



LIMITED LIABILITY
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COMPANY FORTIS»
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"Current repair of anti-radiation shelter № 52108 (group P-4) Ingul Lyceum of the Ingul Village Council, at the address: st. Sadova, 49, Ingulka village, Bashtanka district, Mykolaiv region"

Working project

External storm sewer
173-WP-2024-F-ESS

Chief Project Engineer

Qualification Certificate for Engineering and Construction Design AS
№ 019809. Ministry of Regional Development, Construction, Housing
and Communal Services of Ukraine. Attestation Architectural and
Construction Commission.

Shelikhova V.

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

Agreed

Погоджено:

Затверджено:




Спробовано:

Введено:

List of drawings of the main set of the ICS

Arc.	Name	Note
1	General data	
2	K2 Network Plan	
3	K2 Network Profile	
4	Filtration well K2	
5	Table of wells of the K2 network	

Symbols, conditional, graphic

Denomination graphic	Name	Denomination text
 K2	Storm sewer	K2
 DK	Storm sewer well	DK-1
 DP	Plastic rain receiver	BF-1

General Guidelines

The project has been developed in accordance with current regulations, rules and standards based on: topographic plan M 1:500, architectural drawings, general plan and plan for the organization of the relief M 1:500.

The external storm sewer network is designed from pipes PVC Pipe SN8 Ø110x3.4 mm, DSTU B V.2.5-32:2007.

Pipelines made of plastic pipes are laid on a sand base h=0.20m and covered with sand on the 0,3m above the top of the pipe. Trench under the improved coating, it is covered with sand with layer-by-layer compaction. At the intersection with existing communications, land works manually lead through the 2,0 m in each direction of the intersection.





Technical decision, taken into working drawings, match requirements environmental, sanitary-hygiene,, fire-fighting and other norms, what act upon territory Ukraine and provide safe for life and health'i people operation about'item at compliance with foreseen working drawings of measures.

At performance construction-installation works hidden work be review with assembling acts under DBN V.2.5.-75:2013, per form уроневеденою into DBN E.3.1-5-2016 (application T). List works: preparation basics below pipelines, device stops, magnitude clearances and execution butt seals with'(a) to the extent permitted, corrosion protection of pipelines, backfilling of pipelines with sealing, etc..

Breakdowns network perform under before DBN V.1.3-2:2010 "Geodetic work into construction". Installation networks perform under before DBN V.2.5-75:2013, GOS INTO.2.1-10:2018 "Basics and foundations buildings and structures. Main position", GOS AND.3.2-2:2009 "Protection labor and industrial safety in construction", DSTU-N B V.2.5-40:2009 "Design and installation of water supply and sewerage networks from plastic pipes".

List of documents referred to and attached

Denomination	Name	Note
	<u>Dokuments referenced</u>	
DBN A.2.2-3:2014	Composition and content of project documentation for construction	
DSTU 9243.4:2023	Project documentation system for construction. Basic requirements for project documentation	
DBN A.3.1-5:2016	Organization of construction production	
DBN V.2.5-75:2013	Drain. External networks and structures. Basic design provisions.	
T.P.P.R. 902-09-22.84 Album II	Sewer wells	
T.M.P 902-09-46.88 Album II	Rainwater wells	
	<u>Attached Documents</u>	
173-RP-2024-F-ESS.S	Specification of equipment, products and materials	on 1 sheet.


Change	Several.	Arc.	Dock.	Signature	Date
CPE		Shelihova V.			
Developed		Khudashov L.			
Checked		Shelihova V.			
Norm. control		Pyrov Y.			

173-WP-2024-F-ESS

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Stage	Sheet	Sheets
WP	1	5

General data

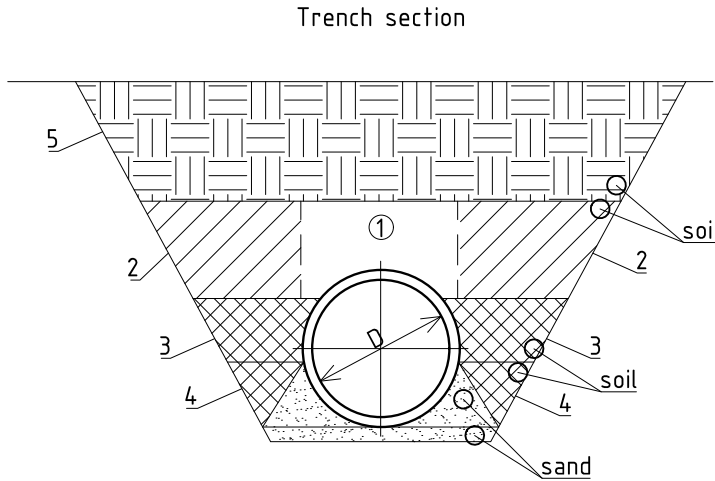
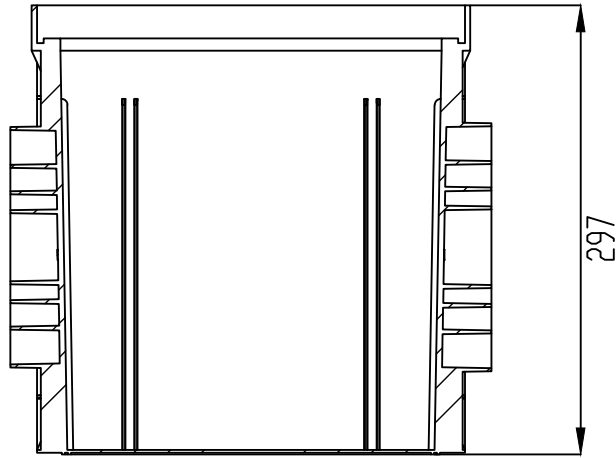
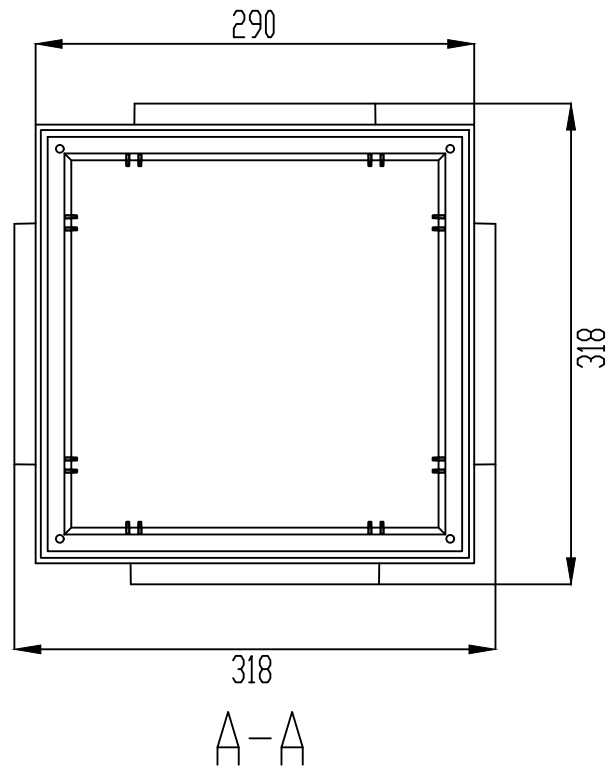
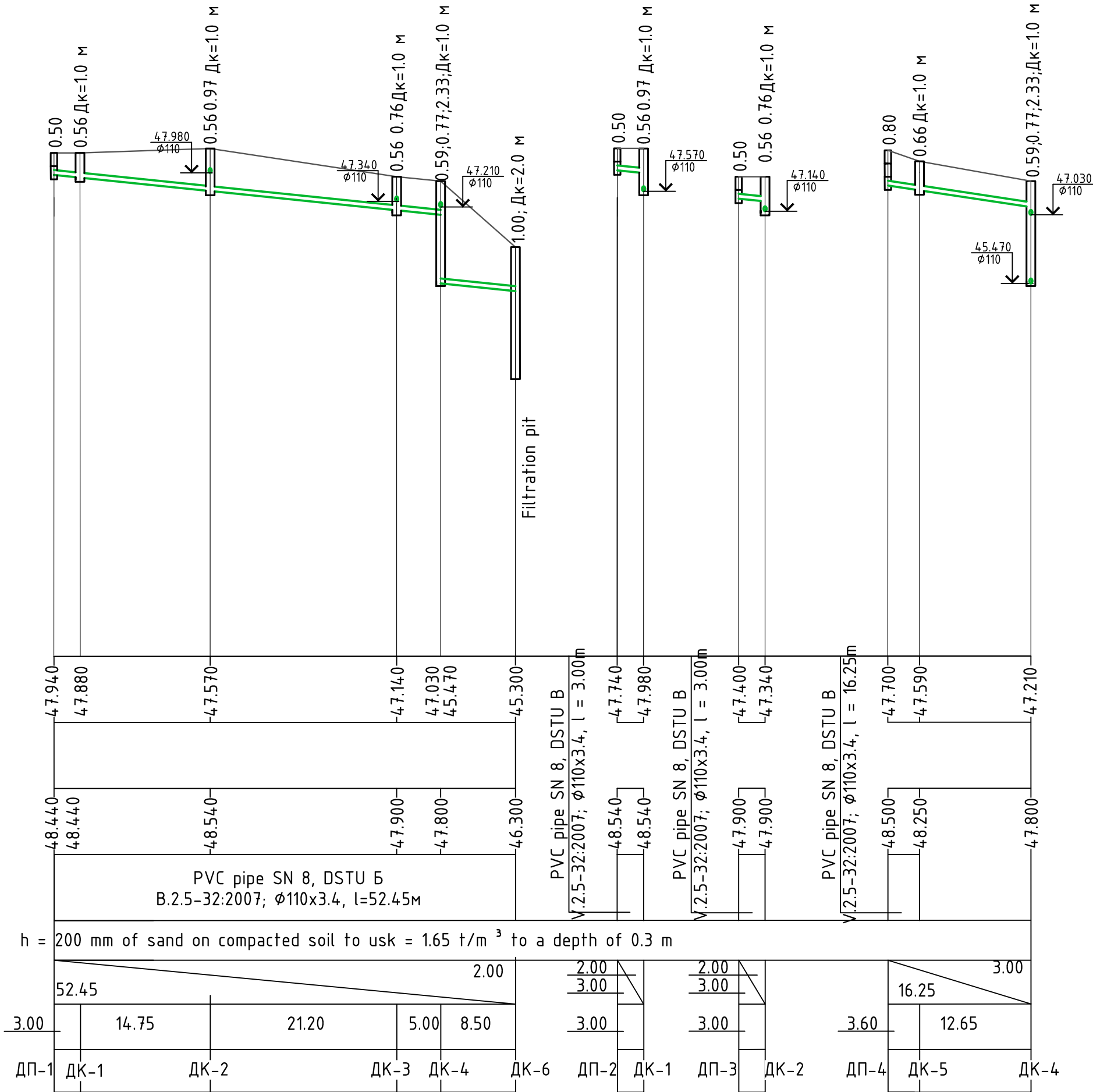


Формат A3(2A4)

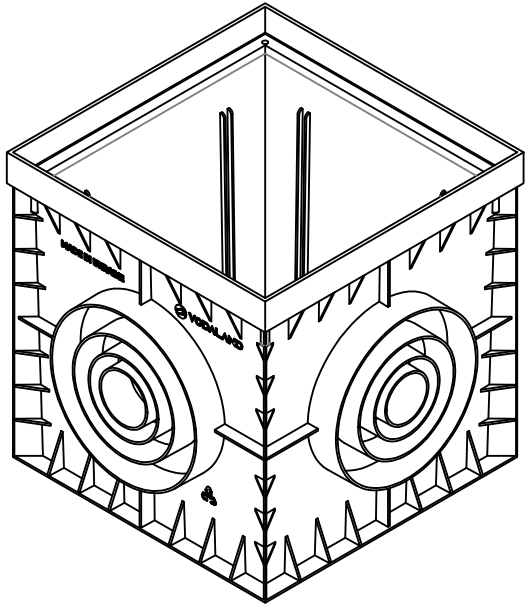
Погоджено:			Зам. інв. №			Підпис і дата			Інв. № ор.

Conditional horizon
37.000

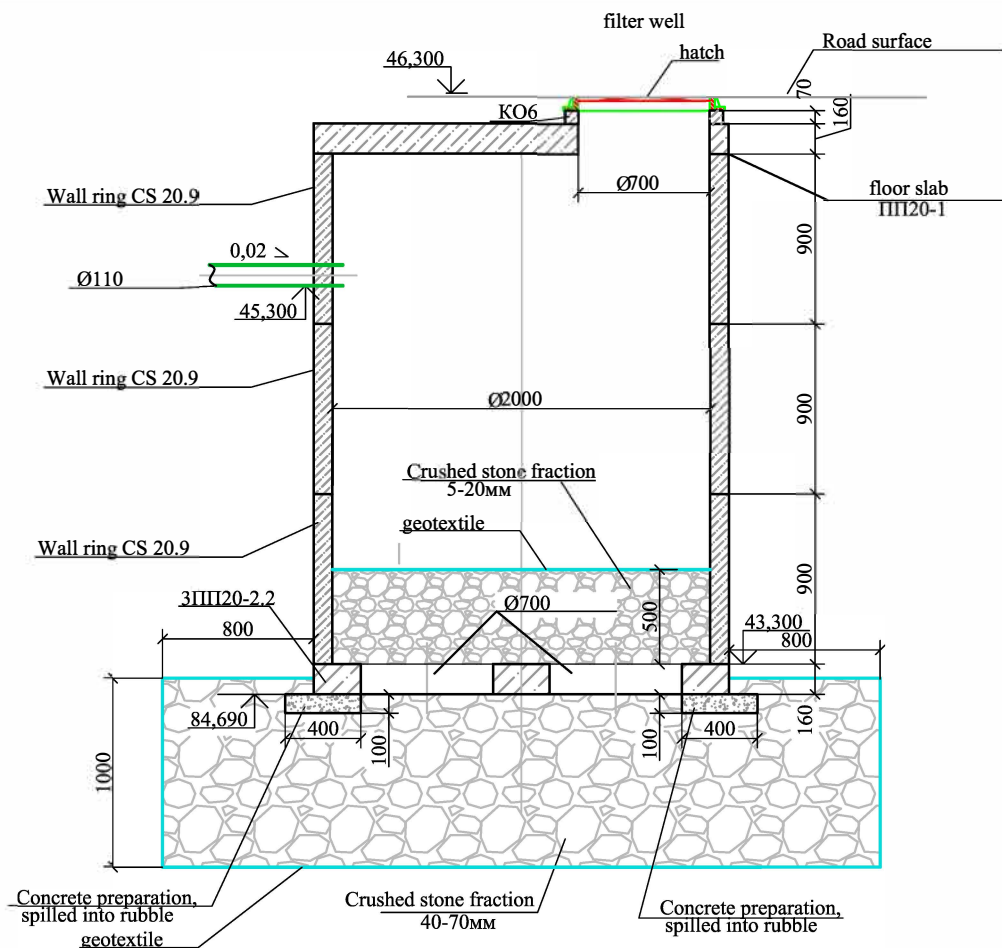
Pipe bottom or tray mark	
Design Land Elevation	
Full-scale land mark	
Pipe designation and type insulation	
Basis	
Length, m	Bias %
Distance, m	
no. of well, point, angle turning	



1 - area above pipeline, where soil compaction is prohibited;
2,3 - soil layer thickness, compacted by manual mechanisms;
4 - soil layer, compacted by hand-held non-mechanized tools;
5 - soil layer, compacted by plate compactors, hydraulic hammers, skating rinks
(h4 - we accept up to 250mm);
h1,h2,h3 - sealing is carried out simultaneously on both sides.



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Change	Several.	Arc.	Dock.	Signature	Date	External storm sewer	Stage	Sheet	Sheets
CPE		Shelihova V.					WP	3	5
Developed		Khudashov L.							
Checked		Shelihova V.				K2 Network Profile			
Norm. control		Pyrov Y.							



Specification

Pos.	Name	Name	Amount	piese., kg
			ДК-4	
1		floor slab III20-1	1	
2		Wall ring CS 20.9	3	
3		Ring support KO6	1	
4		type "I"	1	
5		Floor slab 3III20-2.2	1	
6		Crushed stone fraction 40-70mm	14,5	
7		Crushed stone fraction 5-20mm	1,6	
8		Geotextile, sq.m.	33,15	

Note

- Perform backfilling of the pit cavity up to the density of the soil skeleton 1.6-1.7 t/m³.
- At the top of the floor slab, make a protective layer of cement mortar with composition 1-3 and coat with bitumen for 2 times.
- Installation of reinforced concrete elements shall be performed on mortar of grade 100, seam thickness - 10 mm.
- The loading material for the filter well is crushed stone or gravel measuring 5-20 and 40-70 mm. Showering around the well perform from the same material.
- Holes in the wall rings are made in place by drilling.
- Impregnate unprotected concrete parts (bottom) with bitumen primer and coat with g/and bitumen in 2 layers for 2 times.
- Under the well, prepare from concrete V15 spilled into the rubble.
- If you find a layer of soil from the sandy loam, select it, pump out the water with pumps and arrange the base for wells with crushed stone with a fraction of 40-70 mm.

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Change	Several.	Arc.	Dock.	Signature	Date
CPE		Shelihova V.			
Developed		Khudashov L.			
Checked		Shelihova V.			
Norm. control		Vetrov O.			

External storm sewer

Filtration well K2

Stage	Sheet	Sheets
WP	4	5

FORTIS

Agreed

Inv. No. Podl. Subpara. and data return. Inv.

Table of storm sewer wells																																	
no. of the well according to the plan	Well Grade under Soil Conditions	Well Brand	Depth of the well according to the profile, N, mm	Total depth of the well H, mm	Diameter pipe-du, mm		Diameter of the well Dk, mm	Height of the working part, mm	Neck height with overlap, mm	Material consumption														Differential height, mm	Waterproofing, m ²	Hatch Type	Staples, pcs	Bituminous primer No01, kg	Mastic MGTN No. 24, kg	Cement-sand mortar M100,m ³	Notes		
										Underbody				Working part				Floor slab				Neck											
					Precast reinforced concrete elements (DSTU B V.2.6-106:2010)																												
					PP 10-1	3PP20-2.2				CSE 15.6	RT 15.9	RT 10.6	RT 10.9	RT 20.6	RT 20.9	KSE 10.6-PN	PP 20-1	PP 15-1	PP 10-1	PD 6	RT 7.5	RT 7.3	KO 6										
DK-1	II	ДКСП	560	860	110	110	1000	600	260	1				1						1				1	-	2.70	/I	2	1	6	0.023	- // -	
DK-2	II	ДКСУ	970	1270	110	110	1000	900	370	1					1						1				2	-	4.00	/I	3	2	8	0.03	- // -
DK-3	II	ДКСУ	740	1040	110	110	1000	600	440	1				1							1				3	-	3.10	/I	2	2	7	0.023	- // -
DK-4	II	ДКСУ	2330	2630	110	110	1000	2100	530	1				2	1						1				4	-	8.26	/I	7	3	17	0.06	- // -
DK-5	II	ДКСП	660	960	110	110	1000	600	370	1				1							1				2	-	3,00	/I	2	1	7	0.023	- // -
DK-6	II	ДКСЛ	1000	3000	110	110	2000	2700	300		1						3		1						1	-	18.85	/I	9	6	38	0.16	- // -

- Notes:

- 1. To pass pipes through the walls of wells in dry soils, lay nozzles. After installing the nozzles, the holes in the walls of the well are scalded with concrete of class S12/15.

- 2. Plan the ground surface around the hatches with a slope of 0.03 from the well and arrange an asphalt blind area on a crushed stone base 750 mm wide.

- 3. For lowering in wells on internal surfaces of wall rings to lay staples with a polymer coating with a pitch of 300 mm.

- 4. Provide external waterproofing of wells by coating with bitumen primer No. 01- 1 layer and mastic MGTN No. 24 - 2 layers.

- 5. During construction, according to the DBN A.3.1.-5:2016 - Organization of the former production, it is necessary to draw up acts for the following types of hidden works (Appendix H):

- inspection of bottom base soil quality;

- preparation of the base under the bottom, indicating the dimensions and estimates of the bottom of the pit;

- inspection and admixture of all structures and elements closed during concreting;
- acceptance of finished concrete and reinforced concrete structures with assessment of their quality;

- sealing and sealing of joints and joints;

- waterproofing device;

- sealing holes engineering communications;

- acceptance of installed structures.

6. Prefabricated reinforced concrete products are provided with polyethylene inserts, the ring joints shall be welded with an extruder in place.

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Change	Several.	Arc.	Dock.	Signature	Date	External storm sewer		Stage	Sheet	Sheets
CPE	Shelihova V.							WP	5	5
Developed	Khudashov L.									
Checked	Shelihova V.					Table of wells of the K2 network				
Norm. control	Vetrov O.									

Формат А3

