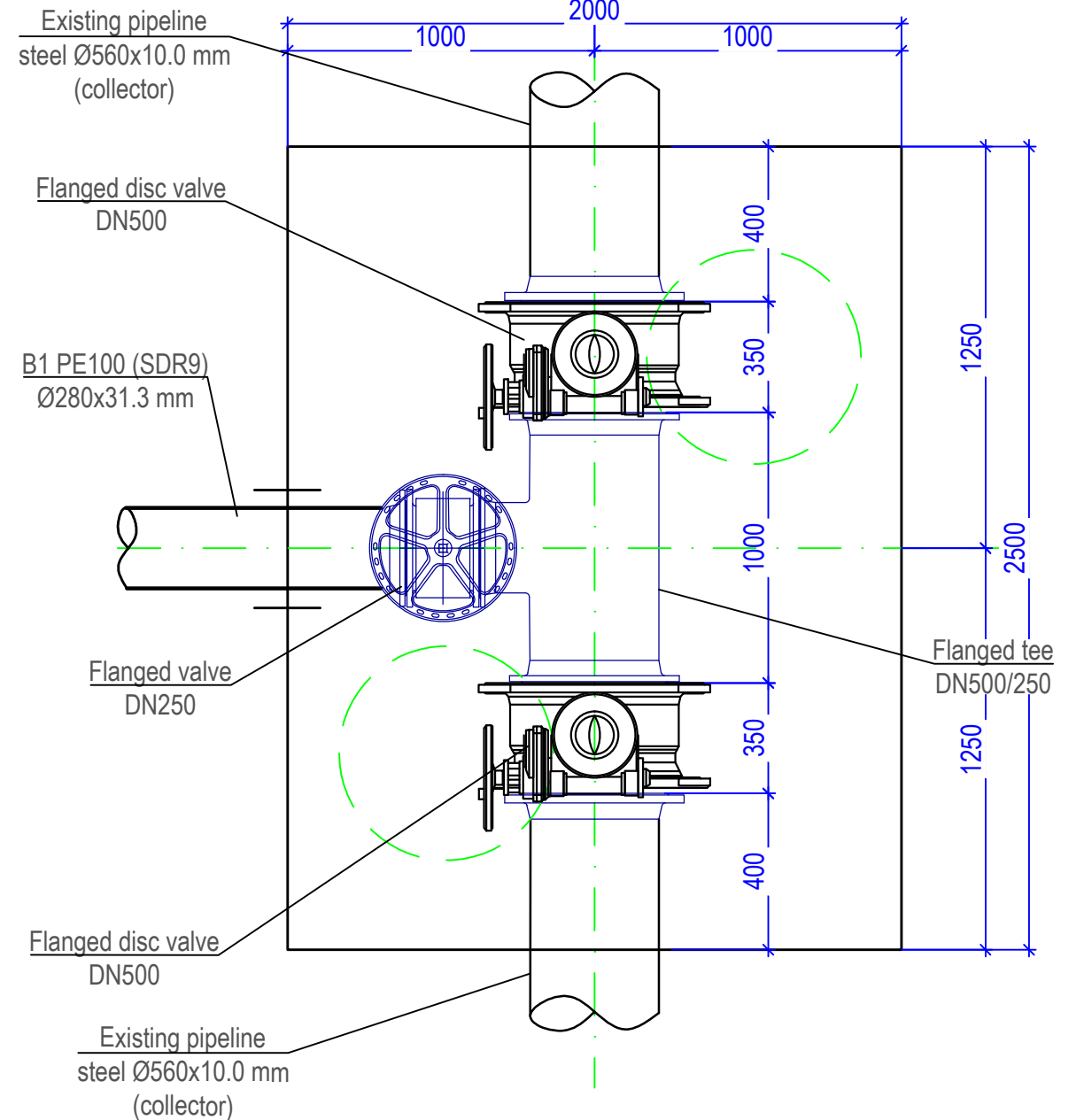
1 (Duker)



2 (Duker)



BK1

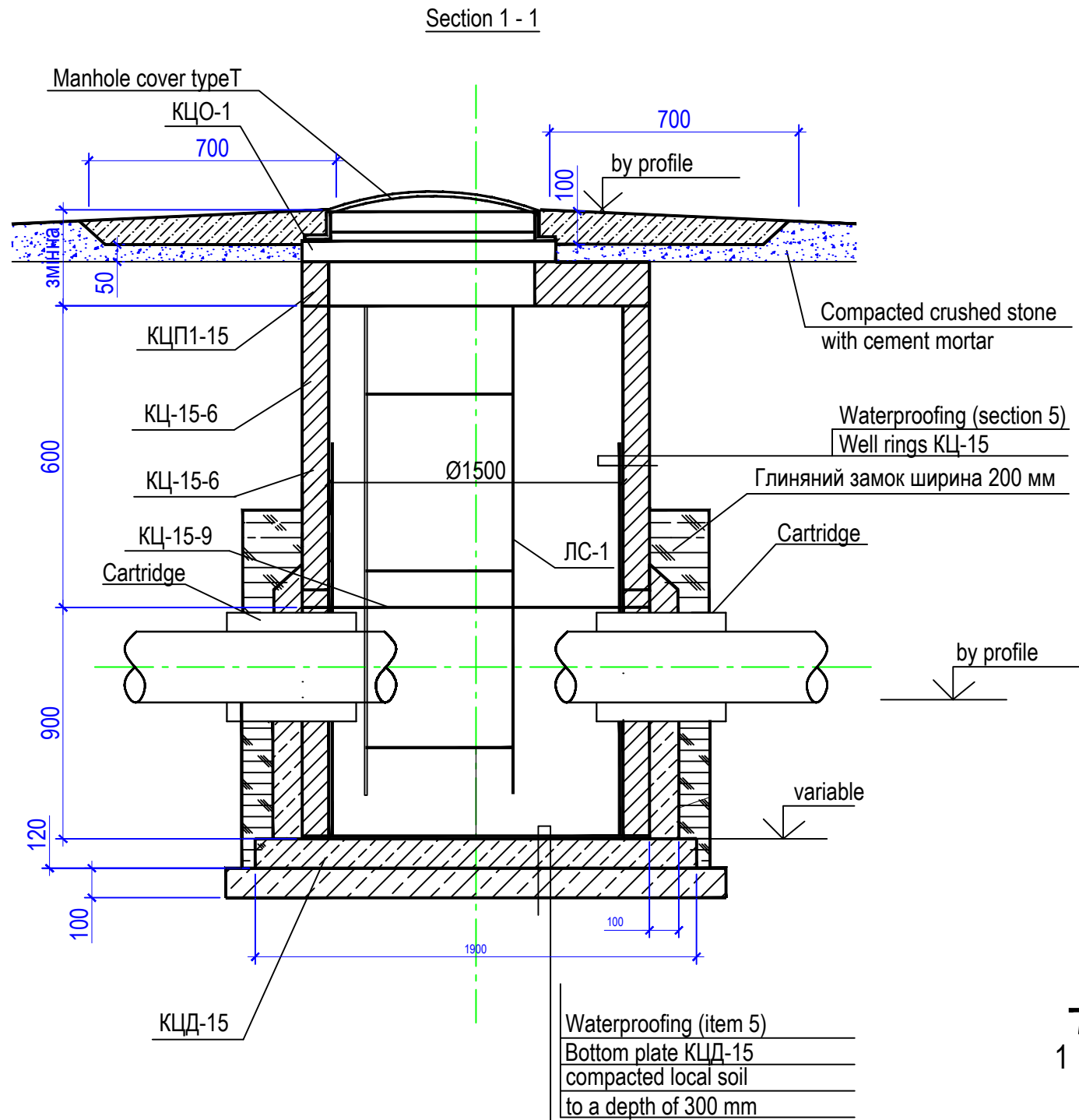


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Зам. інв. №	
Підпис і дата	
Інв. № ор.	

						922-07/25 - 3B				
						"Reconstruction of the water supply system to provide water to settlements of the Sofiivka territorial community of the Bashtansky district of the Mykolaiv region." Adjustment				
Changes	Quantity	Sheet	No. Doc.	Signature	Date	External water supply. First stage of construction		Stage	Sheet	Sheets
						PP		PP	10	
Chief Project Engineer		Khyzhniakova		<i>[Signature]</i>	04.26	Detailing the cameras 1, 2 (duker); BK1		LLC "Dniprovskiy proektno-vyshukovalnyi institut "DPVI"		
Developed		Simak		<i>[Signature]</i>	04.26					
Verified		Khyzhniakova		<i>[Signature]</i>	04.26					
Regulatory control		Valoboev		<i>[Signature]</i>	04.26					

Detailing of the designed well Ø1500 (neck on the roadway)

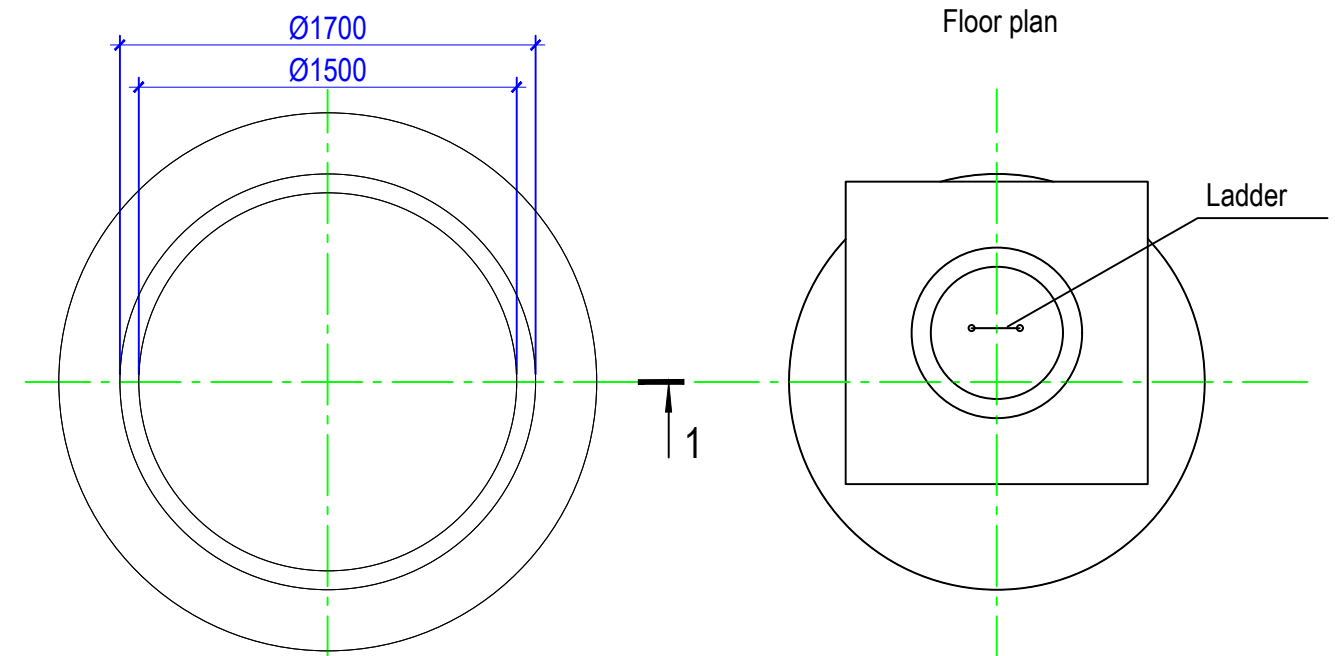
Specification of reinforced concrete products and statement of work scope



Brand, pos.	Designation	Name	Quantity, pcs.	Unit weight, kg	Note
КЦ-15-6	DSTU B V.2.6-106:2010	Well rings КЦ-15-6	Див. арк. 3В-27	670	
КЦ-15-9		Well rings КЦ-15-9		1000	
ПП15-1		Well cover ПП15-1		680	
КЦО-1		Support slab КЦО-1		50	
КЦД-15		Bottom plate КЦД-15		950	
		Cast iron Type T manhole cover, complete with flange		134	
ЛС-1		Ladder			
		Waterproofing of exterior surfaces (item 5)		—	8.48 m ²
		Waterproofing of the interior surface (item 5)		—	1.77 m ²

*) The concrete class is specified in accordance with DBN V.2.6-98:2009.

**) Construction of a well in challenging engineering-geological conditions (settling soils)



General Guidelines

1. Apply two coats of anti-corrosion varnish to the metal parts of the well.
2. Perform formwork, reinforcement, and concrete work in accordance with the requirements of DBN V.2.6-98:2009.
3. Formwork prepared for concrete pouring and installed reinforcement must be accepted with the preparation of inspection reports.
4. Lay the manhole cover slabs on a layer of M100 cement mortar.
5. Treat the outer surface of the ring walls and manhole cover slabs, as well as the inner surface of the manhole bottoms, twice (2.5 mm x 2 layers) with Ceresit CR 65 mastic.
6. Backfill the voids with local soil in layers of 15–20 cm, compacting the soil to a density of $\gamma_{sk} = 1.65 \text{ g/cm}^3$.
7. Install the Ladder stairs in accordance with series 3.900.1-14, issue 1, sheet 45 (DSTU B V.2.6-2-95). Fastening is performed using embedded parts in the walls of the reinforced concrete rings.

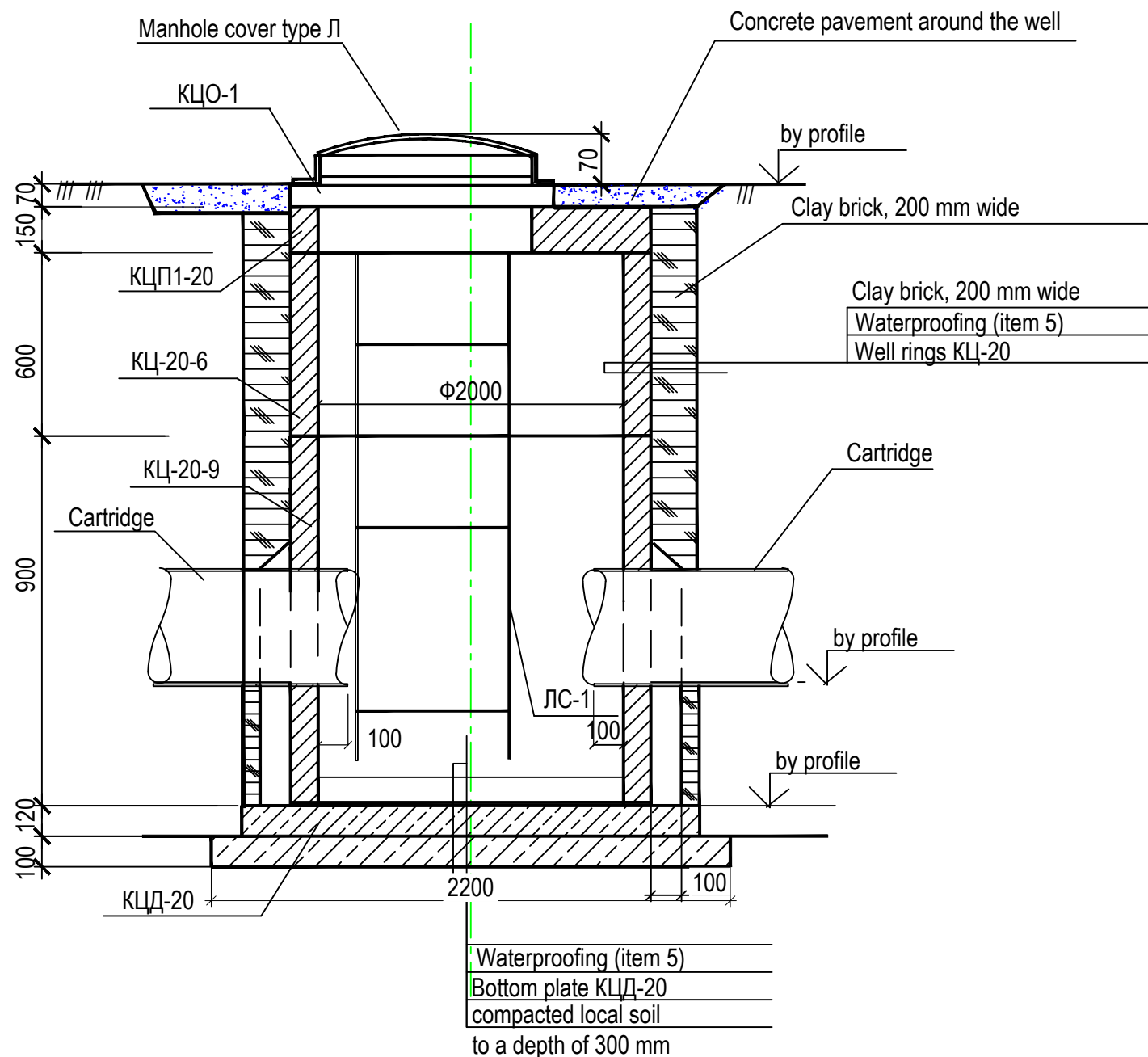
Changes						922-07/25 - 3В		
Quantity	Sheet	No Doc.	Signature	Date	"Reconstruction of the water supply system to provide water to settlements of the Sofiivka territorial community of the Bashtansky district of the Mykolaiv region." Adjustment			
Chief Project Engineer	Khyzhniakova		<i>[Signature]</i>	04.26	External water supply. First stage of construction	Stage	Sheet	Sheets
Developed	Simak		<i>[Signature]</i>	04.26		РП	12	
Verified	Khyzhniakova		<i>[Signature]</i>	04.26	Detailed drawing of the planned manhole Ø1500	LLC "Dniprovskiy proektno-vyshukovalnyi institut "DPVI"		
Regulatory control	Valoboev		<i>[Signature]</i>	04.26				

Погоджено:	
Зам. інв. №	
Підпис і дата	
Інв. № ор.	

**Detailing of the designed well Ø2000
(neck in the green area)**

Specification of reinforced concrete products and statement of work scope

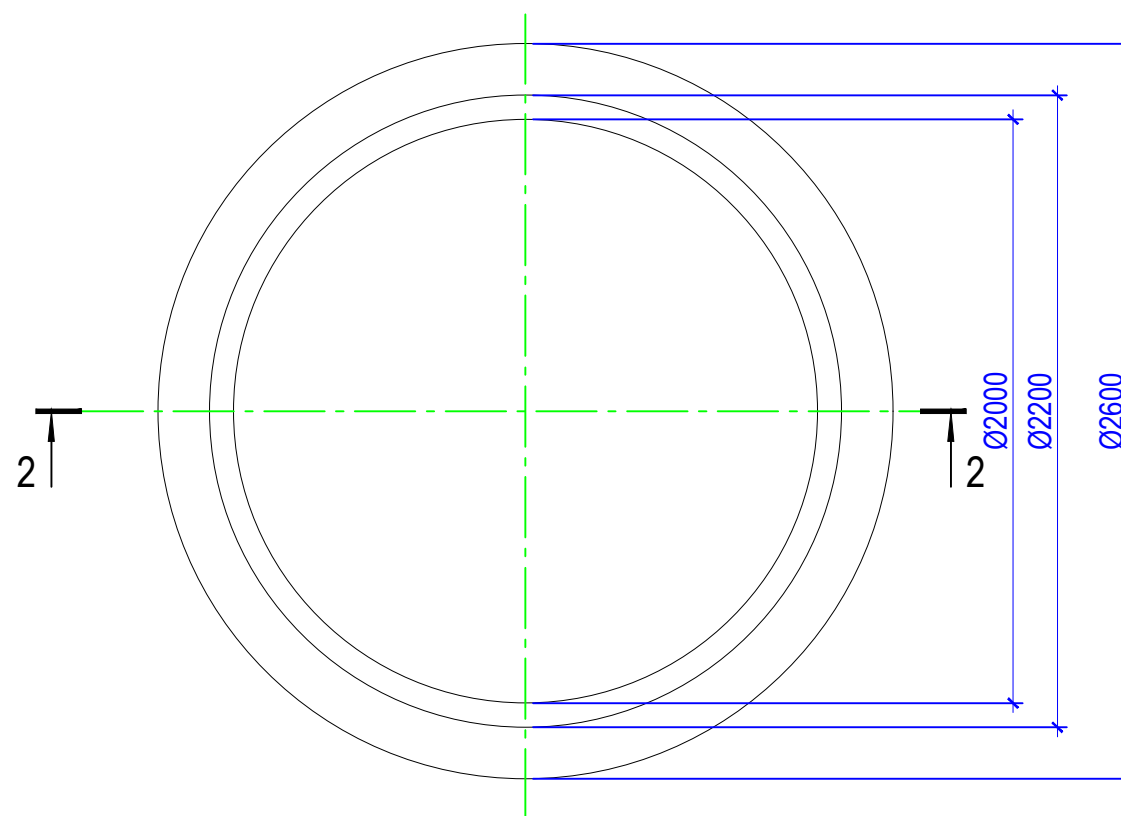
Section 2 - 2



Brand, pos.	Designation	Name	Quantity, pcs.	Unit weight, kg	Note
КЦ-20-6	DSTU B V.2.6-106:2010	Well rings КЦ-20-6	Див. арк. 3В-27	1000	
КЦ-20-9		Well rings КЦ-20-9		1480	
ПП20-1		Well cover ПП20-1		1290	
КЦО-1		Support slab КЦО-1		50	
КЦД-20		Bottom plate КЦД-20		1500	
		Cast iron Type Л manhole cover, complete with flange		134	
ЛС-1		Ladder			
		Waterproofing of exterior surfaces (item 5)		—	11.31 m2
		Waterproofing of the interior surface (item 5)		—	3.14 m2

*) The concrete class is specified in accordance with DBN V.2.6-98:2009.

**) Construction of a well in challenging engineering-geological conditions (settling soils)



General Guidelines

1. Apply two coats of anti-corrosion varnish to the metal parts of the well.
2. Perform formwork, reinforcement, and concrete work in accordance with the requirements of DBN V.2.6-98:2009.
3. Formwork prepared for concrete pouring and installed reinforcement must be accepted with the preparation of inspection reports.
4. Lay the manhole cover slabs on a layer of M100 cement mortar.
5. Treat the outer surface of the ring walls and manhole cover slabs, as well as the inner surface of the manhole bottoms, twice (2.5 mm x 2 layers) with Ceresit CR 65 mastic.
6. Backfill the voids with local soil in layers of 15–20 cm, compacting the soil to a density of $\gamma_{sk} = 1.65 \text{ g/cm}^3$.
7. Install the Ladder stairs in accordance with series 3.900.1-14, issue 1, sheet 45 (DSTU B V.2.6-2-95). Fastening is performed using embedded parts in the walls of the reinforced concrete rings.

922-07/25 - 3B					
"Reconstruction of the water supply system to provide water to settlements of the Sofiivka territorial community of the Bashtansky district of the Mykolaiv region." Adjustment					
Changes	Quantity	Sheet	No Doc.	Signature	Date
Chief Project Engineer	Khyzhniakova	<i>[Signature]</i>			04.26
Developed	Simak	<i>[Signature]</i>			04.26
Verified	Khyzhniakova	<i>[Signature]</i>			04.26
Regulatory control	Valoboiev	<i>[Signature]</i>			04.26
External water supply. First stage of construction				Stage	Sheet
				РП	13
Detailed drawing of the planned manhole Ø2000				LLC "Dniprovskiy proektno-vyshukovalnyi institut "DPVI"	

Погоджено:	
Зам. інв. №	
Підпис і дата	
Інв. № ор.	

List of working drawings for the main set

Sheet	Name	Note
1	General data (beginning)	
2	General data (end)	
3	Plan of the engine room at elevation -2.400	
4	Section 1 - 1	
5	Axonometric diagram of process pipelines	
6	Detailing of the fire hydrant set	New

List of referenced documents

Marking	Name	Note
ДБН А.2.2-3-2014	Composition and content of design documentation for construction	
ДБН В.2.5.-64-2012	Internal water supply and sewage. Part 1 and Part 2	
ДБН В.2.5-74:2013	Water supply. External networks and structures.	
	Basic design provisions	
ДСТУ Б А.2.4-31:2008	Water supply and sewage. External networks. Working drawings	
ДСТУ Б А.2.4-10:2009	Rules for the implementation of specifications, equipment, products and materials	

Key project indicators

System name	Calculated water flow			Note
	m ³ /day	m ³ /hour	l/s	
Water flow		106.33	29.54	

List of attached documents

Marking	Name	Note
922-07/25-TX.BK.C	Equipment and materials specification	2 sheets

Погоджено:

Зам. інв. №
Підпис і дата
Інв. № ор.

922-07/25 - TX.BK					
"Реконструкція Казанківського групового водопроводу з метою забезпечення населених пунктів Софіївської територіальної громади Баштанського району Миколаївської області.					
Зм.	Кільк.	Арк.	Недок.	Підпис	Дата
ГІП		Хижнякова		<i>[Signature]</i>	04.26
Розробив		Сімак		<i>[Signature]</i>	04.26
Перевірив		Хижнякова		<i>[Signature]</i>	04.26
Н.контр.		Валобоев		<i>[Signature]</i>	04.26
				Зовнішній водопровід	Стадія РП
				Загальні дані (початок)	Аркуш 1
				ТОВ "Дніпровський проектно-вишукувальний інститут "ДПВІ"	

Pumping station of the 2nd rise





1. Based on an analysis of the data and the requirements of DBN V.2.5-74:2013, the designed pumping station falls into the first category of operational reliability.
2. The above-ground pumping station has a rectangular floor plan measuring 60.0 x 18.0 m; the pump room measures 55.6 x 6.0 m at elevation -2.400.
3. To supply water through the water main at the existing second-stage pumping station of the Kazankivskyi group water main, two CNS 105-196 pump units (one standby) are being installed, which will ensure the supply of the design water volume during the maximum water supply period of 106.33 m³/h.
4. The existing water storage tanks serve as the water supply source. 5. This project has decided to install two main CNS pump units 6. The maximum design flow rate of the pump is 106.33 m³/h, with a head of 196 m water column, which ensures water supply to populated areas.
7. Multistage centrifugal pumps are installed horizontally on the existing foundation.
8. The pumps are equipped with variable-speed drives to reduce pressure and flow rate when daily water withdrawals decrease. Water is supplied to the water mains 24 hours a day. 9. When water consumption drops to 20 m³/h, the pump units shut down, and they are subsequently restarted either automatically or by maintenance personnel. 10. The pumping station uses a single-row pump layout, with the longitudinal axis of the pumps perpendicular to the wall. The pumps are installed below the water level, and each pump has its own suction pipe connected to a common manifold. Shut-off valves are installed on the suction lines of each pump.
11. The discharge pipes are connected to a common manifold, which is elevated above the level of the pumps. The discharge pipes are connected to the manifold from the side along their axes. This prevents clogging of the risers of pumps that are not in operation.
12. There are two suction pipes.
13. Manually operated gate valves from the manufacturer are installed on the suction pipelines from each pump. Gate valves and check valves are installed on the discharge pipelines.
14. When transitioning from one diameter to another on horizontal sections of the suction pipelines, eccentric reducers with a horizontal upper section are provided.
15. The diameters of the suction and discharge pipelines are selected in accordance with flow rates and permissible water velocities as specified in DBN V.2.5-74:2013.
16. Intra-station pipes are fabricated from steel pipes in accordance with GOST 10704-91 * using welding.
17. A gate valve is provided in the discharge and suction manifolds for draining water during repair work. Water is discharged into the existing drainage pit and subsequently removed by a drainage pump.

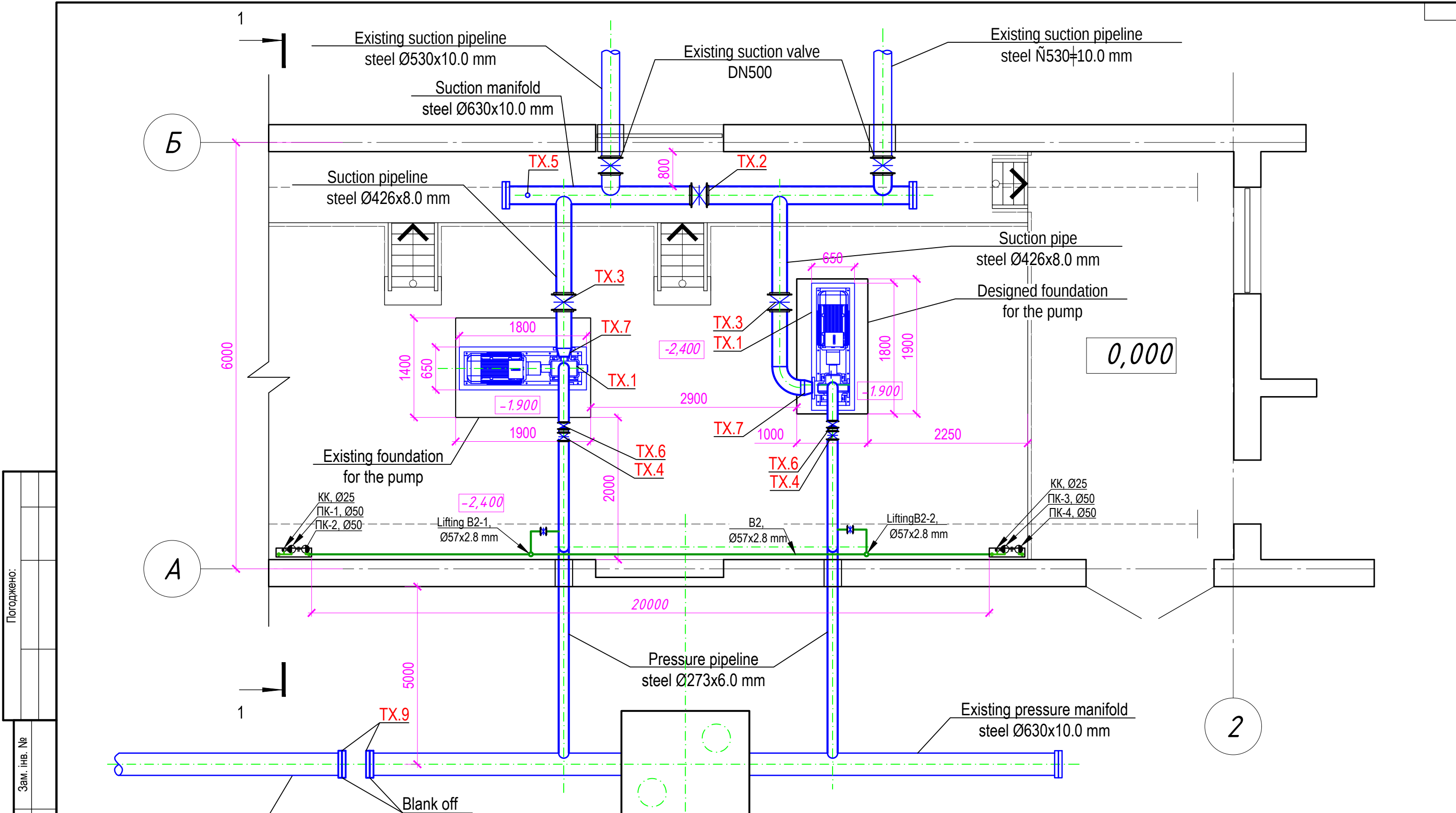
18. The pump station building shall be equipped with general, emergency, and maintenance lighting, as well as a telephone system.
19. Paint the pipelines with two coats of PF-115 enamel over a primer coat of GF-021.
20. Apply the standard color coding to the pipelines in accordance with GOST 14202-69.

Internal Fire Water Supply System

1. An internal fire suppression system is provided for in the pumping station building.
2. The water flow rate for fire suppression is determined in accordance with DBN V.2.5-74:2012 and consists of two streams at 2.5 L/s each.
3. Fire hydrants are located at a height of 1.35 m above floor level.
4. In the building's fire hydrant cabinet enclosures, in addition to housing a 50-mm-diameter fire hydrant assembly, manufactured in accordance with DSTU 4401-2, the cabinets are equipped with a 25 mm diameter fire hydrant assembly, assembled in accordance with DSTU 4401-1, as primary fire extinguishing equipment, and a space for two portable fire extinguishers.
5. For the internal fire water supply system (basement piping, fire risers), galvanized steel water and gas pipes are used in accordance with Technical Specifications U 73086.92-001-93.

Погоджено:		
Зам. інв. №		
Підпис і дата		
Інв. № ор.		

						922-07/25 - ТХ.ВК			
						Реконструкція Казанківського групового водопроводу з метою забезпечення населених пунктів Софіївської територіальної громади Баштанського району Миколаївської області.			
Зм.	Кільк.	Арк.	Недок.	Підпис	Дата	Зовнішній водопровід	Стадія	Аркуш	Аркушів
							РП	2	
ГІП		Хижнякова			04.26	Загальні дані (закінчення)	ТОВ "Дніпровський проектно-вишукувальний інститут "ДПВІ"		
Розробив		Сімак			04.26				
Перевірив		Хижнякова			04.26				
Н.контр.		Валобоев			04.26				



Погоджено:	
Зам. інв. №	
Підпис і дата	
Інв. № ор.	

Зм.	Кільк.	Арк.	Недок.	Підпис	Дата
ГІП		Хижнякова		<i>[Signature]</i>	04.26
Розробив		Сімак		<i>[Signature]</i>	04.26
Перевірив		Хижнякова		<i>[Signature]</i>	04.26
Н.контр.		Валобоев		<i>[Signature]</i>	04.26

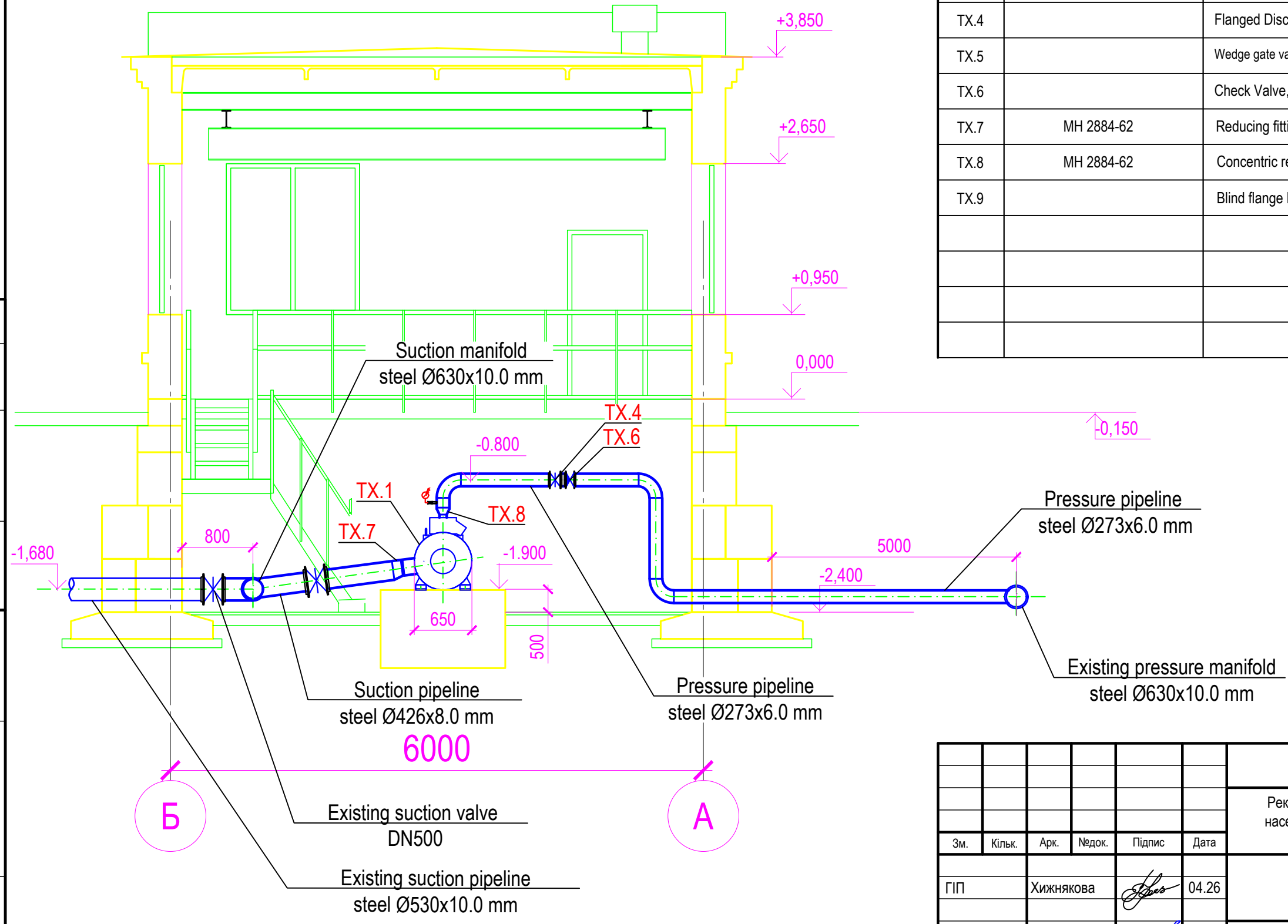
922-07/25 - ТХ.ВК		
Реконструкція Казанківського групового водопроводу з метою забезпечення населених пунктів Софіївської територіальної громади Баштанського району Миколаївської області.		
Зовнішній водопровід	РП	3
План машинного залу на відм. -2.400		ТОВ "Дніпровський проектно-вишукувальний інститут "ДПВІ"

Проектована камера із водомірним вузлом (далі див. розділ 2129-00-3В)

Section 1 - 1

Explication of equipment

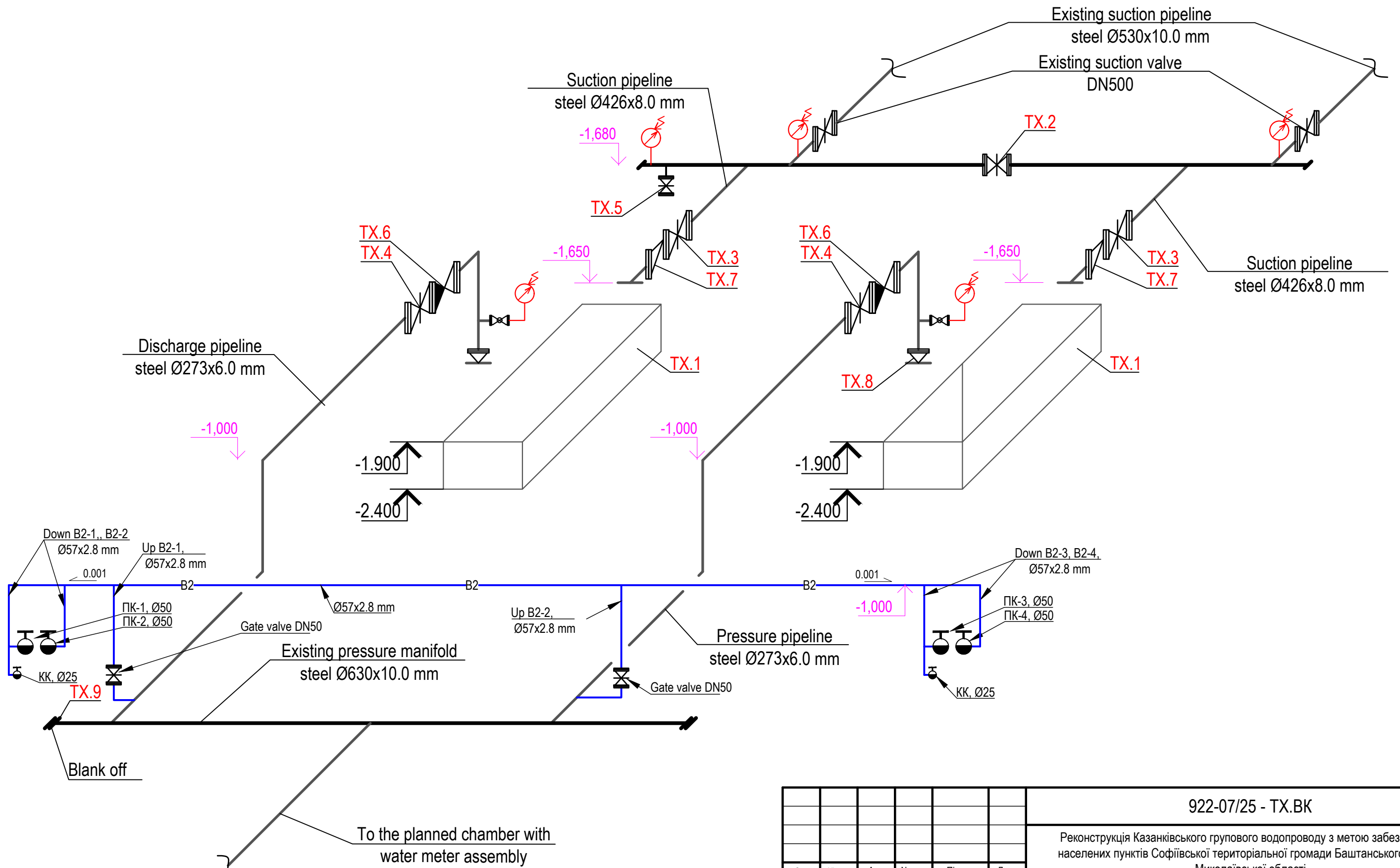
Pos/ Position	Notation	Name	Qty/ Quantity	Note
TX.1	Pump ЦНЧ(Г) 105-196	Electric water supply pump, flow rate: 106.33 m³/h, pressure: 1.96 MPa	2	
TX.2		Wedge-gate flanged valve, DN600, 1.6 MPa	1	
TX.3		Wedge-gate flanged valve, DN400, 1.6 MPa	2	
TX.4		Flanged Disc Valve, DN250 2.5 MPa	2	
TX.5		Wedge gate valve, flanged, rated pressure DN100 1.6 MPa (for drainage)	1	
TX.6		Check Valve, DN250, 2.5 MPa	2	
TX.7	MH 2884-62	Reducing fitting Ø426/125	2	
TX.8	MH 2884-62	Concentric reducer Ø273/125	2	
TX.9		Blind flange DN600	2	



Погоджено:	
Зам. інв. №	
Підпис і дата	
Інв. № ор.	

						922-07/25 - ТХ.ВК			
						Реконструкція Казанківського групового водопроводу з метою забезпечення населених пунктів Софіївської територіальної громади Баштанського району Миколаївської області.			
Зм.	Кільк.	Арк.	Недок.	Підпис	Дата	Зовнішній водопровід	Стадія	Аркуш	Аркушів
ГІП		Хижнякова		<i>[Signature]</i>	04.26		РП	4	
Розробив		Сімак		<i>[Signature]</i>	04.26	Розріз 1 - 1	ТОВ "Дніпровський проектно-вишукувальний інститут "ДПВІ"		
Перевірив		Хижнякова		<i>[Signature]</i>	04.26				
Н.контр.		Валобоев		<i>[Signature]</i>	04.26				

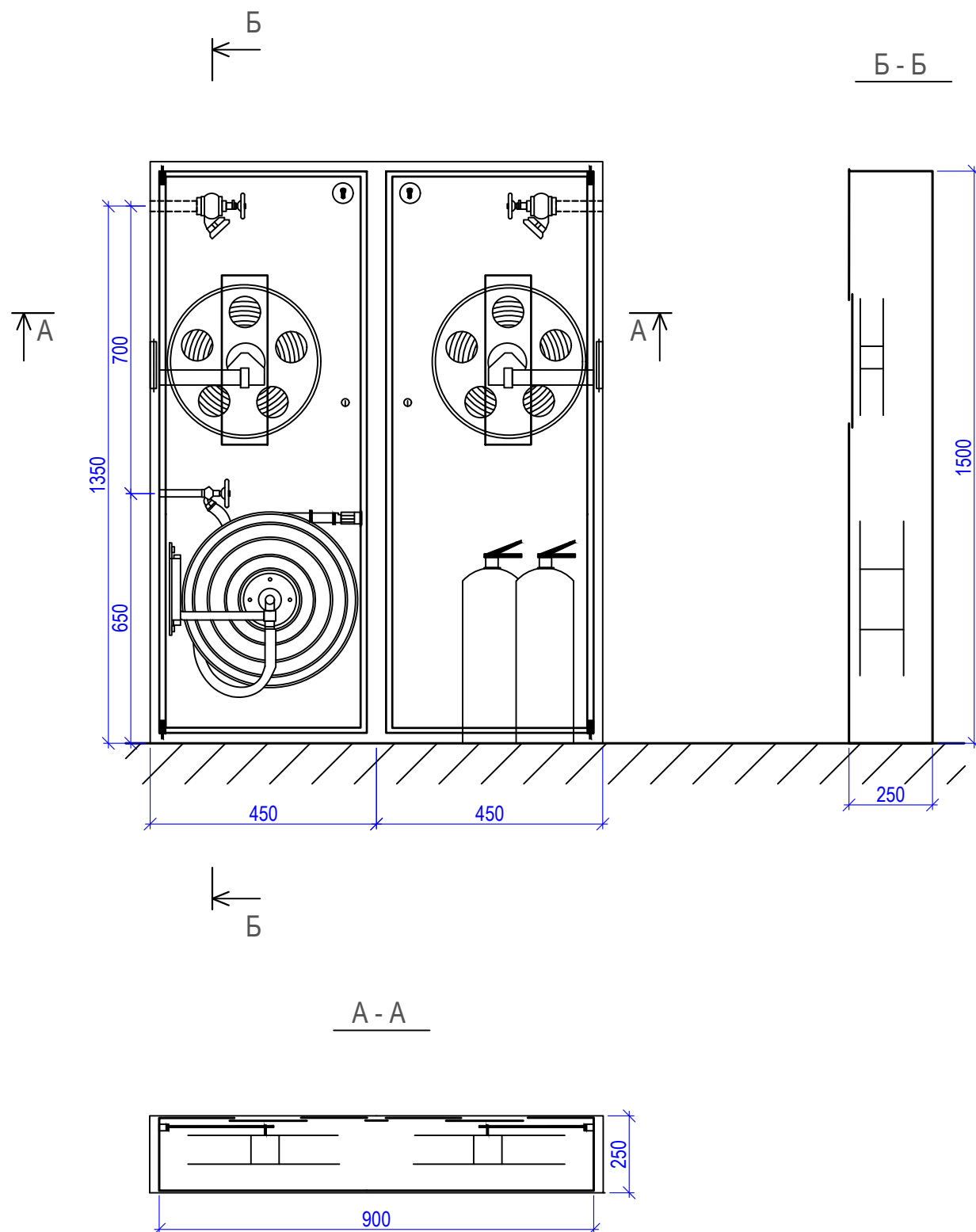
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Зам. інв. №	
Підпис і дата	
Інв. № ор.	



						922-07/25 - ТХ.ВК			
						Реконструкція Казанківського групового водопроводу з метою забезпечення населених пунктів Софіївської територіальної громади Баштанського району Миколаївської області.			
Зм.	Кільк.	Арк.	Недок.	Підпис	Дата	Зовнішній водопровід	Стадія	Аркуш	Аркушів
ГІП		Хижнякова		<i>[Signature]</i>	04.26		РП	5	
Розробив		Сімак		<i>[Signature]</i>	04.26	Аксометрична схема технологічних трубопроводів	ТОВ "Дніпровський проектно-вишукувальний інститут "ДПВІ"		
Перевірив		Хижнякова		<i>[Signature]</i>	04.26				
Н.контр.		Валобоев		<i>[Signature]</i>	04.26				

Detailing of the HW25-52NKV-2.2 fire hose reel assembly

Specification



Nen/n	Name	Unit of measurement	Quantity
	HW25-52NKV-2.2 fire hose reel set for two DN50 fire hydrants and a DN25 fire hose reel set, comprising:	set	1
1	HW25-52NKV-2.2 Wall-Mounted Fire Cabinet - (900 x 1500 x 250 mm)	pcs.	1
2	Reel for flat-wound hose	pcs.	2
3	Coupling DN50	pcs.	2
4	Bronze angle fire valve, DN 50, with fire hydrant position sensor (FHPS)	pcs.	2
5	Coupling Head GM-50	pcs.	2
6	Latex fire hose, D-66 mm, length 20 m	pcs.	2
7	Hose Coupling Head GM-50	pcs.	4
8	PWH-52 fire hose, 50 mm diameter, with a 16 mm coupling	pcs.	2
9	GC-50 Coupling Head	pcs.	2
10	Fire hydrant set, DN 25, consisting of: - Reel for semi-rigid hose - Bronze angle fire valve DN 25 with fire hydrant position sensor (DPPK) - hose coupling DN-25 - semi-rigid hose DN-25 mm, length L=20 m - shut-off valve DN-25/D10	pcs.	1
11	COMK-1-8 Door Opening Sensor (magnetic security alarm)	pcs.	2
12	Fire Hydrant Control Unit	pcs.	1
13	VP-5 Fire Extinguisher	pcs.	2

Погоджено:

Зам. інв. №

Підпис і дата

Інв. № ор.

Зм.	Кільк.	Арк.	Недок.	Підпис	Дата	922-07/25 - ТХ.ВК			
1	3			<i>[Signature]</i>	08.25	Реконструкція Казанківського групового водопроводу з метою забезпечення населених пунктів Софіївської територіальної громади Баштанського району Миколаївської області.			
ГІП Хижнякова <i>[Signature]</i> 04.26						Зовнішній водопровід	Стадія	Аркуш	Аркушів
							РП	6н	
Розробив Сімак <i>[Signature]</i> 04.26						Деталювання пожежного кран-комплекту HW25-52NKV-2.2	ТОВ "Дніпровський проектно-вишукувальний інститут "ДПВІ"		
Перевірив Хижнякова <i>[Signature]</i> 04.26									
Н.контр. Валобоев <i>[Signature]</i> 04.26									

Item No.	Name and technical specification	Name of the document	Code of the equipment, product, material	Factory manufacturer	Unit of measurement	Quantity	Unit weight, kg	Notes
1	2	3	4	5	6	7	8	9
<u>Pumping station</u>								
TX.1	Electric water supply pump, flow rate 106,33m ³ /h, pressure 1,96MPa			PUMP ЦНС(Г) 105-196		2	1610 kg	
TX.2	Wedge gate valve, flanged, DN600, 1.6 MPa	06/30		AVK		1	762 kg	
TX.3	Wedge-gate flanged valve, DN400, 1.6 MPa	06/30		AVK		2	240 kg	
TX.4	Flanged Disc Valve, DN250 2.5 MPa	02/67		AVK		2	110 kg	
TX.5	Wedge gate valve, flanged, rated pressure DN100 1.6 MPa (for drainage)	06/30		AVK		1	17 kg	
TX.6	Check Valve, DN250, 2.5 MPa	903/20		AVK		2	77 kg	
TX.7	Reducing fitting Ø426/125			MH 2884-62		2	27.7 kg	
TX.8	Concentric reducer Ø273/125			MH 2884-62		2	18 kg	
TX.9	Blind flange DN600	603/A		AVK		2	84.7 kg	
6/н	Electric-welded steel pipes Ø630x10	DSTU 8943:2019			m	10.0	152.9 kg	
6/н	Electric-welded steel pipes Ø530x10	DSTU 8943:2019			m	2.0	128.2 kg	
6/н	Electric-welded steel pipes Ø426x10	DSTU 8943:2019			m	10.0	102.59 kg	
6/н	Electric-welded steel pipes Ø273x9	DSTU 8943:2019			m	16.0	58.60 kg	
6/н	Flange for steel pipe DN100, Py 1.6 MPa	603/A		AVK	pcs	2	8.7 kg	
6/н	Flange for steel pipe DN250, Py 1.6 MPa	603/A		AVK	pcs	8	19 kg	
6/н	Flange for steel pipe DN400, Py 1.6 MPa	603/A		AVK	pcs	4	35 kg	
6/н	Flange for steel pipe DN600, Py 1.6 MPa	603/A		AVK	pcs	2	54 kg	
<u>Fire-fighting water supply system B2</u>								
1	Enamelled steel pipe, Ø57x2.8	ТУ У 73086.92-001-93			m	40		
2	Cast iron wedge gate valve, flanged, PN 1.6 MPa, DN50				pcs	2		

Погоджено:

Зам. інв. №

Підпис і дата

Інв. № ор.

						922-07/25 - ТХ.ВК.С				
						Реконструкція Казанківського групового водопроводу з метою забезпечення населених пунктів Софіївської територіальної громади Баштанського району Миколаївської області.				
Зм.	Кільк.	Арк.	Недок.	Підпис	Дата	Зовнішній водопровід		Стадія	Аркуш	Аркушів
				<i>[Signature]</i>	04.26			РП	1	2
ГІП	Хижнякова			<i>[Signature]</i>	04.26	Специфікація обладнання та матеріалів		ТОВ "Дніпровський проектно-вишукувальний інститут "ДПВІ"		
Розробив	Сімак			<i>[Signature]</i>	04.26					
Перевірив	Хижнякова			<i>[Signature]</i>	04.26					
Н.контр.	Валобоев			<i>[Signature]</i>	04.26					

Item	Name and technical specifications	Type, brand, document reference, questionnaire	Equipment, product and material codes	Manufacturer	Unit of measurement	Quantity	Unit weight	Notes
1	2	3	4	5	6	7	8	9
3	Primer in 1 coat				kg	0.788		
4	Oil-based paint for steel pipes (2 coats)				kg	2.836		
	<u>Specification of a fire cabinet for two fire hydrants</u>							
1	HW-25-52NKV-2.2 fire hose reel set for two fire hydrants DN=50 and a hydrant set DN=25, comprising:			'New Fire Technologies'	set	2		
1.1	Built-in cabinet HW-25-52Wkd (900×1500×250 mm)				pc	1		
1.2	Reel for flat-wound hose				pcs	2		
1.3	Connecting coupling, DN=50				pcs	2		
1.4	Bronze angle fire valve, DN=50, with fire hydrant position sensor				pcs.	2		
1.5	GM-50 coupling connector head				pcs	2		
1.6	D-66 latex fire hose, l=20m				pcs	2		
1.7	GM-50 hose coupling head				pcs	4		
1.8	PWH-52 shut-off fire hose, DN=50 with 16 mm coupling				pcs.	2		
1.9	GTC-70 coupling head				pcs	2		
1.10	Fire hose reel set DN=25 comprising: -reel for semi-rigid hose - bronze angle fire valve DN=25 with sensor fire hydrant position (DPPK) -hose nozzle DN=25 -semi-rigid hose, 25 mm diameter, 20 m long - DN-25/D10 shut-off valve				pcs	1		
1.11	COMK 1-8 door opening sensor (alarm magnetic security contact)				pcs.	2		
1.12	Fire hydrant control unit (FHCU)				pcs	1		
1.13	Вогнегасник ВГ-5				pcs	2		

Approved by:

Inventory No.

Signature and date

Inventory No. (Original)

Power supply.

The existing power supply to the pumping station is provided from the transformer substation (ТП) via overhead busbars with a cross-section of 70×100 mm².

According to the initial data from the State Agency of Water Resources of Ukraine, the Regional Water Resources Office in Mykolaiv Oblast, and the Novobuzke Inter-district Water Management Administration No. 198/01 dated 06/11/2020 At the treatment plant site – at the second-stage pumping station in the village of Sofiivka – there is a TM-10/04 630 kVA transformer substation; the maximum design (forecast) load, taking into account the existing permitted capacity, is 530 kW. Idle losses amount to 1,680 kW/month. The available capacity for the needs of the Yelanets district is 230 kW.

The electricity supply is provided in accordance with the electricity supply contract with JSC 'Mykolaivoblenergo' within the limits of the permitted capacity.

Power electrical equipment.

The pump control panel is installed in the existing building of the second-stage pumping station in the electrical room. The designed pumps belong to the third category of power supply reliability.

Working and emergency lighting in the pumping station is existing.

Install the designed pump control panel (PCP) next to the existing GRSh1 input panel of the pumping station to supply the designed pumps.

Power supply to electrical loads is provided from the ~380 V mains with a TN-C-S earthing system. The PEN conductor is split into PE and N conductors in the GRShch1 pump station input panel. The mains supply voltage is 380 V.




Additional rated power of the pumping station: P_r = 110 kW, I_r = 205 A. Annual electricity consumption is 640,000 kWh.

A 'Standard AKN-2-110' type panel with frequency converters, input and output chokes, automatic reserve activation, dry-running protection (when pressure drops below 20 bar), flow control (shutdown when flow drops below 8 l/s, automatic restart after 25 minutes), thermal protection of the pumps, pump control via pressure sensors, and remote data transmission via a GSM modem.

Reactive power compensation is provided using existing capacitor banks, which are retrofitted with a 12-step reactive power regulator (reactive power compensation controller).

The equipment installed in the switchboards can be replaced with equivalent equipment from other manufacturers.

Power distribution networks are installed using AVVGngd cable, laid openly along walls on brackets or in metal trays, with connections to equipment made using flexible metal conduits.

Inv. No. of original	Signature and date	Deputy Inv. No.	922-07/25-ETP								
			'Reconstruction of the Kazankivskiyi group water supply system to supply settlements in the Sofiivska territorial community of the Bashtanka district, Mykolaiv region'. Adjustment								
			Change No.	Sheet	Doc. No.	Signature	Date	Electrical engineering solutions.	Stage	Sheet	Sheets
			Розробив	Шевченко			07.2025		RP	2	
			Перевірів	Хижнякова			07.2025	Explanatory notes to the project (beginning)	ТОВ "Дніпровський проєктно-вишукувальний інститут "ДПВІ"		
			ГП	Хижнякова			07.2025				
			Н. контр	Волобоев			07.2025				

Automation.

Pump automation.

Pump automation is implemented by the "Standard AKH-2-110" pump control unit using pressure sensors and relays a lock.

This cabinet ensures the operation of (2) pumping units.

The control cabinet consists of distribution and protection devices, switching devices (frequency converters, contactors), control and phases, impermissibly low/high voltage in phases, phase sequence violation.

Control is provided in automatic mode via a controller and in manual mode via buttons

"Start", "Stop".

Equipment:

- Multifunctional microprocessor controller;
- Built-in multimeter for monitoring electrical parameters of pumps;
- Keypad for device programming;
- Wide range of algorithms for various systems and sensor types
- 60 programmable parameters
- 2 frequency converter modules
- 4 inputs for connecting sensors (dry contact, wet contact)
- One input for sensor 4-20mA
- Two inputs for sensors WSK/PTC
- 2 inputs for connecting differential pressure relay sensors or oil chamber leak sensors
- Display (status) (of) (sensors)
- 4-digit digital seven-segment display for displaying information about the system
- LED indication of operating and fault
- LED 'dry run' indicator for pumps
- LED indicator warning for voltage
- LED indicator fault (current) for each pump
- LED indicator (for faults) related to pressure drop (or) leakage in the (oil) chamber
- The ability to adjust the device's phase via software
- Automatic restart of the pump following an emergency shutdown
- Two programmable relay emergency
- (Mode) selection (button) Man/Auto
- Pump start buttons in manual mode for each pump
- Main switch with door lock (function)
- Metal housing with powder coating, IP54
- Cable glands for cable connection
- Port RS485 (optional).

The following control and signalling devices are located on the front panel of the cabinet:

- Controller panel
- indicator showing the presence of cabinet power supply "Power".
- "Fault" fault indicator,
- pressure alarms (minimum, maximum, emergency),
- "Start-Stop" control buttons,
- emergency stop button: mushroom-shaped red stop button with lock,
- "Manual/Auto" control mode selector switches. Modes and description of operation:

The electric drive control mode is set by the position of the switch:

- "Manual control" mode.

When the switch is set to the "Manual" position, control is carried out using the start-stop buttons via direct start from the mains

- "Automatic control" mode

When the switch is set to the "Auto" position, the pump units are controlled by pressure.

The cabinet ensures emergency shutdown of the pump unit at any time by cutting the power to the electric motor when the protocol the mushroom-shaped red stop button with

- "Fault" mode – the cabinet's operating mode in the following cases when protection devices are triggered:
- Electronic protection of pumps against faults in the power supply network: open circuit in one or two phases, unacceptable phase imbalance alarm. voltage in
- Protection of pumps against short circuits on the device-pump line.
- Electronic protection of pumps against current overloads with a reverse-proportional current characteristic.
- Pump dry-run protection: electronic (based on power factor and minimum current) or via a signal from an external sensor.
- Protection of pump electric motors against overheating based on signals from built-in WSK/PTC sensors.
- Protection of pumps against pressure drops.

Water metering.

This system automates the transmission of water consumption readings to the centralised monitoring station at the water utility.

Readings are taken using a MagFlux electromagnetic flow meter.

Features of MagFlux flow meters:

- Data (datalogger):

MagFlux displays have built-in flash memory for recording and storing data on flow rate and cumulative volume up to 360,000 records, sorted by date and time. The data is displayed graphically on the screen and can also be exported to a PC via a USB port.

- Easy-to-use Field Link software:

Connecting the flow meter to a computer using MJK-Field Link software allows not only export archive data to a PC, but also to import new software updates into MagFlux. Everything is organised via intuitive steps and a standard USB port.

- Multifunction inputs and outputs:

The MagFlux converter has one active analogue output (4–20 mA), two digital outputs and one digital input. Digital input can stop or reset the settings of the built-in counters, as well as control the dosing counters.

- Automatic cleaning of electrodes:









MagFlux electromagnetic flowmeters are equipped with an automatic electronic electrode cleaning function that continuously active.

- Modbus communication protocol:

The MagFlux display and converter use the Modbus digital communication protocol for both internal communication and any device on the external network.

Inv. No. of original	Signature and date	Invoice No.	922-07/25-ETP									
			'Reconstruction of the Kazankivskiy group water supply system to supply settlements in the Sofiivska territorial community, Bashtanskiy District, Mykolaiv Oblast'. Adjustment									
			Change No.	Sheet	Doc. No.	Signature	Date	Electrical engineering solutions.	Stage	Sheet	Sheets	
			Розробив	Шевченко			07.2025					RP
			Перевірив	Хижнякова			07.2025		TOB "Дніпровський проєктно-вишукувальний інститут "ДПВІ"			
			ГП	Хижнякова			07.2025					Explanatory notes to the project (conclusion)
			Н. контр	Волобоєв			07.2025					

Legend:

-  - power distribution board;
-  - pump control panel;
-  - control unit;
-  - sensor;
-  - pump motor;
- H1
110 - equipment designation;
-  - building power supply networks;
-  - building automation networks;
-  - automation networks;




LIST OF CERTIFICATES FOR CONCEALED WORKS

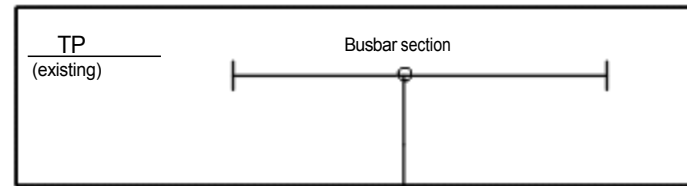
No.	TYPES OF WORK	
1	Certificate for pre-installation work on electrical equipment	+
2	Certificate of technical readiness of electrical equipment for comprehensive testing	+
3	Certificate of acceptance of commissioning works	+
4	Certificate for concealed work on the installation of earthing devices	+
5	Certificate for concealed cable laying works	+
6	Inspection report on the condition of cables on reels	+

Key technical and economic indicators

No.	Name	Symbol	Unit of measurement	Quantity	Note
1	Rated power consumption	P	kW	110	
2	Rated current	Ip	A	205	
3	Supply voltage	U	B	380	
4	Annual electricity consumption	-	thousand kWh	640	

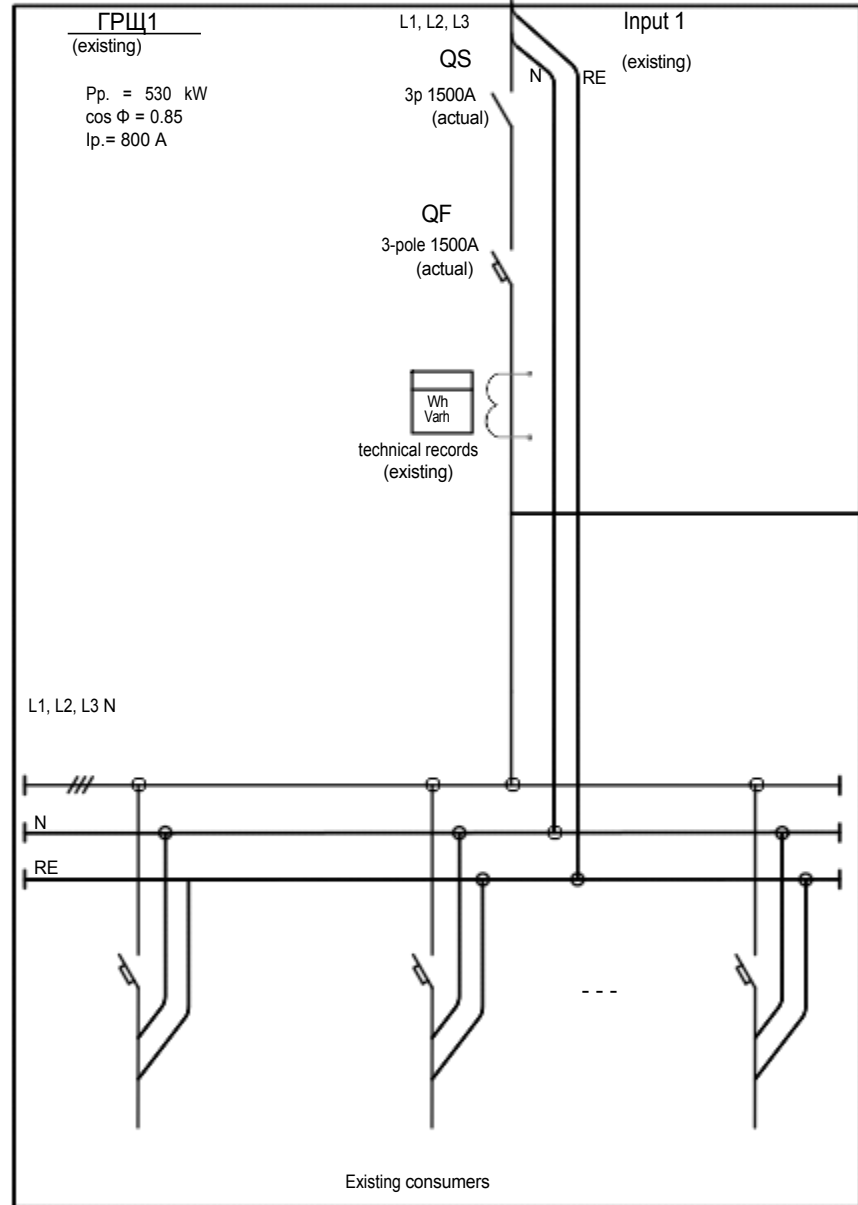
Original inv. no.	Deputy inv. No.
Signature and date	

						922-07/25-ETP			
						'Reconstruction of the Kazankivskiy group water supply system to supply settlements in the Sofiivska territorial community, Bashtanka district, Mykolaiv region'. Adjustment			
Change	No.	Sheet	No.	Signature	Date	Electrical engineering solutions.	Stage	Sheet	Sheets
Розробив		Шевченко			07.2025		RP	4	
Перевірів		Хижнякова			07.2025				
ГІП		Хижнякова			07.2025				
Н. контр		Волобоев			07.2025	List of certificates for concealed works. Legend.	ТОВ "Дніпровський проектно-вишукувальний інститут "ДПВІ"		



Input from TP (existing)
70x100 mm² busbar

L1, L2, L3, N, PE



ГРЩ1 (existing)
Pp. = 530 kW
cos φ = 0.85
Ip. = 800 A

QS
3p 1500A (actual)

QF
3-pole 1500A (actual)

Wh
Vah
technical records (existing)

Input 1 (existing)

П-ЩУН 110-205-3-330-0.1
АВВГнгд 5x120; г.г. 78-12м



ЩУН (design)
Rst. = 220 kW Rr. = 110 kW
I_r = 205 A

Existing consumers

Key to the labels on the diagram:

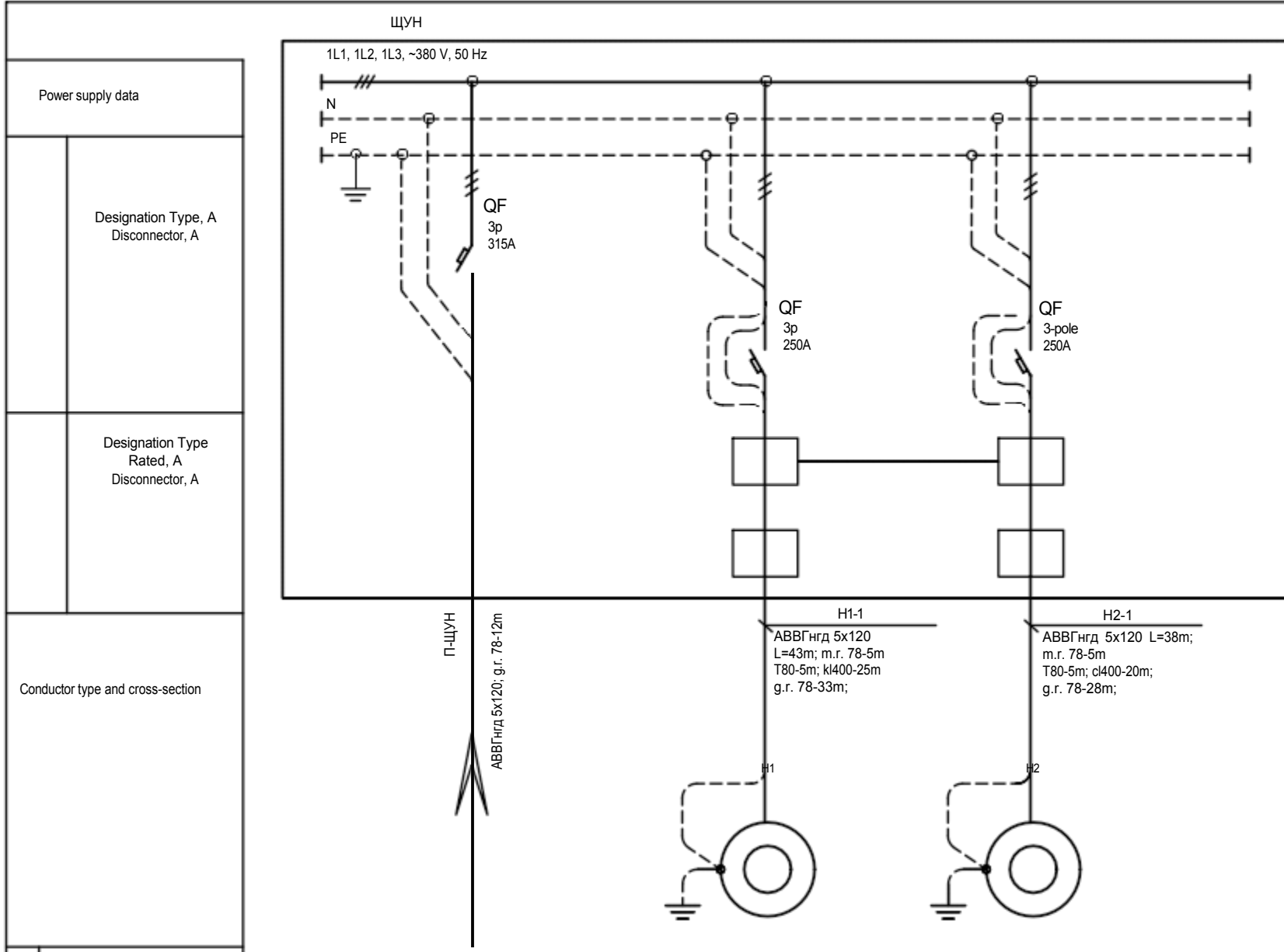
N live lines	Rp kW	I _r A	Lpr m	M = PpxL kW·h	Δ U %
Brand, wire cross-section			Installation method		

General recommendations:

1. For general data, see sheet ETP-1.
2. The equipment in the switchboard may be replaced with equipment of similar characteristics from other manufacturers.
3. The existing ГРЩ1 switchboard.
4. In the existing capacitor installations, retrofit a 12-step reactive power regulator (reactive power compensation controller).
5. The existing cable lines, circuit breakers and current transformers are installed with reserve capacity, allowing for the connection of the designed loads.
6. The incoming circuit breaker for the substation has been selected to ensure selectivity with the existing circuit breakers.

Original inv. no. Signature and date Item No.

						922-07/25-ETP			
						Reconstruction of the Kazankivskiy group water supply system to supply settlements in the Sofiivska territorial community, Bashtanka district, Mykolaiv region. Adjustment			
Amendment	No.	Sheet	No. of lines	Signature	Date	Electrical engineering solutions.	Stage	Sheet	Sheets
	Розробив	Шевченко		<i>[Signature]</i>	07.2025		РП	5	
	Перевірив	Хижнякова		<i>[Signature]</i>	07.2025				
	ГП	Хижнякова		<i>[Signature]</i>	07.2025				
	Н. контр	Волобоз		<i>[Signature]</i>	07.2025	Single-line diagram of the power supply.	ТОВ "Дніпровський проєктно-випробувальний інститут "ДПВІ"		



R_{vst.} = 220 kW; R_{r.} = 110 kW;
 cos φ = 0.8;
 I_r = 205 A;
 ΔU = 1.5%.

Electric motor	Schematic representation			
	Plan number			
	Type			
	P _n , kW	220	110	110
	Current, A	I _{nom}	205	205
		I _{start}		
Name of mechanism	Input: ~380 V, 50 Hz from the existing main distribution board 1	Pump (operating)	Pump (working)	

Replacement inventory no.

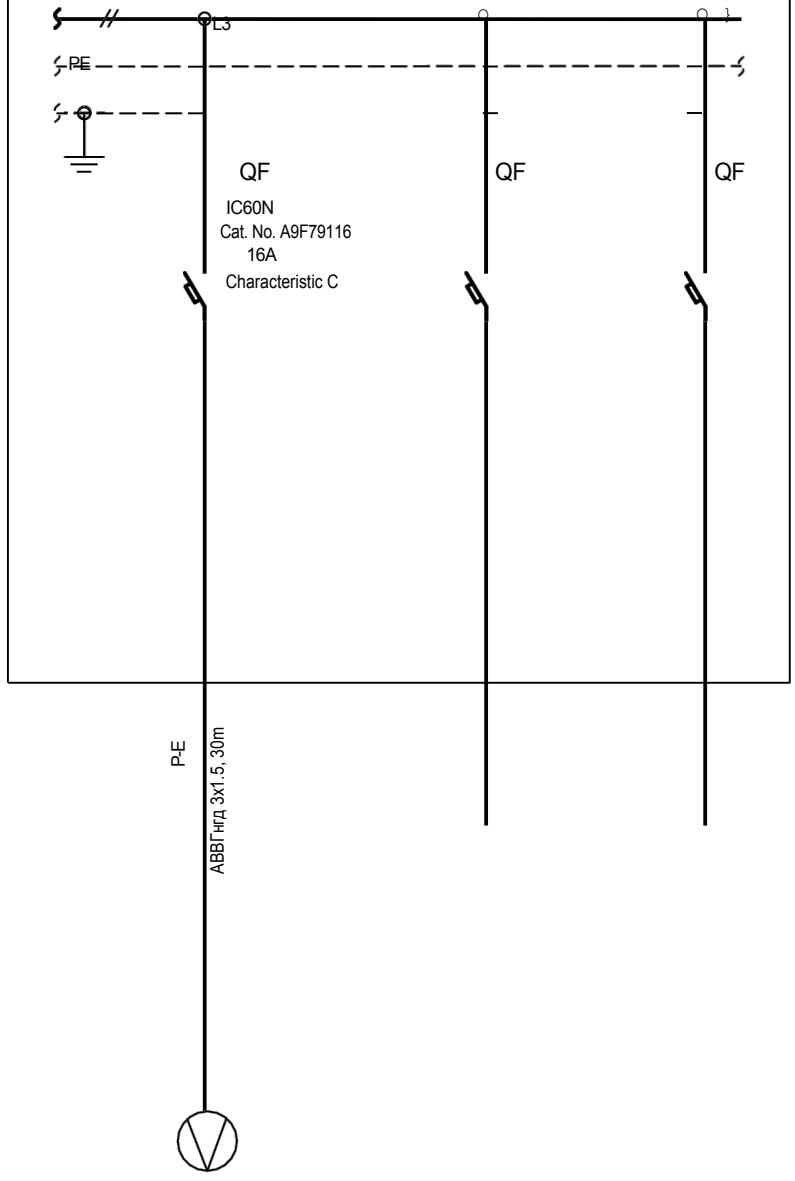
Signature and date

Original inv. no.

						922-07/25-ETR			
						'Reconstruction of the Kazankivskiy group water supply system to supply settlements in the Sofiivska territorial community, Bashtanka district, Mykolaiv region'. Adjustment			
Change	No.	Sheet	No.	Signature	Date	Electrical engineering solutions.	Stage	Sheet	Sheets
Розробив		Шевченко		<i>[Signature]</i>	07.2025		RP	6	
Перевірив		Хижнякова		<i>[Signature]</i>	07.2025				
ПІП		Хижнякова		<i>[Signature]</i>	07.2025				
Н. контр		Волобоев		<i>[Signature]</i>	07.2025	Single-line schematic diagram of the ЩУН distribution networks.	ТОВ "Дніпровський проєктно-вишукувальний інститут "ДПВІ"		

ГРЩ1 (existing)

1L1, 1L2, 1L3, ~380 V, 50 Hz N



Power supply network data

Designation Type
Current, A Release,
A

Designation Type
Current, A
Disconnecter, A

Conductor type and cross-section

Schematic diagram

Electric receiver

Number according to plan		C4	
Type			
Rn, kW		0.1	
Current, A	I nom	0.5	
	I start		
Name of mechanism		MagFlux flow meter	Existing consumers

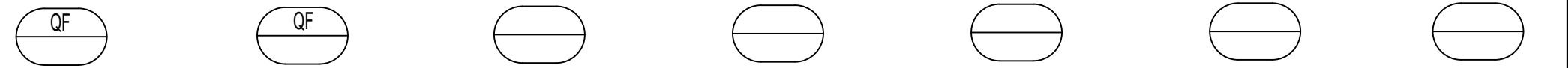
General recommendations:

1. For general data, see sheet ETP-1.
2. The equipment installed in the switchboard is highlighted within the dotted line;
3. This diagram also serves as the manufacturer's instruction for producing the panel;
4. Equipment may be replaced with equipment having similar technical specifications of other manufacturers;
5. If necessary, redistribute the load across the phases to ensure an even load distribution.

					922-07/25-ETP			
					'Reconstruction of the Kazankivskiyi group water supply system to supply settlements in the Sofiivska territorial community, Bashtank district, Mykolaiv region'. Adjustment			
Changes	Q-ty.	Doc. No.	Signature	Date	Electrical solutions.	Stage	Sheet	Sheets
				07.2025		RP	7	
				07.2025				
				07.2025				
					Single-line electrical schematic diagram flow meter power supply.			

H1-1	Pump	АВВГнгд 5х120,0								
H2-1	Pump	АВВГнгд 5х120,0								

Cable number	Address	Brand, cross-section								
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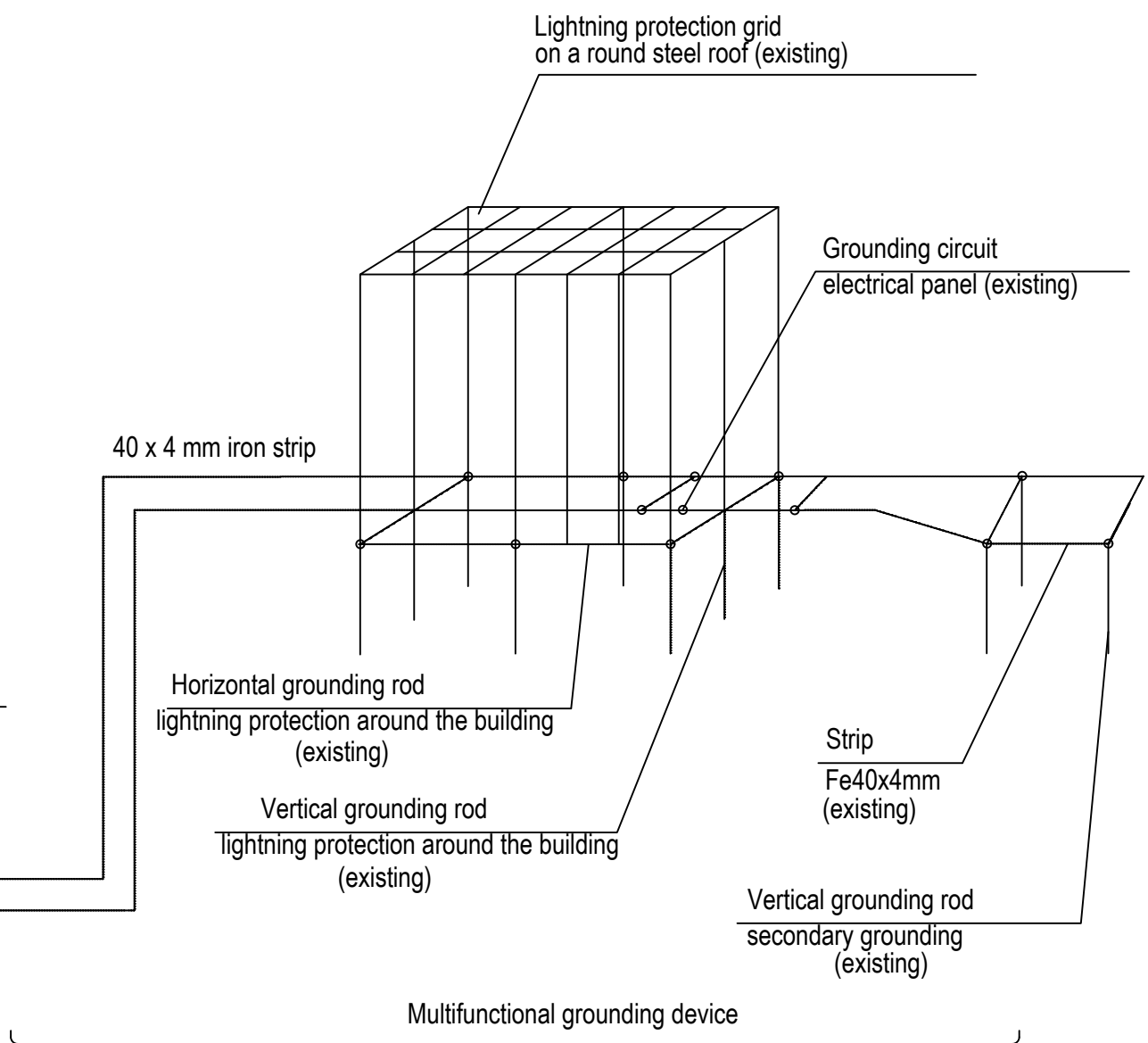
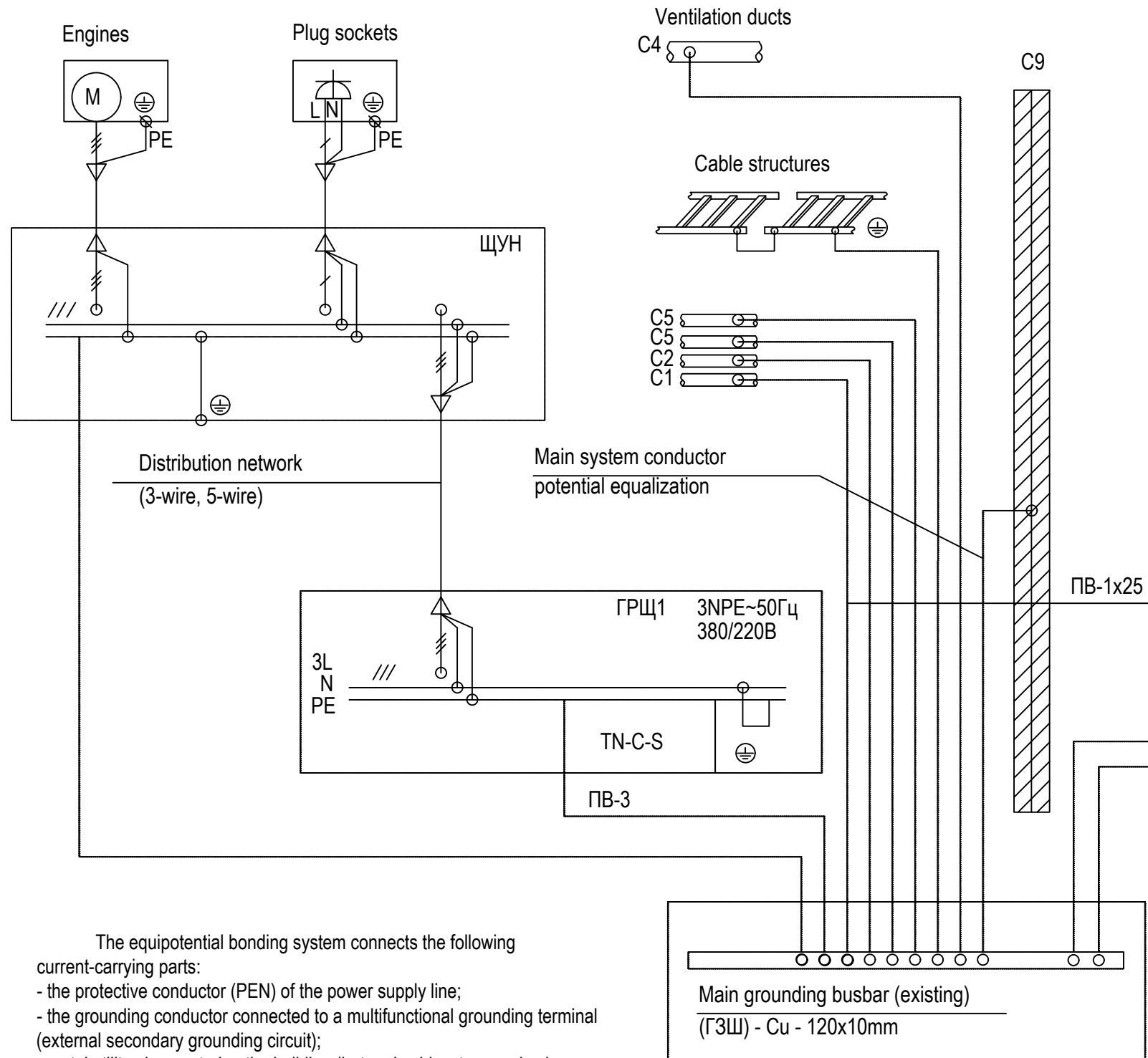
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Cable number	Address	Brand, cross-section								
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Зам. інв. №
 Підпис і дата
 Інв. № ориг.

						922-07/25-ETP					
						'Reconstruction of the Kazankivskiy group water supply system to supply settlements in the Sofiivska territorial community, Bashtanka district, Mykolaiv region'. Adjustment					
Змін.	Кільк.	Арк.	Недок.	Підпис	Дата	Electrical Engineering Solutions			Стадія	Аркуш	Аркушів
Розробив		Шевченко			07.2025				РП	9	
Перевірив		Хижнякова			07.2025						
ГІП		Хижнякова			07.2025						
Н. контр		Волобоев			07.2025	ЩУН Panel. Wiring diagram			ТОВ "Дніпровський проектно-вишукувальний інститут "ДПВІ"		

Group network



Legend:

- C1-Metal water supply pipes (for hot and cold water);
- C2-Metal sewer pipes;
- C4-Ventilation and air conditioning ducts;
- C5-Heating system;
- C9—Reinforcement of Reinforced Concrete Structures in the Building
- - new devices currently in development;
- - existing devices.

The equipotential bonding system connects the following current-carrying parts:

- the protective conductor (PEN) of the power supply line;
- the grounding conductor connected to a multifunctional grounding terminal (external secondary grounding circuit);
- metal utility pipes entering the building (hot and cold water supply pipes, sewer pipes, heating pipes, etc.);
- metal parts of the building's frame;
- the grounding device of the lightning protection system; which are interconnected at the building's entry point.

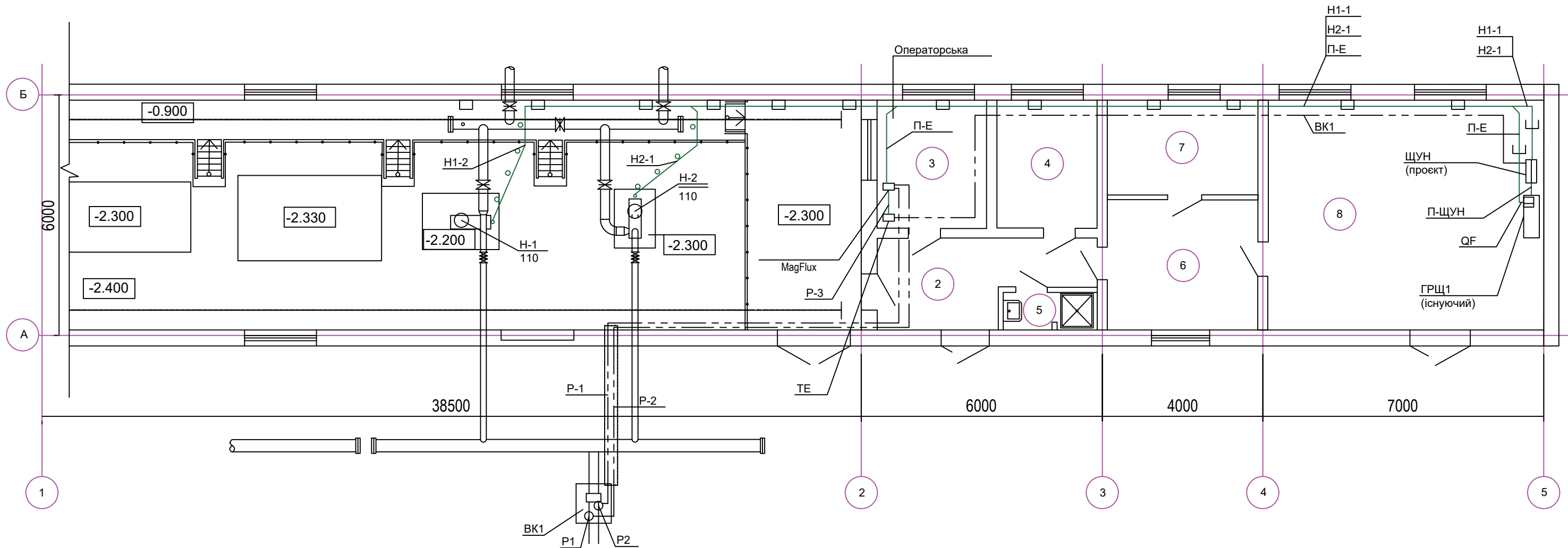
All of the above-mentioned parts are connected to the building's main grounding busbar (ГЗШ) via conductors of the main equipotential bonding system.

The neutral protective busbar (ВНП) of the input and distribution device (PE) is intended to serve as the building's main grounding busbar (ГЗШ). Potential equalization conductors are connected to the ГЗШ using bolted connections and to the grounding device via welding. Grounding conductors shall be marked with yellow-green stripes at their connection points.

						922-07/25-ETP			
						'Reconstruction of the Kazankivskiy group water supply system to supply settlements in the Sofiivska territorial community, Bashtanka district, Mykolaiv region'. Adjustment			
Змін.	Кільк.	Арк.	№ док.	Підпис	Дата	Electrical engineering solutions.	Stage	Sheet	Sheets
Розробив	Шевченко			<i>UM</i>			РП	10	
Перевірив	Хижнякова			<i>Хижнякова</i>		Potential equalization circuit.			
ГІП	Хижнякова			<i>Хижнякова</i>					
Н.контр.	Волобоев			<i>Волобоев</i>					

Інв. № ориг. Підпис і дата Зам. інв. №

Excerpt from the plan at elevation 0.000
M1:100



General Instructions:

1. See ETR-1 for general information.
2. Install panels, circuit breakers, and control units at a height of 1.3 m above floor level; confirm during installation.
3. Install power lines as follows: along walls and ceilings—using AVVGngd cable in vinyl-plastic corrugated pipes on cable trays; in the floor—in steel pipes; connections to equipment should be made using flexible metal conduits.
4. Specify cable routing during installation.
5. See sheet ETR-4 for symbols.

Item	Name	Area, m ²	Category
1	Technical room	221,1	
2	Hallway	9,9	
3	Utility room	8,8	
4	Utility room	8,0	
5	Shower	2,2	
6	Utility room	12,2	
7	Utility room	8,9	
8	Electrical panel	39,5	

					922-07/25-ETP				
					'Reconstruction of the Kazankivskiy group water supply system to supply settlements in the Sofiivska territorial community, Bashtanka district, Mykolaiv region'. Adjustment				
Змін. Кільк.	Арк. № док.	Підпис	Дата	Electrical engineering solutions.			Stage	Sheet	Sheets
Розробив	Шевченко	<i>[Signature]</i>					РП	10	
Перевірів	Хижнякова	<i>[Signature]</i>							
ГІП	Хижнякова	<i>[Signature]</i>							
Н.контр.	Волобоев	<i>[Signature]</i>		A section of the pumping station plan showing the power distribution networks					

Item	Name and technical specification	Name of the document	Code of the equipment, product material	Factory-manufacturer	Unit of measurements	Quantity	Unit weight kg	Примітка
1	2	3	4	5	6	7	8	9
	<u>Electrical equipment</u>							
QF	IC60N circuit breaker, ~220 V, 50 Hz, 1-pole, In = 16 A		№A9F79116	"Schneider Electric"	pcs.	1	0,215kg	дообладнання в існуючий ГРЩ1
ЩУН	Pump control panel with frequency converters and input and output chokes	"Стандарт АКН-2-110"			pcs.	1		
	12-step reactive power regulator, reactive power compensation controller	RGT-12E		"Tense"	pcs.	1		
	Water pressure sensor, 4-20 mA			"Danfoss"	pcs.	2		
	<u>Cables and Wires</u>							
	A cable with an aluminum conductor and PVC insulation does not support combustion:	АВВГнгд		ВАТ«Завод«Південкабель»				
	5 × 120.0 mm ²				m	93	6,39kg/m	
	with a cross-sectional area of 3x1,5 mm ²				m	30	0,113kg/m	
	Vinyl-insulated wire with a single conductor:	ПВ-1		ВАТ«Завод«Південкабель»				
	with a cross-sectional area of 1x10,0 mm ²				m	10		
	Data transmission cable:	UNITRONIC BUS LD FD P			m	95		
	3x2x0,25							

It is permissible to substitute the manufacturer of electrical equipment and cable and wire products with similar technical specifications.

						922-07/25-ETP.C			
						'Reconstruction of the Kazankivskiyi group water supply system to supply settlements in the Sofiivska territorial community, Bashtanka district, Mykolaiv region'. Adjustment			
						Electrical engineering solutions	Stage	Sheet	Sheets
							РП	1	2
						Specifications for Equipment, Products, and Materials	ТОВ "Дніпровський проєктно-вишукувальний інститут "ДПВІ"		
							Формат А3		

Взам. інв. №	
Підпис і дата	
Інв. № оригін.	

Змін.	Кільк.	Арк.	Недок.	Підпис	Дата
Розробив		Шевченко		<i>UM</i>	07.2025
Перевірів		Хижнякова		<i>Step</i>	07.2025
ГІП		Хижнякова		<i>Step</i>	07.2025
Н. контр		Волобоев			07.2025

No.	Description	Unit Spec.	Quantity	Note
1	2	3	4	5
Equipment installation				
1	Installation of the SHUN system	pcs	1	
2	Commissioning work: - Connection of power cable - Installation and connection of cabinet components - Cable routing	pcs	1	
3	Commissioning work: - Power cable installation - Connection of control cables - Installation and connection of device components - Cable routing	pcs	1	
4	Installation of water pressure sensors, 4–20 mA	pcs	2	
5	Laying cable in a cable duct along the wall	m	25	
6	Laying cable in a metal conduit	m	10	

Inventory No.	Signature and date	Deputy inventory no.
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Ch.	No.	Sheet	No.	Signature	Date

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