**Part 2 MATERIALS/EQUIPMENT SUPPLIED FROM ABROAD**

**LOT 1**

**WATER MAIN REHABILITATION SECTIONS/SEGMENTS 1 AND 2**

**Part 2.1 Segment A1.**Rehabilitation of emergency sections of the WPS “Shubranets” - CWR “Popova” pressure water main DN = 900 mm with a total length of ~ 7 km in Chernivtsi city, Chernivtsi region.

Rehabilitation of the water main sections with an estimated length of 3.5 km that are not included in Phase 1 (the 1st segment of the water main near Ocheret village from the gravel road).

| **ITEM NO.** | **DESCRIPTION** | **UNIT** | **QUANTITY** |
| --- | --- | --- | --- |
| 2.1 | Socket pipes made of spheroidal graphite ductile iron DN800 PN25 | m | 2089 |
| 2.2 | Anchored joint DN800 PN25 with locking ring  | pcs | 339 |
| 2.3 | Bolt М 45х170 (dxL), washer М45, spring washer М45, nut М45 | pcs | 338 |
| 2.4 | Bell reducer made of spheroidal graphite ductile iron DN800 | pcs | 20 |
| 2.5 | Joint gasket DN800 | pcs | 35 |
| 2.6 | Hub elbow made of spheroidal graphite ductile iron 45° DN800 PN25 | pcs | 4 |
| 2.7 | Hub elbow made of spheroidal graphite ductile iron 22° DN800 PN25 | pcs | 3 |
| 2.8 | Hub elbow made of spheroidal graphite ductile iron 11° DN800 PN25 | pcs | 4 |
| 2.9 | Flexible coupling for pipes made of ductile iron DN800 PN25 | pcs | 57 |
| 2.10 | Ductile iron flange adapter PN25 DN900x800 | pcs | 1 |
| 2.11 | Ductile iron branch, flange hub DN800 PN25 | pcs | 1 |

47**Part 2.2 Segment A2.**Rehabilitation of emergency sections of the WPS “Shubranets” - CWR “Popova” pressure water main DN = 900 mm with a total length of ~ 7 km in Chernivtsi city, Chernivtsi region.

Rehabilitation of the water main sections with an estimated length of 3.5 km that are not included in Phase 1 (the 2nd segment of the water main near Ocheret village to the gravel road)

| **ITEM NO.** | **DESCRIPTION** | **UNIT** | **QUANTITY** |
| --- | --- | --- | --- |
| 2.1 | Socket pipes made of spheroidal graphite ductile iron DN800 PN25 | m | 1737 |
| 2.2 | Anchored joint DN800 PN25 with locking ring | pcs | 303 |
| 2.3 | Bolt М 45х170 (dxL), washer М45, spring washer М45, nut М45 | pcs | 300 |
| 2.4 | Bell reducer made of spheroidal graphite ductile iron DN800 | pcs | 25 |
| 2.5 | Joint gasket DN800 | pcs | 38 |
| 2.6 | Hub elbow made of spheroidal graphite ductile iron 45° DN800 PN25 | pcs | 4 |
| 2.7 | Hub elbow made of spheroidal graphite ductile iron 22° DN800 PN25 | pcs | 3 |
| 2.8 | Hub elbow made of spheroidal graphite ductile iron 11° DN800 PN25 | pcs | 5 |
| 2.9 | Flexible coupling for pipes made of ductile iron DN800 PN25 | pcs | 55 |
| 2.10 | Smooth flanged branch with ductile iron end DN800 L=0.6 m PN25 | pcs | 2 |
| 2.11 | Ductile iron flange T-bend DN800х800х800 PN25 | pcs | 1 |
| 2.12 | Dismantling joint DN800 PN25 | pcs | 1 |
| 2.13 | Ductile iron branch, flange hub DN800 PN25 | pcs | 1 |
| 2.14 | Ductile iron flange adapter PN25 DN900х800 | pcs | 3 |
| 2.15 | Two-stage air valve DN150 PN25 | pcs | 1 |
| 2.16 | Short flange ductile iron gate valve PN25 DN150 | pcs | 2 |
| 2.17 | Flywheel for gate valve DN150 | pcs | 2 |
| 2.18 | CIPP Liner including the curing materials or other materials to be used for no-dig method | m | 51.64 |

**Part 3 WORKS**

**LOT 1**

**WATER MAIN REHABILITATION SECTIONS/SEGMENTS 1 AND 2**

**Part 3.1 Segment A1.**Rehabilitation of emergency sections of the WPS “Shubranets” - CWR “Popova” pressure water main DN = 900 mm with a total length of ~ 7 km in Chernivtsi city, Chernivtsi region.

Rehabilitation of the water main sections with an estimated length of 3.5 km that are not included in Phase 1 (the 1st segment of the water main near Ocheret village from the gravel road).

| **ITEM NO.** | **DESCRIPTION** | **UNIT** | **QUANTITY** |
| --- | --- | --- | --- |
| 3.1 | **PIPEWORK - PIPES IN TRENCHES**  |  |  |
| 3.1.1 | Laying of Socket pipes made of spheroidal graphite ductile iron DN800 PN25 | lm | 2089 |
| 3.1.2 | Excavation into a disposal area with the “dragline” or “back hoe” excavators, the group of soils is 4 | m3 | 1978.58 |
| 3.1.3 | Excavation into a disposal area with the “dragline” or “back hoe” excavators, the group of soils is 2 | m3 | 2595.01 |
| 3.1.4 | Excavation loading the, group of soils is 4, with further transportation for up to 40 km | m 3 | 103.86 |
| 3.1.5 | Excavation loading the soil, group of soils is 2, with further transportation for up to 40 km | m3 | 1618.4  |
| 3.1.6 | Finishing manually, hand stripping of the bottom and walls with the soil displacement in the excavation pits and tranches developed by mechanical means | m3 | 691.22 |
| 3.1.7 | Arrangement of a sand foundation under the pipelines | m3 | 228.92 |
| 3.1.8 | Sand dusting, h=500 mm | m3 | 35.86 |
| 3.1.9 | Filling the trenches, excavation of pit hollows and pits manually, the group of soils is 1 | m3 | 233.58 |
| 3.1.10 | Backfilling of trenches with bulldozers using the soil of 1,2 type, and its further compaction with air rammers | m3 | 3052.65 |
| 3.1.11 | Backfilling of trenches with bulldozers using the soil of 3,4 type, and its further compaction with air rammers | m3 | 1977.95 |
| 3.1.12 | Installation of concrete stops on the network | pcs | 11 |
| 3.3 | **PIPEWORK - FITTINGS AND VALVES** |  |  |
| 3.3.1 | Installation of anchored joint DN 800 PN25 with locking ring with a set of mount hardware | pcs | 338 |
| 3.3.2 | Installation of bell reducer made of spheroidal graphite ductile iron DN800 PN25 | pcs | 20 |
| 3.3.3 | Installation of joint gasket DN800 | pcs | 35 |
| 3.3.4 | Installation of hub elbow made of spheroidal graphite ductile iron 45° DN800 PN25 | pcs | 4 |
| 3.3.5 | Installation of hub elbow made of spheroidal graphite ductile iron 22° DN800 PN25 | pcs | 3 |
| 3.3.6 | Installation of hub elbow made of spheroidal graphite ductile iron 11° DN800 PN25 | pcs | 4 |
| 3.3.7 | Installation of flexible coupling for pipes made of ductile iron DN800 PN25 | pcs | 57 |
| 3.4 | **PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES** |  |  |
| 3.4.1 | *Chamber, which incl the next works:* | *pcs* | *1* |
| 3.4.1.1 | Excavation loading the soil on dump trucks with single-bucket diesel-powered crawler excavators, group of soils is 4, with its further transportation for up to 40 km | m3 | 10.84 |
| 3.4.1.2 | Excavation loading the soil on dump trucks with single-bucket diesel-powered crawler excavators, group of soils is 2 with further transportation for up to 40 km | m3 | 52.38 |
| 3.4.1.3 | Arrangement of gravel basis under the foundations | m3 | 1.81 |
| 3.4.1.4 | Arrangement of concrete foundation mattress | m3 | 1.8 |
| 3.4.1.5 | Arrangement of pasting waterproofing with the sealing membrane in bituminous mastic, the first layer | m2 | 17.3 |
| 3.4.1.6 | Arrangement of flat bottoms of rectangular structures with a wall thickness of more than 150 mm, B 30 (M 400) heavy-weight concrete, aggregate size is 5-10 mm | m3 | 3.5 |
| 3.4.1.7 | Arrangement of levelling concrete with a thickness of 20 mm, considering adding or removing for every 5 mm change in the thickness of levelling concrete (up to an average thickness of 55 mm) | m2 | 9 |
| 3.4.1.8 | Arrangement of concrete pillars, B 10 (M 150) heavy-weight concrete, aggregate size is 40 mm | m3 | 0.4 |
| 3.4.1.9 | Installation of basement wall blocks of ФБС 24.4.6 type, DSTU B.V.2.6-108:2010 (with the weight of up to 1.5 t) | pcs. | 8 |
| 3.4.1.10 | Installation of basement wall blocks of ФБС 12.4.6 type, DSTU B.V.2.6-108:2010 (with the weight of up to 1 t) | pcs. | 14 |
| 3.4.1.11 | Installation of basement wall blocks of ФБС 9.4.6 type, DSTU B.V.2.6-108:2010 (with the weight of up to 0.5 t) | pcs. | 4 |
| 3.4.1.12 | Installation of basement wall blocks of ФБС 12.4.3 type, DSTU B.V.2.6-108:2010 (with the weight of up to 0.5 t) | pcs. | 2 |
| 3.4.1.13 | Reinforcement of walls with the greed of 40х40 A240C type, d=10 | m2 | 1.3 |
| 3.4.1.14 | Installation of reinforced concrete rings КС-7-6 | pcs. | 4 |
| 3.4.1.15 | Laying of ceiling slabs ПТ 75.180.14-6 | pcs. | 2 |
| 3.4.1.16 | Laying of ceiling slabs ПТО 150.180.14-6 | pcs. | 2 |
| 3.4.1.17 | Installation of beam Б7 (3580х380х300) | pcs. | 1 |
| 3.4.1.18 | Installation of ductile iron hatch for the well | pcs. | 4 |
| 3.4.1.19 | Installation of wall bracket for ladder | pcs. | 8 |
| 3.4.1.20 | Installation of emergency stairs with a fence | pcs. | 4 |
| 3.4.1.21 | Priming of metal surfaces at a time with zinc protective primer | m2 | 6.8 |
| 3.4.1.22 | Arrangement of pits 400х400х200 | pcs. | 1 |
| 3.4.1.23 | Arrangement of belts in the form | m3 | 1.1 |
| 3.4.1.24 | Arrangement of cement covering with a thickness of 20 mm considering adding or removing for every 5 mm change in the thickness of cement covering (up to the thickness of 40 mm) | m2 | 9.1204 |
| 3.4.1.25 | Horizontal pasting waterproofing of walls and foundations in 1 layer | m2 | 53.2 |
| 3.4.1.26 | Arrangement of pasting waterproofing with sealing membrane in bituminous mastic, first layer | m2 | 13.2 |
| 3.4.1.27 | Welding of flanges to steel pipelines DN900 PN25 | pcs | 1 |
| 3.4.1.28 | Installation of ductile iron flange adapter PN25 DN900x800 | pcs. | 1 |
| 3.4.1.29 | Installation of ductile iron branch, flange hub DN800 PN25 | pcs. | 1 |
| 3.4.1.30 | Installation of anchored joint DN 800 PN25 with locking ring | pcs. | 1 |
| *3.4.2* | *Breaking Up, Temporary and Permanent Reinstatement of Surfaces around Manholes and buried* |  |
| 3.4.2.1 | Arrangement of concrete pavement around the wells | m3 | 1.24 |
| *3.4.3* | *Pipework – Reinstatement. Breaking Up, Temporary and Permanent Reinstatement of Surfaces of Different Types along Pipe Routes* |  |  |
| 3.4.3.1 | Arrangement of levelling layers of the sand base with a motor grader | m3 | 12.5 |
| 3.4.3.2 | Arrangement of black gravel foundations using infiltration method if the thickness is 8 cm. If the thickness of the foundation changes, add to/from standard 27-23-5 for every 1 cm (up to a thickness of 18 cm)  | m2 | 50 |
| 3.4.3.3 | Arrangement of the top layer of 5-cm-thick coating of asphalt and concrete mixture with an asphalt paver if the width of laying is 7 m. If the thickness changes, add to/from standards 27-27-1 – 27-27-4 for every 0.5 cm (up to a thickness of 6 cm) | m2 | 50 |
| 3.4.3.4 | Installation of concrete curb stones on a concrete base of up to 100 mm | lm | 20 |
| *3.4.4* | *Crossings Through the Walls of Chambers or Buildings* |  |
| 3.4.4.1 | Hole in the reinforced concrete well | pcs. | 2 |
| 3.4.4.2 | Installation of the sealing as specified under the Sub-Chapter 2.1.1 in the Chapter 2 Particular Technical Specifications | pcs. | 2 |
| 3.5 | **HYDRAULIC PRESSURE TEST** |  |  |
| 3.5.1 | Hydraulic pressure tests, flushing and disinfection of pipelines DN800 | lm | 2089 |
| 3.6 | **DEMOLITION AND SITE CLEARANCE** |  |  |
| 3.6.1 | Dismantling of existing steel water supply pipes DN900 | lm | 5 |
| 3.6.2 | Transportation of waste material up to 15 km | t | 1 |
| 3.6.3 | Dismantling of a metal fence made of welded mesh panels on reinforced concrete pillars without a base, up to 2.2 m high | lm | 10 |
|  |  |  |  |
| **OPTIONAL WORKS TO CONNECT PHASE 1 AND PHASE 2 PIPEWORKS IN CHAMBERS (Details are provided in the Chapter 2 Particular Technical Specifications Sub-Chapter 2.1.1)** |
| 3.8 | CONNECTION CHAMBER BETWEEN TWO DI DN800 MM PIPES AND EXISTING DN1000 MM PIPE (PK0) including following works |  |  |
| 3.8.1 | Redesign of the chamber as shown on Figure 3 Sub-Chapter 2.1.1, Chapter 2 Particular Technical Specifications | ls | 1 |
| 3.8.2 | Construction of the Chamber following requirements set under Chapter 2 and under 3.4 in the Price Schedule | ls | 1 |
| 3.8.3 | Installation of the DI DN800 Tee and clamps | ls | 1 |
| 3.8.4 | Installation of Valve DN800 and needed fittings | ls | 1 |
| 3.8.5 | Connection with the DN1000 steel pipe  | ls | 1 |
| 3.9 | CONNECTION CHAMBER TO CONNEC PHASE 1 AND PHASE 2 DI DN 800 MM PIPES as specified under Chapter 2 Particular Technical Specifications Sub-Chapter 2.1.1 Figure 5 and under items 3.3 and 3.4 in the BoQ | ls | 1 |

**Part 3.2 Segment A2.**Rehabilitation of emergency sections of the WPS “Shubranets” - CWR “Popova” pressure water main DN = 900 mm with a total length of ~ 7 km in Chernivtsi city, Chernivtsi region.

Rehabilitation of the water main sections with an estimated length of 3.5 km that are not included in Phase 1 (the 2nd segment of the water main near Ocheret village to the gravel road)

| **ITEM NO.** | **DESCRIPTION** | **UNIT** | **QUANTITY** |
| --- | --- | --- | --- |
| 3.1 | **PIPEWORK - PIPES IN TRENCHES** |  |  |
| 3.1.1 | Laying of Socket pipes made of spheroidal graphite ductile iron DN800 PN25 | m | 1737 |
| 3.1.2 | Excavation into a disposal area with the “dragline” or “back hoe” excavators, the group of soils is 4  | m3 | 1891.45 |
| 3.1.3 | Excavation into a disposal area with the “dragline” or “back hoe” excavators, the group of soils is 2  | m3 | 1372.77 |
| 3.1.4 | Excavation loading the soil, group of soils is 4, with its further transportation for up to 40 km | m3 | 99.31 |
| 3.1.5 | Excavation loading the soil, group of soils is 2, with its further transportation for up to 40 km | m3 | 1301.96 |
| 3.1.6 | Finishing manually, hand stripping of the bottom and walls with the soil displacement in the excavation pits and tranches developed by mechanical means | m3 | 533.28 |
| 3.1.7 | Arrangement of a sand foundation under the pipelines | m3 | 190.27 |
| 3.1.8 | Sand dusting, h=500 mm | m3 | 30.54 |
| 3.1.9 | Filling the trenches, excavation of pit hollows and pits manually, the group of soils is 1 | m3 | 152.77 |
| 3.1.10 | Backfilling of trenches with bulldozers using the soil of 1,2 type, and its further compaction with air rammers | m3 | 1753.28 |
| 3.1.11 | Backfilling of trenches with bulldozers using the soil of 3,4 type, and its further compaction with air rammers | m3 | 1891.45 |
| 3.1.12 | Installation of concrete stops on the network | pcs | 12 |
| 3.2 | **PIPEWORK – TRENCHLESS** |  |  |
| 3.2.1 | Clean the Host Pipe DN900 | m | 51.5 |
| 3.2.2 | Set up bypass, flow management | m | 51.5 |
| 3.2.3 | Installation of CIPP liner | m | 51.5 |
| 3.2.4 | UV light or Heat for curing | m | 51.5 |
| 3.2.5 | Testing of the section | m | 51.5 |
| 3.2.6 | Arrangement of waterproofing | m2 | 9.75 |
| 3.2.7 | Excavation loading the soil, group of soils is 4, with its further transportation for up to 40 km | m3 | 36.13 |
| 3.2.8 | Excavation loading the group of soils is 2, with its further transportation for up to 40 km | m3 | 90.31 |
| 3.2.9 | Excavation into a disposal area with the “dragline” or “back hoe” excavators, the group of soils is 4, during the trenches development | m3 | 13.87 |
| 3.2.10 | Excavation into a disposal area with the “dragline” or “back hoe” excavators, the group of soils is 2, during the trenches development | m3 | 39.69 |
| 3.2.11 | Finishing manually, hand stripping of the bottom and walls with the soil displacement in the excavation pits and tranches developed by mechanical means | m3 | 10 |
| 3.2.12 | Backfilling of trenches with bulldozers using the soil of 1,2 type, and its further compaction with air rammers | m3 | 49.69 |
| 3.2.13 | Backfilling of trenches with bulldozers using the soil of 3,4 type, and its further compaction with air rammers | m3 | 13.87 |
| 3.3 | **PIPEWORK - FITTINGS AND VALVES** |  |  |
| 3.3.1 | Welding of flanges to steel pipelines DN900 PN25 | pcs. | 4 |
| 3.3.2 | Installation of anchored joint DN 800 PN25 with locking ring with set of mount hardware | pcs. | 300 |
| 3.3.3 | Installation of bell reducer made of spheroidal graphite ductile iron DN800 | pcs. | 25 |
| 3.3.4 | Installation of joint gasket DN800 | pcs. | 38 |
| 3.3.5 | Installation of hub elbow made of spheroidal graphite ductile iron 45° DN800 PN25 | pcs. | 4 |
| 3.3.6 | Installation of hub elbow made of spheroidal graphite ductile iron 22° DN800 PN25 | pcs. | 3 |
| 3.3.7 | Installation of hub elbow made of spheroidal graphite ductile iron 11° DN800 PN25 | pcs. | 5 |
| 3.3.8 | Installation of flexible coupling for pipes made of ductile iron DN800 PN25 | pcs. | 55 |
| 3.4 | **PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES** |  |  |
| 3.4.1 | **Chamber 1\*, which includes the following works**  | pcs. | 1 |
| 3.4.1.1 | Excavation loading the soil, group of soils is 4, with its further transportation for up to 40 km | m3 | 24.53 |
| 3.4.1.2 | Excavation loading the soil, group of soils is 2, with its further transportation for up to 40 km | m3 | 53.14 |
| 3.4.1.3 | Arrangement of gravel basis under the foundations | m3 | 2.73 |
| 3.4.1.4 | Arrangement of concrete foundation mattress | m3 | 2.7 |
| 3.4.1.5 | Arrangement of pasting waterproofing with sealing membrane in bituminous mastic, the first layer | m2 | 26.22 |
| 3.4.1.6 | Arrangement of flat bottoms of rectangular structures with a wall thickness of more than 150 mm, B 30 (M 400) heavy-weight concrete, aggregate size is 5-10 mm | m3 | 5.3 |
| 3.4.1.7 | Arrangement of levelling concrete with a thickness of 20 mm considering adding or removing for every 5 mm change in the thickness of levelling concrete (up to an average thickness of 55 mm) | m2 | 15.75 |
| 3.4.1.8 | Arrangement of concrete pillars, B 10 (M 150) heavy-weight concrete, aggregate size is 40 mm | m3 | 1.1 |
| 3.4.1.9 | Installation of basement wall blocks of ФБС 24.4.6-Т type, DSTU B.V.2.6-108:2010 (with the weight of up to 1,5 t) | pcs. | 10 |
| 3.4.1.10 | Installation of basement wall blocks of ФБС 12.4.6-Т type DSTU B.V.2.6-108:2010 (with the weight of up to 1 t) | pcs. | 9 |
| 3.4.1.11 | Installation of basement wall blocks of ФБС 9.4.6-Т type, DSTU B.V.2.6-108:2010 (with the weight of up to 0,5 t) | pcs. | 30 |
| 3.4.1.12 | Reinforcement of walls with a greed of 40х40, d=10, А240С type | m2 | 1.63 |
| 3.4.1.13 | Installation of reinforced concrete rings КО6 (3.900.1-14 released 1 (Ф321) | pcs. | 4 |
| 3.4.1.14 | Laying of ceiling slabs ПТ 75.240.14-6 | pcs. | 4 |
| 3.4.1.15 | Laying of ceiling slabs ПТО 150.240.14-6 | pcs. | 4 |
| 3.4.1.16 | Installation of a metal ladder МД-1 (MD-1) | pcs. | 4 |
| 3.4.1.17 | Installation of ductile iron hatch for the well | pcs. | 4 |
| 3.4.1.18 | Installation of beam Б12 (4300\*500\*400) | pcs. | 1 |
| 3.4.1.19 | Priming of metal surfaces at a time with zinc protective primer |  m2 | 6.8 |
| 3.4.1.20 | Installation of pits 400х400х200 | pcs. | 1 |
| 3.4.1.21 | Installation of cast-in place reinforcing belt ПМ-1 | m2 | 1.4 |
| 3.4.1.22 | Arrangement of levelling concrete with a thickness of 20 mm considering adding or removing for every 5 mm change in the thickness of levelling concrete (up to an average thickness of 55 mm) | m2 | 15.9094 |
| 3.4.1.23 | Horizontal pasting waterproofing of walls and foundations in 1 layer | m2 | 54.44 |
| 3.4.1.24 | Arrangement of pasting waterproofing with sealing membrane in bituminous mastic, first layer | m2 | 21.14 |
| 3.4.1.25 | Installation of smooth flanged branch with ductile iron end DN800 L=0.6 m PN25 | pcs. | 1 |
| 3.4.1.26 | Installation of ductile iron flange T-bend DN800х800х800 PN25 | pcs. | 1 |
| 3.4.1.27 | Installation of dismantling joint DN800 PN25 | pcs. | 1 |
| 3.4.1.28 | Installation of anchored joint DN 800 PN25 with locking ring | pcs. | 1 |
| 3.4.1.29 | Welding of flanges to steel pipelines DN900 | pcs. | 1 |
| 3.4.1.30 | Installation of short flange ductile iron gate valve PN25 DN150 with flywheel DN150  | pcs. | 2 |
| 3.4.1.31 | Installation of ductile iron flange adapter PN25 DN900х800 | pcs. | 1 |
| 3.4.1.32 | Welding of flat steel flanges ВСт9сп2, ВСт9сп3 PN25 DN150  | pcs. | 2 |
| 3.4.1.33 | Welding of the steel blind flange DN150  | pcs. | 1 |
| 3.4.1.34 | Installation of steel nipple DN150 | m | 0.3 |
| 3.4.1.35 | Welding of flanges to steel pipelines DN800 | pcs. | 1 |
| 3.4.1.36 | Installation of a two-stage air valve DN150 | pcs. | 1 |
| 3.4.2 | **Chamber 2 and 3 including the following works:** | pcs. | 2 |
| 3.4.2.1 | Installation of steel structures remaining in the body of concrete (running staples) | pcs. | 16 |
| 3.4.2.2 | Arrangement of gravel basis under the foundations | m3 | 3.62 |
| 3.4.2.3 | Arrangement of concrete foundation mattress | m3 | 3.6 |
| 3.4.2.4 | Arrangement of pasting waterproofing with sealing membrane in bituminous mastic, the first layer | m2 | 34.6 |
| 3.4.2.5 | Arrangement of flat bottoms of rectangular structures with a wall thickness of more than 150 mm, B 30 (M 400) heavy-weight concrete, aggregate size is 5-10 mm |  m3 | 7 |
| 3.4.2.6 | Arrangement of levelling concrete with a thickness of 20 mm considering adding or removing for every 5 mm change in the thickness of levelling concrete (up to an average thickness of 55 mm) |  m2 | 18 |
| 3.4.2.7 | Arrangement of concrete pillars, B 10 (M 150) heavy-weight concrete, aggregate size is 40 mm |  m3 | 0.8 |
| 3.4.2.8 | Installation of basement wall blocks of ФБС 24.4.6 type, DSTU B.V.2.6-108:2010 (with the weight of up to 1,5 t | pcs. | 16 |
| 3.4.2.9 | Installation of basement wall blocks of ФБС 12.4.6-Т type DSTU B.V.2.6-108:2010 (with the weight of up to 1 t | pcs. | 28 |
| 3.4.2.10 | Installation of basement wall blocks of ФБС 9.4.6-Т type, DSTU B.V.2.6-108:2010 with the weight of up to 0,5 t | pcs. | 8 |
| 3.4.2.11 | Installation of basement wall blocks of ФБС 12.4.3-Т type, DSTU B.V.2.6-108:2010 | pcs. | 4 |
| 3.4.2.12 | Reinforcement of walls with a greed of 40х40, d=10, А240С type | m2 | 2.6 |
| 3.4.2.13 | Installation of reinforced concrete rings КС-7-6  | pcs. | 8 |
| 3.4.2.14 | Laying of ceiling slabs ПТ 75.180.14-6 | pcs. | 4 |
| 3.4.2.15 | Laying of ceiling slabs ПТО 150.180.14-6 | pcs. | 8 |
| 3.4.2.16 | Installation of beam Б7 (3580\*380\*300) | pcs. | 2 |
| 3.4.2.17 | Installation of ductile iron hatch for the well | pcs. | 8 |
| 3.4.2.18 | Installation of a metal ladder МД-1 | pcs. | 8 |
| 3.4.2.19 | Priming of metal surfaces at a time with zinc protective primer |  m2 | 13,6 |
| 3.4.2.20 | Installation of pits 400х400х200 | pcs. | 2 |
| 3.4.2.21 | Installation of cast-in place reinforcing belt ПМ-2 | m2 | 2.2 |
| 3.4.2.22 | Arrangement of levelling concrete with a thickness of 20 mm considering adding or removing for every 5 mm change in the thickness of levelling concrete (up to an average thickness of 55 mm) | m2 | 18.2408 |
| 3.4.2.23 | Horizontal pasting waterproofing of walls and foundations in 1 layer | m2 | 106.4 |
| 3.4.2.24 | Arrangement of pasting waterproofing with sealing membrane in bituminous mastic, first layer | m2 | 26.4 |
| 3.4.2.25 | Welding of flanges to steel pipelines DN900  | pcs. | 2 |
| 3.4.2.26 | Installation of ductile iron flange adapter PN25 DN900x800 | pcs. | 2 |
| 3.4.2.27 | Installation of ductile iron branch, flange hub DN800 PN25 | pcs. | 1 |
| 3.4.2.28 | Installation of smooth flanged branch with ductile iron end DN800 L=0.6 m PN25 | pcs. | 1 |
| 3.4.2.29 | Installation of anchored joint DN 800 PN25 with locking ring | pcs. | 2 |
| *3.4.3* | *Breaking Up, Temporary and Permanent Reinstatement of Surfaces around Manholes and buried* | pcs. | 3 |
| 3.4.3.1 | Arrangement of concrete pavement around the wells |  m3 | 3.72 |
| *3.4.4* | *Crossings Through the Walls of Chambers or Buildings* |  |
|  | *Сhamber 1, which incl:* | pcs. | 1 |
| 3.4.4.1 | Hole in the reinforced concrete well | pcs. | 3 |
| 3.4.4.2 | Installation of the sealing as specified under the Sub-Chapter 2.1.1 in the Chapter 2 Particular Technical Specifications | lm | 0.4 |
|  | *Сhamber 2 and 3:* | pcs. | 2 |
| 3.4.4.3 | Hole in the reinforced concrete well | pcs. | 4 |
| 3.4.4.4 | Installation of the sealing as specified under the Sub-Chapter 2.1.1 in the Chapter 2 Particular Technical Specifications | lm | 0.8 |
| *3.4.5* | *Pipework – Reinstatement. Breaking Up, Temporary and Permanent Reinstatement of Surfaces of Different Types along Pipe Routes* |  |
| 3.4.5.1 | Arrangement of levelling layers of the sand base with a motor grader | m3 | 2.5 |
| 3.4.5.2 | Arrangement of black gravel foundations using infiltration method if the thickness is 8 cm with adding add to/from standard 27-23-5 for every 1 cm (up to a thickness of 18 cm) | m2 | 10 |
| 3.4.5.3 | Arrangement of the top layer of 5-cm-thick coating of asphalt and concrete mixture with an asphalt paver if the width of laying is 7 m. If the thickness changes, add to/from standards 27-27-1 – 27-27-4 for every 0.5 cm (up to a thickness of 6 cm) | m2 | 10 |
| 3.4.5.4 | Installation of concrete curb stones on a concrete base of up to 100 mm | lm | 8 |
| 3.5 | **HYDRAULIC PRESSURE TESTS** |  |  |
| 3.5.1 | Hydraulic pressure tests, flushing and disinfection of pipelines DN800-900 | lm | 1788.5 |
| 3.6 | **DEMOLITION AND SITE CLEARANCE** |  |  |
| 3.6.1 | Dismantling of existing steel water supply pipes DN900 |  lm | 25 |
| 3.6.2 | Transportation of waste up to 15 km |  t | 5.1 |
| 3.7 | **WATER MAIN RENOVATION AND ANCILLARY WORKS** |  |  |
| 3.7.1 | Laying pipelines with polyethylene pipes DN300, hydraulic test | m | 5 |
| 3.7.2 | Laying of polyethylene water supply pipes using hydraulic-pressure test, the pipes diameter is 160 mm |  m | 3 |
| 3.7.3 | Installing a filter box for round channel DN100 | pcs. | 1 |
| 3.7.4 | Installation of polyethylene shaped parts DN160 | pcs. | 1 |
| 3.7.5 | Installation of ventilation fungus DN160 |  m2 | 0.04 |

**Part 2 MATERIALS/EQUIPMENT SUPPLIED FROM ABROAD**

**LOT 2**

**WATER MAIN REHABILITATION SECTIONS/SEGMENTS 3, 4 AND 5**

**Part 2.1 Segment A3.**Rehabilitation of emergency sections of the WPS “Shubranets” - CWR “Popova” pressure water main DN900 with a total length of ~ 7 km in Chernivtsi city, Chernivtsi region.

 Rehabilitation of the water main section with an estimated length of 2 km (the segment of the water main from Halytskyi Shliakh Street to the Prut River).

| **ITEM NO.** | **DESCRIPTION** | **UNIT** | **QUANTITY** |
| --- | --- | --- | --- |
| 2.1 | Rotary butterfly valve DN900 PN25 | pcs | 3 |
| 2.2 | Ductile iron flange T-bend DN900х900х900 PN25 | pcs | 2 |
| 2.3 | Dismantling joint DN900 PN25 | pcs | 3 |
| 2.4 | Two-stage air valve DN150 PN25 | pcs | 1 |
| 2.5 | Short flange ductile iron gate valve PN25 DN150 | pcs | 2 |
| 2.6 | Flywheel for gate valve DN150 | pcs | 2 |
| 2.7 | CIPP Liner including the curing materials | m | 808.78 |

**Part 2.2 Segment A4.**Rehabilitation of emergency sections of the WPS “Shubranets” - CWR “Popova” pressure water main DN = 900 mm with a total length of ~ 7 km in Chernivtsi city, Chernivtsi region.

 Rehabilitation of the water main section with an estimated length of 2 km (Water main segment in the area of Lenkivtsi village to Halytskyi Shliakh Street)

| **ITEM NO.** | **DESCRIPTION** | **UNIT** | **QUANTITY** |
| --- | --- | --- | --- |
| 2.1 | Socket pipes made of spheroidal graphite ductile iron DN800 PN25 | m | 978.5 |
| 2.2 | Anchored joint DN800 PN25 with locking ring | pcs | 153 |
| 2.3 | Bolt М 45х180 (dxL), washer М45, spring washer М45, nut М45 | pcs | 151 |
| 2.4 | Bell reducer made of spheroidal graphite ductile iron DN800 | pcs | 25 |
| 2.5 | Joint gasket DN800 | pcs | 165 |
| 2.6 | Hub elbow made of spheroidal graphite ductile iron 45° DN800 PN25 | pcs | 8 |
| 2.7 | Hub elbow made of spheroidal graphite ductile iron 22° DN800 PN25 | pcs | 6 |
| 2.8 | Hub elbow made of spheroidal graphite ductile iron 11° DN800 PN25 | pcs | 9 |
| 2.9 | Flexible coupling for pipes made of ductile iron DN800 PN25 | pcs | 5 |
| 2.10 | Ductile iron flange adapter PN25 DN900х800 | pcs | 2 |
| 2.11 | Smooth flanged branch with ductile iron end DN800 L=0.6 m PN25 | pcs | 1 |
| 2.12 | Ductile iron flange T-bend DN800х300х800 PN25 | pcs | 1 |
| 2.13 | Ductile iron branch, flange hub DN800 PN25 | pcs | 1 |
| 2.14 | Rotary butterfly valve DN800 PN25 | pcs | 1 |
| 2.15 | Dismantling joint DN800 PN25 | pcs | 1 |
| 2.16 | Rotary butterfly valve DN300 PN25 | pcs | 1 |
| 2.17 | Flywheel for gate valve DN300 | pcs | 1 |

**Part 2.3 Segment A5.**Rehabilitation of emergency sections of the WPS “Shubranets” - CWR “Popova” pressure water main DN = 900 mm with a total length of ~ 7 km in Chernivtsi city, Chernivtsi region.

Rehabilitation of the water main segment with an estimated length of 1.5 km between Zolochivska and Stryiska Streets

| **ITEM NO.** | **DESCRIPTION** | **UNIT** | **QUANTITY** |
| --- | --- | --- | --- |
| 2.1 | Socket pipes made of spheroidal graphite ductile iron DN800 PN25 | m | 650 |
| 2.2 | Anchored joint DN800 PN25 with locking ring | pcs | 117 |
| 2.3 | Bolt М 45х170 (dxL), washer М45, spring washer М45, nut М45 | pcs | 109 |
| 2.4 | Bell reducer made of spheroidal graphite ductile iron DN800 | pcs | 20 |
| 2.5 | Joint gasket DN800 | pcs | 120 |
| 2.6 | Hub elbow made of spheroidal graphite ductile iron 45° DN800 PN25 | pcs | 10 |
| 2.7 | Hub elbow made of spheroidal graphite ductile iron 22° DN800 PN25 | pcs | 6 |
| 2.8 | Hub elbow made of spheroidal graphite ductile iron 11° DN800 PN25 | pcs | 8 |
| 2.9 | Flexible coupling for pipes made of ductile iron DN800 PN25 | pcs | 3 |
| 2.10 | Ductile iron flange adapter PN25 DN900х800 | pcs | 4 |
| 2.11 | Ductile iron branch, flange hub DN800 PN25 | pcs | 3 |
| 2.12 | Smooth flanged branch with ductile iron end DN800 L=0.6 m PN25 | pcs | 5 |
| 2.13 | Ductile iron flange T-bend DN800х800х800 PN25 | pcs | 1 |
| 2.14 | Ductile iron flange T-bend DN800х300х800 PN25 | pcs | 1 |
| 2.15 | Dismantling joint DN900 PN25 | pcs | 1 |
| 2.16 | Short flange ductile iron gate valve PN25 DN150 | pcs | 4 |
| 2.17 | Flywheel for gate valve DN150 | pcs | 4 |
| 2.18 | Two-stage air valve DN150 PN25 | pcs | 2 |
| 2.19 | Rotary butterfly valve DN300 PN25 | pcs | 1 |
| 2.20 | Flywheel for gate valve DN300 | pcs | 1 |
| 2.21 | Ductile iron flange T-bend DN900х900х900 PN25 | pcs | 1 |
| 2.22 | Dismantling joint DN800 PN25 | pcs | 1 |
| 2.23 | Coupling with short split bolts DN900 PN25 | pcs | 2 |
| 2.24 | CIPP Liner including the curing materials | m | 670.56 |

**Part 3 WORKS**

**LOT 2**

**WATER MAIN REHABILITATION SECTIONS/SEGMENTS 3, 4 AND 5**

**Part 3.1 Segment A3.**Rehabilitation of emergency sections of the WPS “Shubranets” - CWR “Popova” pressure water main DN900 with a total length of ~ 7 km in Chernivtsi city, Chernivtsi region.

 Rehabilitation of the water main section with an estimated length of 2 km (the segment of the water main from Halytskyi Shliakh Street to the Prut River).

| **ITEM NO.** | **DESCRIPTION** | **UNIT** | **QUANTITY** |
| --- | --- | --- | --- |
| 3.2 | **PIPEWORK – TRENCHLESS** |  |  |
| 3.2.1 | Clean the Host Pipe DN900 | m | 808.5 |
| 3.2.2 | Set up bypass, flow management | m | 808.5 |
| 3.2.3 | Installation of CIPP liner | m | 808.5 |
| 3.2.4 | UV light or Heat for curing | m | 808.5 |
| 3.2.5 | Pressure testing and cleaning of the section | m | 808.5 |
| 3.2.6 | Arrangement of waterproofing | m2 | 19.5 |
| 3.2.7 | Excavation loading the soil on dump trucks with single-bucket diesel-powered crawler excavators, group of soils is 4 with its further transportation for up to 40 km | m3 | 12.75 |
| 3.2.8 | Excavation loading the soil on dump trucks with single-bucket diesel-powered crawler excavators, group of soils is 2 with its further transportation for up to 40 km | m3 | 74.38 |
| 3.2.9 | Excavation into a disposal area with the “dragline” or “back hoe” excavators, the group of soils is 4 | m3 | 54.5 |
| 3.2.10 | Excavation into a disposal area with the “dragline” or “back hoe” excavators, the group of soils is 2 | m3 | 239.74 |
| 3.2.11 | Finishing manually, hand stripping of the bottom and walls with the soil displacement in the excavation pits and tranches developed by mechanical means | m3 | 25 |
| 3.2.12 | Backfilling of trenches with bulldozers using the soil of 1,2 type, and its further compaction with air rammers | m3 | 264.74 |
| 3.2.13 | Backfilling of trenches with bulldozers using the soil of 3,4 type, and its further compaction with air rammers | m3 | 54.5 |
| 3.3 | **PIPEWORK - FITTINGS AND VALVES** |  |  |
| 3.3.1 | Welding of flanges to steel pipelines DN900 PN25 | pcs. | 8 |
| 3.4 | **PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES** |  |  |
| 3.4.1 | **Chamber 1, which includes the following works**  | pcs. | 1 |
| 3.4.1.1 | Arrangement of gravel basis under the foundations | m3 | 2.13 |
| 3.4.1.2 | Arrangement of concrete foundation mattress | m3 | 2.1 |
| 3.4.1.3 | Arrangement of pasting waterproofing with sealing membrane in bituminous mastic, the first layer | m2 | 20.4 |
| 3.4.1.4 | Arrangement of flat bottoms of rectangular structures with a wall thickness of more than 150 mm, B 30 (M 400) heavy-weight concrete, aggregate size is 5-10 mm | m3 | 4.2 |
| 3.4.1.5 | Arrangement of levelling concrete with a thickness of 20 mm considering adding or removing for every 5 mm change in the thickness of levelling concrete (up to an average thickness of 55 mm) | m2 | 11.25 |
| 3.4.1.6 | Arrangement of concrete pillars, B 10 (M 150) heavy-weight concrete, aggregate size is 40 mm | m3 | 1.2 |
| 3.4.1.7 | Installation of basement wall blocks of ФБС 24.4.6-Т type, DSTU B.V.2.6-108:2010 (with the weight of up to 1,5 t) | pcs. | 12 |
| 3.4.1.8 | Installation of basement wall blocks of ФБС 12.4.6-Т type DSTU B.V.2.6-108:2010 (with the weight of up to 1 t) | pcs. | 18 |
| 3.4.1.9 | Installation of basement wall blocks of ФБС 9.4.6-Т type, DSTU B.V.2.6-108:2010 (with the weight of up to 0,5 t) | pcs. | 4 |
| 3.4.1.10 | Reinforcement of walls with a greed of 40х40, d=10, А240С type | m2 | 2.4 |
| 3.4.1.11 | Installation of reinforced concrete rings КС-7-6  | pcs. | 4 |
| 3.4.1.12 | Laying of ceiling slabs ПТ 75.180.14-6 | pcs. | 4 |
| 3.4.1.13 | Laying of ceiling slabs ПТО 150.180.14-6 | pcs. | 4 |
| 3.4.1.14 | Installation of a metal ladder МД-1 (MD-1) | pcs. | 4 |
| 3.4.1.15 | Installation of ductile iron hatch for the well | pcs. | 4 |
| 3.4.1.16 | Installation of beam Б12 (4300\*500\*400) | pcs. | 1 |
| 3.4.1.17 | Priming of metal surfaces at a time with zinc protective primer | m2 | 8.4 |
| 3.4.1.18 | Installation of pits 400х400х200 | pcs. | 1 |
| 3.4.1.19 | Installation of cast-in place reinforcing belt ПМ-1 | m3 | 1.2 |
| 3.4.1.20 | Arrangement of levelling concrete with a thickness of 20 mm considering adding or removing for every 5 mm change in the thickness of levelling concrete (up to an average thickness of 40 mm) | m2 | 11.3854 |
| 3.4.1.21 | Horizontal pasting waterproofing of walls and foundations in 1 layer | m2 | 68.5 |
| 3.4.1.22 | Arrangement of pasting waterproofing with sealing membrane in bituminous mastic, first layer | m2 | 15.81 |
| 3.4.1.23 | Installation of running staples remaining in the body of concrete  | pcs. | 8 |
| 3.4.1.24 | Installation rotary butterfly valve DN900 PN25 | pcs. | 1 |
| 3.4.1.25 | Installation of ductile iron flange T-bend DN900х900х900 PN25 | pcs. | 1 |
| 3.4.1.26 | Installation of dismantling joint DN900 PN25 | pcs. | 1 |
| 3.4.1.27 | Welding of steel flange to steel pipelines DN900 PN25  | pcs. | 2 |
| 3.4.1.28 | Welding of steel blind flange to steel pipelines DN900 PN25  | pcs. | 1 |
| 3.4.1.29 | Installation of a two-stage air valve DN150 PN25 | pcs. | 1 |
| 3.4.1.30 | Welding of flat steel flanges ВСт9сп2, ВСт9сп3 PN25 DN150 | pcs. | 2 |
| 3.4.1.31 | Welding of the steel blind flange DN150 | pcs. | 1 |
| 3.4.1.32 | Installation of steel nipple DN150 | m | 0,3 |
| 3.4.1.33 | Installation of short flange ductile iron gate valve PN25 DN150 with flywheel DN150 | pcs. | 2 |
| 3.4.2 | **Chamber 2 including the following works:** | pcs. | 1 |
| 3.4.2.1 | Excavation loading the soil on dump trucks with single-bucket diesel-powered crawler excavators, group of soils is 4, with its further transportation for up to 40 km | m3 | 23.75 |
| 3.4.2.2 | Excavation loading the soil on dump trucks with single-bucket diesel-powered crawler excavators, group of soils is 2, with its further transportation for up to 40 km | m3 | 75.69 |
| 3.4.2.3 | Arrangement of gravel basis under the foundations | m3 | 3 |
| 3.4.2.4 | Arrangement of concrete foundation mattress | m3 | 3 |
| 3.4.2.5 | Arrangement of pasting waterproofing with sealing membrane in bituminous mastic, the first layer | m2 | 28.6 |
| 3.4.2.6 | Arrangement of flat bottoms of rectangular structures with a wall thickness of more than 150 mm, B 30 (M 400) heavy-weight concrete, aggregate size is 5-10 mm | m3 | 6 |
| 3.4.2.7 | Arrangement of levelling concrete with a thickness of 20 mm considering adding or removing for every 5 mm change in the thickness of levelling concrete (up to an average thickness of 55 mm) | m2 | 18.9 |
| 3.4.2.8 | Arrangement of concrete pillars, B 10 (M 150) heavy-weight concrete, aggregate size is 40 mm | m3 | 2.8 |
| 3.4.2.9 | Installation of basement wall blocks of ФБС 24.4.6-Т type, DSTU B.V.2.6-108:2010 (with the weight of up to 1,5 t) | pcs. | 10 |
| 3.4.2.10 | Installation of basement wall blocks of ФБС 12.4.6-Т type DSTU B.V.2.6-108:2010 (with the weight of up to 1 t) | pcs. | 8 |
| 3.4.2.11 | Installation of basement wall blocks of ФБС 9.4.6-Т type, DSTU B.V.2.6-108:2010 (with the weight of up to 0,5 t) | pcs. | 23 |
| 3.4.2.12 | Reinforcement of walls with a greed of 40х40, DN10, А240С type | m2 | 1.8 |
| 3.4.2.13 | Installation of reinforced concrete rings КС-7-6  | pcs. | 4 |
| 3.4.2.14 | Laying of ceiling slabs ПТ 75.240.14-6 | pcs. | 2 |
| 3.4.2.15 | Laying of ceiling slabs ПТО 150.240.14-6 | pcs. | 6 |
| 3.4.2.16 | Installation of a metal ladder МД-1 (MD-1) | pcs. | 4 |
| 3.4.2.17 | Installation of ductile iron hatch  | pcs. | 4 |
| 3.4.2.18 | Installation of running staples remaining in the body of concrete  | pcs. | 8 |
| 3.4.2.19 | Installation of ceiling beams, under-crane and binding at a height of supporting platform up to 6 m at the height of the beams over 500 mm to 800 mm | m3 | 1.16 |
| 3.4.2.20 | Priming of metal surfaces at a time with zinc protective primer | m2 | 6.8 |
| 3.4.2.21 | Installation of pits 400х400х200 | pcs. | 1 |
| 3.4.2.22 | Installation of cast-in place reinforcing belt ПМ-2 | m3 | 1.6 |
| 3.4.2.23 | Arrangement of levelling concrete with a thickness of 20 mm considering adding or removing for every 5 mm change in the thickness of levelling concrete (up to an average thickness of 55 mm) | m2 | 19.07 |
| 3.4.2.24 | Horizontal pasting waterproofing of walls and foundations in 1 layer | m2 | 69.01 |
| 3.4.2.25 | Arrangement of pasting waterproofing with sealing membrane in bituminous mastic, first layer | m2 | 24.65 |
| 3.4.2.26 | Installation of steel structures remaining in the body of concrete (staple УП2-8) | pcs. | 2 |
| 3.4.2.27 | Installation rotary butterfly valve DN900 PN25 | pcs. | 2 |
| 3.4.2.28 | Installation of ductile iron flange T-bend DN900х900х900 PN25 | pcs. | 1 |
| 3.4.2.29 | Installation of dismantling joint DN900 PN25 | pcs. | 2 |
| 3.4.2.30 | Welding of steel welded flange to pipelines DN900 PN25 | pcs. | 3 |
| *3.4.3* | *Breaking Up, Temporary and Permanent Reinstatement of Surfaces around Manholes and buried* | pcs. | 2 |
| 3.4.3.1 | Arrangement of concrete pavement around the wells |  m3 | 2.48 |
| *3.4.4* | *Crossings Through the Walls of Chambers or Buildings* |  |
| 3.4.4.1 | Hole in the reinforced concrete well | pcs. | 4 |
| 3.4.4.2 | Installation of the sealing as specified under the Sub-Chapter 2.1.1 in the Chapter 2 Particular Technical Specifications Installation of ring space seal  | pcs. | 4 |
| *3.4.5* | *Pipework – Reinstatement. Breaking Up, Temporary and Permanent Reinstatement of Surfaces of Different Types along Pipe Routes* |  |  |
| 3.4.5.1 | Mechanized soil preparation for arranging parterre and ordinary lawn without introduction of plant soil with further sowing parterre, moorish and ordinary lawns in manual | m2 | 90 |
| 3.5 | **HYDRAULIC PRESSURE TESTS** |  |  |
| 3.5.1 | Hydraulic pressure tests, flushing and disinfection of pipelines DN900 | m | 808.5 |
| 3.6 | **DEMOLITION AND SITE CLEARANCE** |  |  |
| 3.6.1 | Dismantling of rectangular water supply concrete wells with monolithic walls and a precast reinforced concrete coating in wet soils | m3 | 31.5 |
| 3.6.2 | Dismantling of steel gate latches or reverse valves DN900 | pcs. | 2 |
| 3.6.3 | Dismantling of steel gate latches or reverse valves DN150 | pcs. | 1 |
| 3.6.4 | Transportation of waste material up to 15 km | t | 9 |
| 3.7 | **WATER MAIN RENOVATION AND ANCILLARY WORKS** |  |  |
| 3.7.1 | Laying of polyethylene water supply pipes DN160 using hydraulic-pressure test | m | 3 |
| 3.7.2 | Installing a filter box for round channel DN100 | pcs. | 1 |
| 3.7.3 | Installation of polyethylene shaped parts DN160 | pcs. | 1 |
| 3.7.4 | Installation of ventilation fungus DN160 | pcs. | 1 |
|  |  |  |  |
| **OPTIONAL WORKS TO CONNECT PHASE 1 AND PHASE 2 PIPEWORKS IN CHAMBERS****(Details are provided in the Chapter 2 Particular Technical Specifications Sub-Chapter 2.1.1)** |
| 3.8 | CONNECTION CHAMBER BETWEEN TWO DI DN800 MM PIPES AND EXISTING DN1000 MM PIPE (PK0) including following works |  |  |
| 3.8.1 | Redesign of the chamber as shown on Figure 3 Sub-Chapter 2.1.1, Chapter 2 Particular Technical Specifications | ls | 1 |
| 3.8.2 | Construction of the Chamber following requirements set under Chapter 2 and under 3.4 in the Price Schedule | ls | 1 |
| 3.8.3 | Installation of the DI DN800 Tee and clamps | ls | 1 |
| 3.8.4 | Installation of Valve DN800 and needed fittings | ls | 1 |
| 3.8.5 | Connection with the DN1000 steel pipe  | ls | 1 |
| 3.9 | CONNECTION CHAMBER TO CONNEC PHASE 1 AND PHASE 2 DI DN 800 MM PIPES as specified under Chapter 2 Particular Technical Specifications Sub-Chapter 2.1.1 Figure 5 and under items 3.3 and 3.4 in the Price Schedule | ls | 1 |

**Part 3.2 Segment A4.**Rehabilitation of emergency sections of the WPS “Shubranets” - CWR “Popova” pressure water main DN = 900 mm with a total length of ~ 7 km in Chernivtsi city, Chernivtsi region.

 Rehabilitation of the water main section with an estimated length of 2 km (Water main segment in the area of Lenkivtsi village to Halytskyi Shliakh Street)

| **ITEM NO.** | **DESCRIPTION** | **UNIT** | **QUANTITY** |
| --- | --- | --- | --- |
| 3.1 | **PIPEWORK- PIPES IN TRENCHES** |  |  |
| 3.1.1 | Laying of Socket pipes made of spheroidal graphite ductile iron DN800 PN25 | m | 978.5 |
| 3.1.2 | Excavation into a disposal area with the “dragline” or “back hoe” excavators, the group of soils is 4 | m3 | 494.33 |
| 3.1.3 | Excavation into a disposal area with the “dragline” or “back hoe” excavators, the group of soils is 2 | m3 | 1898.67 |
| 3.1.4 | Excavation loading the soil on dump trucks with single-bucket diesel-powered crawler excavators, group of soils is 4, with further transportation for up to 40 km | m3 | 29.11 |
| 3.1.5 | Excavation loading the soil on dump trucks with single-bucket diesel-powered crawler excavators, group of soils is 2, with further transportation for up to 40 km | m3 | 794.47 |
| 3.1.6 | Finishing manually, hand stripping of the bottom and walls with the soil displacement in the excavation pits and tranches developed by mechanical means | m3 | 359.29 |
| 3.1.7 | Arrangement of a sand foundation under the pipelines | m3 | 107 |
| 3.1.8 | Sand dusting, h=500 mm | m3 | 17.2 |
| 3.1.9 | Filling the trenches, excavation of pit hollows and pits manually, the group of soils is 1 | m3 | 145.35 |
| 3.1.10 | Backfilling of trenches with bulldozers with the further compaction using air rammers, type of the soil 1,2  | m3 | 2112.61 |
| 3.1.11 | Backfilling of trenches with bulldozers with the further compaction using air rammers, type of the soil of 3,4 | m3 | 494.33 |
| 3.1.12 | Installation of concrete stops on the network | pcs. | 28 |
| 3.3 | **PIPEWORK - FITTINGS AND VALVES** |  |  |
| 3.3.1 | Installation of anchored joint DN 800 PN25 with locking ring with a set of mount hardware | pcs. | 151 |
| 3.3.2 | Installation of bell reducer made of spheroidal graphite ductile iron DN800 | pcs. | 25 |
| 3.3.3 | Installation of joint gasket DN800 | pcs. | 165 |
| 3.3.4 | Installation of hub elbow made of spheroidal graphite ductile iron 45° DN800 PN25 | pcs. | 8 |
| 3.3.5 | Installation of hub elbow made of spheroidal graphite ductile iron 22° DN800 PN25 | pcs. | 6 |
| 3.3.6 | Installation of hub elbow made of spheroidal graphite ductile iron 11° DN800 PN25 | pcs. | 9 |
| 3.3.7 | Installation of flexible coupling for pipes made of ductile iron DN800 PN25 | pcs. | 5 |
| 3.4 | **PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES** |  |  |
| 3.4.1 | **Chamber 1, which includes the following works**  | pcs. | 1 |
| 3.4.1.1 | Excavation loading the soil, group of soils is 4, with its further transportation for up to 40 km | m3 | 3.61 |
| 3.4.1.2 | Excavation loading the soil, group of soils is 2, with its further transportation for up to 40 km | m3 | 58.7 |
| 3.4.1.3 | Arrangement of gravel basis under the foundations | m3 | 1.81 |
| 3.4.1.4 | Arrangement of concrete foundation mattress | m3 | 1.8 |
| 3.4.1.5 | Arrangement of pasting waterproofing with sealing membrane in bituminous mastic, the first layer | m2 | 17.3 |
| 3.4.1.6 | Arrangement of flat bottoms of rectangular structures with a wall thickness of more than 150 mm, B 30 (M 400) heavy-weight concrete, aggregate size is 5-10 mm | m3 | 3.5 |
| 3.4.1.7 | Arrangement of levelling concrete with a thickness of 20 mm considering adding or removing for every 5 mm change in the thickness of levelling concrete (up to an average thickness of 55 mm) | m2 | 9 |
| 3.4.1.8 | Arrangement of concrete pillars, B 10 (M 150) heavy-weight concrete, aggregate size is 40 mm | m3 | 0.4 |
| 3.4.1.9 | Installation of basement wall blocks of ФБС 24.4.6-Т type, DSTU B.V.2.6-108:2010 (with the weight of up to 1,5 t) | pcs. | 8 |
| 3.4.1.10 | Installation of basement wall blocks of ФБС 12.4.6-Т type DSTU B.V.2.6-108:2010 (with the weight of up to 1 t) | pcs. | 14 |
| 3.4.1.11 | Installation of basement wall blocks of ФБС 12.4.3-Т type, DSTU B.V.2.6-108:2010 (with the weight of up to 0,5 t) | pcs. | 2 |
| 3.4.1.12 | Installation of basement wall blocks of ФБС 9.4.6-Т type, DSTU B.V.2.6-108:2010 (with the weight of up to 0,5 t) | pcs. | 4 |
| 3.4.1.13 | Reinforcement of walls with a greed of 40х40, d=10, А240С type | m2 | 1.3 |
| 3.4.1.14 | Installation of reinforced concrete rings КС-7-6 | pcs. | 4 |
| 3.4.1.15 | Laying of ceiling slabs ПТ 75.180.14-6 | pcs. | 2 |
| 3.4.1.16 | Laying of ceiling slabs ПТО 150.180.14-6 | pcs. | 4 |
| 3.4.1.17 | Installation of a metal ladder МД-1 (MD-1) | pcs. | 4 |
| 3.4.1.18 | Installation of ductile iron hatch | pcs. | 4 |
| 3.4.1.19 | Installation of beam Б7 (3580\*380\*300) | pcs. | 1 |
| 3.4.1.20 | Priming of metal surfaces at a time with zinc protective primer | m2 | 6.8 |
| 3.4.1.21 | Installation of metal grille of pits 400х400х200 | pcs. | 1 |
| 3.4.1.22 | Installation of cast-in place reinforcing belt ПМ-1 | m3 | 1.1 |
| 3.4.1.23 | Arrangement of levelling concrete with a thickness of 20 mm considering adding or removing for every 5 mm change in the thickness of levelling concrete (up to an average thickness of 55 mm) | m2 | 9.12 |
| 3.4.1.24 | Horizontal pasting waterproofing of walls and foundations in 1 layer | m2 | 52.5 |
| 3.4.1.25 | Arrangement of pasting waterproofing with sealing membrane in bituminous mastic, first layer | m2 | 13.2 |
| 3.4.1.26 | Installation of running staples remaining in the body of concrete | pcs. | 8 |
| 3.4.1.27 | Welding of flanges to steel pipelines DN900 | pcs. | 1 |
| 3.4.1.28 | Installation of ductile iron flange adapter PN25 DN900x800 | pcs. | 1 |
| 3.4.1.29 | Installation of smooth flanged branch with ductile iron end DN800 L=0.6 m PN25 | pcs. | 1 |
| 3.4.1.30 | Installation of anchored joint DN 800 PN25 with locking ring | pcs. | 1 |
| 3.4.2 | **Chamber 2 including the following works:** | pcs. | 1 |
| 3.4.2.1 | Excavation loading the soil on dump trucks with excavators, group of soils is 4, with its further transportation for up to 40 km | m3 | 12.75 |
| 3.4.2.2 | Excavation loading the soil on dump trucks with excavators, group of soils is 2, with its further transportation for up to 40 km | m3 | 61.63 |
| 3.4.2.3 | Arrangement of gravel basis under the foundations | m3 | 2.13 |
| 3.4.2.4 | Arrangement of concrete foundation mattress | m3 | 2.1 |
| 3.4.2.5 | Arrangement of pasting waterproofing with sealing membrane in bituminous mastic, the first layer | m2 | 20.34 |
| 3.4.2.6 | Arrangement of flat bottoms of rectangular structures with a wall thickness of more than 150 mm, B 30 (M 400) heavy-weight concrete, aggregate size is 5-10 mm | m3 | 4.2 |
| 3.4.2.7 | Arrangement of levelling concrete with a thickness of 20 mm considering adding or removing for every 5 mm change in the thickness of levelling concrete (up to an average thickness of 55 mm) | m2 | 11.25 |
| 3.4.2.8 | Arrangement of concrete pillars, B 10 (M 150) heavy-weight concrete, aggregate size is 40 mm | m3 | 0.9 |
| 3.4.2.9 | Installation of basement wall blocks of ФБС 24.4.6-Т type, DSTU B.V.2.6-108:2010 (with the weight of up to 1,5 t) | pcs. | 6 |
| 3.4.2.10 | Installation of basement wall blocks of ФБС 12.4.6-Т type DSTU B.V.2.6-108:2010 (with the weight of up to 1 t) | pcs. | 14 |
| 3.4.2.11 | Installation of basement wall blocks of ФБС 9.4.6-Т type, DSTU B.V.2.6-108:2010 (with the weight of up to 0,5 t) | pcs. | 15 |
| 3.4.2.12 | Reinforcement of walls with a greed of 40х40, d=10, А240С type | m2 | 1.6 |
| 3.4.2.13 | Installation of reinforced concrete rings КC-7-6 | pcs. | 4 |
| 3.4.2.14 | Laying of ceiling slabs ПТ 75.180.14-6 | pcs. | 4 |
| 3.4.2.15 | Laying of ceiling slabs ПТО 150.180.14-6 | pcs. | 4 |
| 3.4.2.16 | Installation of a metal ladder МД-1 (MD-1) | pcs. | 4 |
| 3.4.2.17 | Installation of ductile iron hatch  | pcs. | 4 |
| 3.4.2.18 | Installation of beam Б12 (4300\*500\*400) | m3 | 1 |
| 3.4.2.19 | Priming of metal surfaces at a time with zinc protective primer |  m2 | 6.8 |
| 3.4.2.20 | Installation the metal grille of pits 400х400х200 | pcs. | 1 |
| 3.4.2.21 | Installation of cast-in place reinforcing belt ПМ-2 | m3 | 1.2 |
| 3.4.2.22 | Arrangement of levelling concrete with a thickness of 20 mm considering adding or removing for every 5 mm change in the thickness of levelling concrete (up to an average thickness of 55 mm) | m2 | 11.39 |
| 3.4.2.23 | Horizontal pasting waterproofing of walls and foundations in 1 layer | m2 | 58.5 |
| 3.4.2.24 | Arrangement of pasting waterproofing with sealing membrane in bituminous mastic, first layer | m2 | 15.81 |
| 3.4.2.25 | Installation of running staples remaining in the body of concrete | pcs. | 8 |
| 3.4.2.26 | Installation of ductile iron flange adapter PN25 DN900x800 | pcs. | 1 |
| 3.4.2.27 | Installation of ductile iron flange T-bend DN800х300х800 PN25 | pcs. | 1 |
| 3.4.2.28 | Installation of anchored joint DN 800 PN25 with locking ring with a set of mount hardware | pcs. | 1 |
| 3.4.2.29 | Installation of ductile iron branch, flange hub DN800 PN25 | pcs. | 1 |
| 3.4.2.30 | Installation rotary butterfly valve DN800 PN25 | pcs. | 1 |
| 3.4.2.31 | Laying pipelines with polyethylene pipes «MultiPipe ІІ RС» DN300 with hydraulic testing | m | 2 |
| 3.4.2.32 | Installation of welded flange bushing DN300 | pcs. | 1 |
| 3.4.2.33 | Installation of steel flange for PE pipes DN300 | pcs. | 1 |
| 3.4.2.34 | Installation of heat-resistant coupling GF DN300 | pcs. | 1 |
| 3.4.2.35 | Installation of dismantling joint DN800 PN25 | pcs. | 1 |
| 3.4.2.36 | Installation rotary butterfly valve DN300 PN25 with flywheel DN300 | pcs. | 1 |
| 3.4.2.37 | Welding of flanges to steel pipelines DN900 | pcs. | 1 |
| 3.4.2.38 | *Drainage well including the following works:* |  |  |
| 3.4.2.38.1 | Excavation loading the soil on dump trucks with excavators, group of soils is 4, with its further transportation for up to 40 km | m3 | 3.44 |
| 3.4.2.38.2 | Excavation loading the soil on dump trucks with excavators, group of soils is 2, with its further transportation for up to 40 km | m3 | 25.19 |
| 3.4.2.38.3 | Soil compaction with crushed stone | m2 | 5.72 |
| 3.4.2.38.4 | Arrangement of concrete foundation mattress | m3 | 0.57 |
| 3.4.2.38.5 | Laying of bottom reinforced concrete slabs ПН20 series 3.900.1-14 production 1 | pcs. | 1 |
| 3.4.2.38.6 | Laying of reinforced concrete rings КС20.9 series серія 3.900.1- 14 production 1 | pcs. | 5 |
| 3.4.2.38.7 | Laying of bottom reinforced concrete slabs 1ПП20-2 series 3.900.1-14 production 1 | pcs. | 1 |
| 3.4.2.38.8 | Installation of ductile iron hatch for the well | pcs. | 1 |
| 3.4.2.38.9 | Сoncrete spraing of the surface with preliminary sandblasting processing with surface ironing | m2 | 37.7 |
| 3.4.2.38.10 | Arrangement of levelling concrete with a thickness of 20 mm considering adding or removing for every 5 mm change in the thickness of levelling concrete (up to an average thickness of 40 mm) | m2 | 3.14 |
| *3.4.3* | *Breaking Up, Temporary and Permanent Reinstatement of Surfaces around Manholes and buried* |  |  |
| 3.4.3.1 | Arrangement of concrete pavement around the wells |  m3 | 2.79 |
| *3.4.4* | *Crossings Through the Walls of Chambers or Buildings* |  |
| 3.4.4.1 | Hole in the reinforced concrete well | pcs. | 6 |
| 3.4.4.2 | Installation of the sealing as specified under the Sub-Chapter 2.1.1 in the Chapter 2 Particular Technical Specifications | pcs. | 6 |
| *3.4.5* | *Pipework – Reinstatement. Breaking Up, Temporary and Permanent Reinstatement of Surfaces of Different Types along Pipe Routes* |  |  |
| 3.4.5.1 | Arrangement of levelling layers of the sand base with a motor grader | m3 | 6.25 |
| 3.4.5.2 | Arrangement of black gravel foundations using infiltration method if the thickness is 8 cm with adding for every 1 cm (up to a thickness of 18 cm) | m2 | 25 |
| 3.4.5.3 | Arrangement of the top layer of 5-cm-thick coating of asphalt with adding for every 0.5 cm (up to a thickness of 6 cm) | m2 | 25 |
| 3.4.5.4 | Installation of concrete curb stones on a concrete base of up to 100 mm | m | 10 |
| 3.5 | **HYDRAULIC PRESSURE TESTS** |  |  |
| 3.5.1 | Hydraulic pressure tests, flushing and disinfection of pipelines DN800 | m | 978.5 |
| 3.5.2 | Flushing and disinfection of pipelines DN300 | m | 2 |
| 3.6 | **DEMOLITION AND SITE CLEARANCE** |  |  |
| 3.6.1 | Dismantling of existing steel water supply pipes DN900 | m | 80 |
| 3.6.2 | Rooting of trees with trolling up to 100 m, tree diameter over 32 cm | pcs. | 6 |
| 3.6.3 | Transportation of waste material up to 15 km | t | 16.2 |
| 3.7 | **WATER MAIN RENOVATION AND ANCILLARY WORKS** |  |  |
| 3.7.1 | Laying pipelines with polyethylene pipes DN300, hydraulic test | lm | 7 |

**Part 3.3 Segment A5.**Rehabilitation of emergency sections of the WPS “Shubranets” - CWR “Popova” pressure water main DN = 900 mm with a total length of ~ 7 km in Chernivtsi city, Chernivtsi region.

Rehabilitation of the water main segment with an estimated length of 1.5 km between Zolochivska and Stryiska Streets

| **ITEM NO.** | **DESCRIPTION** | **UNIT** | **QUANTITY** |
| --- | --- | --- | --- |
| 3.1 | **PIPEWORK- PIPES IN TRENCHES** |  |  |
| 3.1.1 | Laying of Socket pipes made of spheroidal graphite ductile ironDN800 PN25 | m | 650 |
| 3.1.2 | Excavation into a disposal area with the “dragline” or “back hoe” excavators, the group of soils is 4 | m3 | 2247.09 |
| 3.1.3 | Excavation into a disposal area with the “dragline” or “back hoe” excavators, the group of soils is 2 | m3 | 4451.45 |
| 3.1.4 | Excavation loading the soil, group of soils is 4, with further transportation for up to 40 km | m3 | 124.53 |
| 3.1.5 | Excavation loading the, group of soils is 2, with further transportation for up to 40 km | m3 | 796.9 |
| 3.1.6 | Finishing manually, hand stripping of the bottom and walls with the soil displacement in the excavation pits and tranches developed by mechanical means | m3 | 410.21 |
| 3.1.7 | Arrangement of a sand foundation under the pipelines | m3 | 70.37 |
| 3.1.8 | Sand dusting, h=500 mm | m3 | 103.05 |
| 3.1.9 | Filling the trenches, excavation of pit hollows and pits manually, the group of soils is 1 | m3 | 269.47 |
| 3.1.10 | Backfilling of trenches with bulldozers with the further compaction using air rammers, type of the soil of 1,2 | m3 | 4592.19 |
| 3.1.11 | Backfilling of trenches with bulldozers with the further compaction using air rammers, type of the soil of 3,4 | m3 | 2247.09 |
| 3.1.12 | Installation of concrete stops on the network | pcs | 24 |
| 3.2 | **PIPEWORK – TRENCHLESS** |  |  |
| 3.2.1 | Clean the Host Pipe DN900 | lm | 670 |
| 3.2.2 | Set up bypass, flow management | lm | 670 |
| 3.2.3 | Installation of CIPP liner | lm | 670 |
| 3.2.4 | UV light or Heat for curing | lm | 670 |
| 3.2.5 | Pressure testing and cleaning of the section | lm | 670 |
| 3.2.6 | Arrangement of waterproofing | m2 | 39 |
| 3.2.7 | Excavation loading the soil, group of soils is 4 with its further transportation for up to 40 km | m3 | 51.02 |
| 3.2.8 | Excavation loading the soil, group of soils is 2 with its further transportation for up to 40 km | m3 | 275.2 |
| 3.2.9 | Excavation into a disposal area with the “dragline” or “back hoe” excavators, the group of soils is 4  | m3 | 58.98 |
| 3.2.10 | Excavation into a disposal area with the “dragline” or “back hoe” excavators, the group of soils is 2 | m3 | 331.05 |
| 3.2.11 | Finishing manually, hand stripping of the bottom and walls with the soil displacement in the excavation pits and tranches developed by mechanical means | m3 | 30 |
| 3.2.12 | Backfilling of trenches with bulldozers with the further compaction using air rammers, type of the soil of 1,2 | m3 | 361.05 |
| 3.2.13 | Backfilling of trenches with bulldozers with the further compaction using air rammers, type of the soil of 3,4 | m3 | 58.98 |
| 3.3 | **PIPEWORK - FITTINGS AND VALVES** |  |  |
| 3.3.1 | Installation of anchored joint DN 800 PN25 with locking ring with a set of mount hardware | pcs. | 109 |
| 3.3.2 | Installation of bell reducer made of spheroidal graphite ductile iron DN800 | pcs. | 20 |
| 3.3.3 | Installation of joint gasket DN800 | pcs. | 120 |
| 3.3.4 | Installation of hub elbow made of spheroidal graphite ductile iron 45° DN800 PN25 | pcs. | 10 |
| 3.3.5 | Installation of hub elbow made of spheroidal graphite ductile iron 22° DN800 PN25 | pcs. | 6 |
| 3.3.6 | Installation of hub elbow made of spheroidal graphite ductile iron 11° DN800 PN25 | pcs. | 8 |
| 3.3.7 | Installation of flexible coupling for pipes made of ductile iron DN800 PN25 | pcs. | 3 |
| 3.3.8 | Welding of flanges to steel pipelines DN900 PN25 | pcs. | 16 |
| 3.4 | **PIPEWORK - MANHOLES AND PIPEWORK ANCILLARIES** |  |  |
| 3.4.1 | **Chamber 1, 2, 3 and 5 includes the following works**  | pcs. | 4 |
| 3.4.1.1 | Excavation loading the soil on dump trucks with excavators, group of soils is 4, with its further transportation for up to 40 km | m3 | 14.5 |
| 3.4.1.2 | Excavation loading the soil on dump trucks with excavators, group of soils is 2, with its further transportation for up to 40 km | m3 | 47.9 |
| 3.4.1.3 | Arrangement of gravel basis under the foundations | m3 | 7.24 |
| 3.4.1.4 | Arrangement of concrete foundation mattress | m3 | 7.2 |
| 3.4.1.5 | Arrangement of pasting waterproofing with sealing membrane in bituminous mastic, the first layer | m2 | 69.2 |
| 3.4.1.6 | Arrangement of flat bottoms of rectangular structures with a wall thickness of more than 150 mm, B 30 (M 400) heavy-weight concrete, aggregate size is 5-10 mm | m3 | 14 |
| 3.4.1.7 | Arrangement of levelling concrete with a thickness of 20 mm considering adding or removing for every 5 mm change in the thickness of levelling concrete (up to an average thickness of 55 mm) | m2 | 36 |
| 3.4.1.8 | Arrangement of concrete pillars, B 10 (M 150) heavy-weight concrete, aggregate size is 40 mm | m3 | 1.6 |
| 3.4.1.9 | Installation of basement wall blocks of ФБС 24.4.6-Т type, DSTU B.V.2.6-108:2010 (with the weight of up to 1,5 t) | pcs. | 52 |
| 3.4.1.10 | Installation of basement wall blocks of ФБС 12.4.6-Т type DSTU B.V.2.6-108:2010 (with the weight of up to 1 t) | pcs. | 64 |
| 3.4.1.11 | Installation of basement wall blocks of ФБС 9.4.6-Т type, DSTU B.V.2.6-108:2010 (with the weight of up to 0,5 t) | pcs. | 24 |
| 3.4.1.12 | Installation of basement wall blocks of ФБС 12.4.3-Т DSTU B.V.2.6-108:2010 (with the weight of up to 0,5 t) | pcs. | 6 |
| 3.4.1.13 | Reinforcement of walls with a greed of 40х40, d=10, А240С type | m2 | 7.8 |
| 3.4.1.14 | Installation of reinforced concrete rings КС-7-6  | pcs. | 24 |
| 3.4.1.15 | Laying of ceiling slabs ПТ 75.180.14-6 | pcs. | 8 |
| 3.4.1.16 | Laying of ceiling slabs ПТО 150.180.14-6 | pcs. | 16 |
| 3.4.1.17 | Installation of a metal ladder МД-1 (MD-1) | pcs. | 16 |
| 3.4.1.18 | Installation of ductile iron hatch | pcs. | 16 |
| 3.4.1.19 | Installation of beam Б7 (3580\*380\*300) | pcs. | 4 |
| 3.4.1.20 | Priming of metal surfaces at a time with zinc protective primer | m2 | 35.2 |
| 3.4.1.21 | Installation of metal grille of pits 400х400х200 | pcs. | 4 |
| 3.4.1.22 | Installation of cast-in place reinforcing belts | m3 | 5.5 |
| 3.4.1.23 | Arrangement of levelling concrete with a thickness of 20 mm considering adding or removing for every 5 mm change in the thickness of levelling concrete (up to an average thickness of 55 mm) | m2 | 36.48 |
| 3.4.1.24 | Horizontal pasting waterproofing of walls and foundations in 1 layer | m2 | 277 |
| 3.4.1.25 | Arrangement of pasting waterproofing with sealing membrane in bituminous mastic, first layer | m2 | 52.8 |
| 3.4.1.26 | Installation of running staples remaining in the body of concrete | pcs. | 36 |
| 3.4.1.27 | Welding of flanges to steel pipelines DN900 | pcs. | 4 |
| 3.4.1.28 | Installation of ductile iron flange adapter PN25 DN900x800 | pcs. | 4 |
| 3.4.1.29 | Installation of ductile iron branch, flange hub DN800 PN25 | pcs. | 2 |
| 3.4.1.30 | Installation of smooth flanged branch with ductile iron end DN800 L=0.6 m PN25 | pcs. | 2 |
| 3.4.1.31 | Installation of anchored joint DN 800 PN25 with locking ring | pcs. | 4 |
| 3.4.2 | **Chamber 3.1 and 4, which includes the following works**  | pcs. | 2 |
| 3.4.2.1 | Excavation loading the soil on dump trucks with excavators, group of soils is 4, with its further transportation for up to 40 km | m3 | 38.8 |
| 3.4.2.2 | Excavation loading the soil on dump trucks with excavators, group of soils is 2, with its further transportation for up to 40 km | m3 | 129.61 |
| 3.4.2.3 | Arrangement of gravel basis under the foundations | m3 | 4.86 |
| 3.4.2.4 | Arrangement of concrete foundation mattress | m3 | 4.8 |
| 3.4.2.5 | Arrangement of pasting waterproofing with sealing membrane in bituminous mastic, the first layer | m2 | 46.54 |
| 3.4.2.6 | Arrangement of flat bottoms of rectangular structures with a wall thickness of more than 150 mm, B 30 (M 400) heavy-weight concrete, aggregate size is 5-10 mm | m3 | 9.5 |
| 3.4.2.7 | Arrangement of levelling concrete with a thickness of 20 mm considering adding or removing for every 5 mm change in the thickness of levelling concrete (up to an average thickness of 55 mm) | m2 | 27 |
| 3.4.2.8 | Arrangement of concrete pillars, B 10 (M 150) heavy-weight concrete, aggregate size is 40 mm | m3 | 1.7 |
| 3.4.2.9 | Installation of basement wall blocks of ФБС 24.4.6-Т type, DSTU B.V.2.6-108:2010 (with the weight of up to 1,5 t) | pcs. | 16 |
| 3.4.2.10 | Installation of basement wall blocks of ФБС 12.4.6-Т type DSTU B.V.2.6-108:2010 (with the weight of up to 1 t) | pcs. | 23 |
| 3.4.2.11 | Installation of basement wall blocks of ФБС 9.4.6-Т type, DSTU B.V.2.6-108:2010 (with the weight of up to 0,5 t) | pcs. | 45 |
| 3.4.2.12 | Reinforcement of walls with a greed of 40х40, d=10, А240С type | m2 | 3.2 |
| 3.4.2.13 | Installation of reinforced concrete rings КС-7-6 | pcs. | 8 |
| 3.4.2.14 | Laying of ceiling slabs ПТ 75.240.14-6 | pcs. | 4 |
| 3.4.2.15 | Laying of ceiling slabs ПТО 150.240.14-6 | pcs. | 4 |
| 3.4.2.16 | Laying of ceiling slabs ПТ 75.180.14-6 | pcs. | 4 |
| 3.4.2.17 | Laying of ceiling slabs ПТО 150.180.14-6 | pcs. | 4 |
| 3.4.2.18 | Installation of a metal ladder МД-1 (MD-1) | pcs. | 8 |
| 3.4.2.19 | Installation of ductile iron hatch | pcs. | 8 |
| 3.4.2.20 | Installation of beam Б12 (4300\*500\*400) | pcs. | 2 |
| 3.4.2.21 | Priming of metal surfaces at a time with zinc protective primer | m2 | 13.6 |
| 3.4.2.22 | Installation of pits 400х400х200 | pcs. | 2 |
| 3.4.2.23 | Installation of cast-in place reinforcing belt ПМ-3.1 | m3 | 1.4 |
| 3.4.2.24 | Installation of cast-in place reinforcing belt ПМ-4 | m3 | 1.2 |
| 3.4.2.25 | Arrangement of levelling concrete with a thickness of 20 mm considering adding or removing for every 5 mm change in the thickness of levelling concrete (up to an average thickness of 55 mm) | m2 | 27.3 |
| 3.4.2.26 | Horizontal pasting waterproofing of walls and foundations in 1 layer | m2 | 124.5 |
| 3.4.2.27 | Arrangement of pasting waterproofing with sealing membrane in bituminous mastic, first layer | m2 | 36.95 |
| 3.4.2.28 | Installation of running staples remaining in the body of concrete | pcs. | 16 |
| 3.4.2.29 | Installation of smooth flanged branch with ductile iron end DN800 L=0.6 m PN25 | pcs. | 3 |
| 3.4.2.30 | Installation of ductile iron flange T-bend DN800х800х800 PN25 | pcs. | 1 |
| 3.4.2.31 | Installation of ductile iron flange T-bend DN800х300х800 PN25 | pcs. | 1 |
| 3.4.2.32 | Installation of dismantling joint DN800 PN25 | pcs. | 1 |
| 3.4.2.33 | Installation of anchored joint DN 800 PN25 with locking ring | pcs. | 4 |
| 3.4.2.34 | Installation of ductile iron branch, flange hub DN800 PN25 | pcs. | 1 |
| 3.4.2.35 | Installation of short flange ductile iron gate valve PN25 DN150 with flywheel DN150 | pcs. | 2 |
| 3.4.2.36 | Welding of flat steel flanges ВСт9сп2, ВСт9сп3 PN25 DN150 | pcs. | 2 |
| 3.4.2.37 | Welding of the steel welded blind flange DN150 | pcs. | 1 |
| 3.4.2.38 | Installation of steel brunch DN150 | m | 0.3 |
| 3.4.2.39 | Welding of steel welded blind flange DN800 | pcs. | 1 |
| 3.4.2.40 | Installation of a two-stage air valve DN150 PN25 | pcs. | 1 |
| 3.4.2.41 | Laying pipelines with polyethylene pipes «MultiPipe ІІ RС» DN300 with hydraulic testing | m | 2 |
| 3.4.2.42 | Installation of welded flange bushing DN300 | pcs. | 1 |
| 3.4.2.43 | Installation of steel flange for PE pipes DN300 | pcs. | 1 |
| 3.4.2.44 | Installation of heat-resistant coupling GF DN300 | pcs. | 1 |
| 3.4.2.45 | Installation of rotary butterfly valve DN300 PN25 with a flywheel DN300 | pcs. | 1 |
| 3.4.2.46 | *Drainage well including the following works:* |  |  |
| 3.4.2.46.1 | Excavation loading the soil on dump trucks with excavators, group of soils is 4, with its further transportation for up to 40 km | m3 | 4.58 |
| 3.4.2.46.2 | Excavation loading the soil on dump trucks with excavators, group of soils is 2, with its further transportation for up to 40 km | m3 | 18.32 |
| 3.4.2.46.3 | Soil compaction with crushed stone | m2 | 5.72 |
| 3.4.2.46.4 | Arrangement of concrete foundation mattress | m3 | 0.6 |
| 3.4.2.46.5 | Laying of bottom reinforced concrete slabs ПН20 series 3.900.1-14 production 1 | pcs. | 1 |
| 3.4.2.46.6 | Laying of reinforced concrete rings КС20.9 series серія 3.900.1- 14 production 1 | pcs. | 4 |
| 3.4.2.46.7 | Laying of bottom reinforced concrete slabs 1ПП20-2 series 3.900.1-14 production 1 | pcs. | 1 |
| 3.4.2.46.8 | Installation of ductile iron hatch for the well | pcs. | 1 |
| 3.4.2.46.9 | Сoncrete spraing of the surface with preliminary sandblasting processing with surface ironing | m2 | 31.4 |
| 3.4.2.46.10 | Arrangement of levelling concrete with a thickness of 20 mm considering adding or removing for every 5 mm change in the thickness of levelling concrete (up to an average thickness of 40 mm) | m2 | 3.14 |
| 3.4.3 | **Chamber 6 and 7 including the following works:** | pcs. | 2 |
| 3.4.3.1 | Excavation loading the soil on dump trucks with single-bucket diesel-powered crawler excavators, group of soils is 4, with its further transportation for up to 40 km | m3 | 17 |
| 3.4.3.2 | Excavation loading the soil on dump trucks with single-bucket diesel-powered crawler excavators, group of soils is 2, with its further transportation for up to 40 km | m3 | 70.13 |
| 3.4.3.3 | Arrangement of gravel basis under the foundations | m3 | 3.41 |
| 3.4.3.4 | Arrangement of concrete foundation mattress | m3 | 3.4 |
| 3.4.3.5 | Arrangement of pasting waterproofing with sealing membrane in bituminous mastic, the first layer | m2 | 32.5 |
| 3.4.3.6 | Arrangement of flat bottoms of rectangular structures with a wall thickness of more than 150 mm, B 30 (M 400) heavy-weight concrete, aggregate size is 5-10 mm | m3 | 6.6 |
| 3.4.3.7 | Arrangement of levelling concrete with a thickness of 20 mm considering adding or removing for every 5 mm change in the thickness of levelling concrete (up to an average thickness of 55 mm) | m2 | 16.65 |
| 3.4.3.8 | Arrangement of concrete pillars, B 10 (M 150) heavy-weight concrete, aggregate size is 40 mm | m3 | 1.3 |
| 3.4.3.9 | Installation of basement wall blocks of ФБС 24.4.6-Т type, DSTU B.V.2.6-108:2010 (with the weight of up to 1,5 t) | pcs. | 14 |
| 3.4.3.10 | Installation of basement wall blocks of ФБС 12.4.6-Т type DSTU B.V.2.6-108:2010 (with the weight of up to 1 t) | pcs. | 28 |
| 3.4.3.11 | Installation of basement wall blocks of ФБС 9.4.6-Т type, DSTU B.V.2.6-108:2010 (with the weight of up to 0,5 t) | pcs. | 32 |
| 3.4.3.12 | Reinforcement of walls with a greed of 40х40, d=10, А240С type | m2 | 4.1 |
| 3.4.3.13 | Installation of reinforced concrete rings КС-7-6 | pcs. | 8 |
| 3.4.3.14 | Laying of ceiling slabs ПТ 75.180.14-6 | pcs. | 4 |
| 3.4.3.15 | Laying of ceiling slabs ПТО 150.180.14-6 | pcs. | 4 |
| 3.4.3.16 | Laying of ceiling slabs П11д-8 75.150.10-6 | pcs. | 4 |
| 3.4.3.17 | Laying of ceiling slabs ПТО 150.150.12-6 | pcs. | 2 |
| 3.4.3.18 | Installation of a metal ladder МД-1 (MD-1) | pcs. | 6 |
| 3.4.3.19 | Installation of ductile iron hatch for the well | pcs. | 6 |
| 3.4.3.20 | Installation of beam Б12 (4300\*500\*400) | pcs. | 1 |
| 3.4.3.21 | Installation of beam Б5 (2840\*380\*300) | pcs. | 1 |
| 3.4.3.22 | Priming of metal surfaces at a time with zinc protective primer |  m2 | 12.6 |
| 3.4.3.23 | Installation of pits 400х400х200 | pcs. | 2 |
| 3.4.3.24 | Installation of cast-in place reinforcing belt | m3 | 3 |
| 3.4.3.25 | Arrangement of levelling concrete with a thickness of 20 mm considering adding or removing for every 5 mm change in the thickness of levelling concrete (up to an average thickness of 55 mm) | m2 | 16.88 |
| 3.4.3.26 | Horizontal pasting waterproofing of walls and foundations in 1 layer | m2 | 127 |
| 3.4.3.27 | Arrangement of pasting waterproofing with sealing membrane in bituminous mastic, first layer | m2 | 25 |
| 3.4.3.28 | Installation of running staples remaining in the body of concrete | pcs. | 12 |
| 3.4.3.29 | Installation of ductile iron flange T-bend DN900х900х900 PN25 | pcs. | 1 |
| 3.4.3.30 | Installation of dismantling joint DN900 PN25 | pcs. | 1 |
| 3.4.3.31 | Welding of steel welded flange DN900 PN25 | pcs. | 2 |
| 3.4.3.32 | Welding of steel welded blind flange DN900 PN25 | pcs. | 1 |
| 3.4.3.33 | Installation of a two-stage air valve DN150 PN25 | pcs. | 1 |
| 3.4.3.34 | Welding of flat steel flanges ВСт9сп2, ВСт9сп3 PN25 DN150 | pcs. | 2 |
| 3.4.3.35 | Welding of the steel blind flange DN150 | pcs. | 1 |
| 3.4.3.36 | Installation of steel nipple DN150 | m | 0.3 |
| 3.4.3.37 | Installation of short flange ductile iron gate valve PN25 DN150 with flywheel DN150 | pcs. | 2 |
| 3.4.3.38 | Installation of coupling with short split bolts DN900 PN25 | pcs. | 2 |
| *3.4.4* | *Crossings Through the Walls of Chambers or Buildings* |  |  |
| 3.4.4.1 | Hole in the reinforced concrete well | pcs. | 20 |
| 3.4.4.2 | Installation of the sealing as specified under the Sub-Chapter 2.1.1 in the Chapter 2 Particular Technical Specifications | pcs. | 20 |
| *3.4.5* | *Breaking Up, Temporary and Permanent Reinstatement of Surfaces around Manholes and buried* |  |  |
| 3.4.5.1 | Arrangement of concrete pavement around the wells |  m3 | 9.61 |
| *3.4.6* | *Pipework – Reinstatement. Breaking Up, Temporary and Permanent Reinstatement of Surfaces of Different Types along Pipe Routes* |  |  |
| 3.4.6.1 | Arrangement of levelling layers of the sand base with a motor grader | m3 | 62.5 |
| 3.4.6.2 | Arrangement of black gravel foundations with adding add to/from standard 27-23-5 for every 1 cm (up to a thickness of 18 cm) | m2 | 250 |
| 3.4.6.3 | Arrangement of the top layer of 5-cm-thick coating of asphalt. If the thickness changes, add to/from standards 27-27-1 – 27-27-4 for every 0.5 cm (up to a thickness of 6 cm) | m2 | 250 |
| 3.4.6.4 | Installation of concrete curb stones on a concrete base of up to 100 mm | m | 100 |
| 3.4.6.5 | Soil preparation for lawn arrangement with subsequent sowing of the lawn manually | m2 | 2105 |
| 3.5 | **HYDRAULIC PRESSURE TESTS** |  |  |
| 3.5.1 | Hydraulic pressure tests, flushing and disinfection of pipelines DN800-900 | m | 1320 |
| 3.5.2 | Flushing and disinfection of pipelines DN300 | m | 2 |
| 3.6 | **DEMOLITION AND SITE CLEARANCE** |  |  |
| 3.6.1 | Dismantling of steel water supply pipes DN900 | m | 50 |
| 3.6.2 | Dismantling of round manholes in wet soils | m2 | 22 |
| 3.6.3 | Dismantling of steel valves DN150 | pcs. | 1 |
| 3.6.4 | Rooting of trees diameter over 32 cm | pcs. | 33 |
| 3.6.5 | Transportation of waste material up to 15 km | t | 25 |
| 3.7 | **WATER MAIN RENOVATION AND ANCILLARY WORKS** |  |  |
| 3.7.1 | Laying pipelines with polyethylene pipes DN300, hydraulic test | m | 5 |
| 3.7.2 | Manual backfilling of a concrete well, soil group 1 | m3 | 8 |
| 3.7.3 | Dismantling of reinforced concrete non-pressure flared pipes DN500 | m | 10 |
| 3.7.4 | Laying of non-pressure reinforced concrete flared pipes DN500 | m | 10 |
| 3.7.5 | Laying of polyethylene water supply pipes using hydraulic-pressure test, the pipes DN160 | m | 6 |
| 3.7.6 | Installing a filter box for round channel DN100 | pcs. | 2 |
| 3.7.7 | Installation of polyethylene fittings DN160 | pcs. | 2 |
| 3.7.8 | Installation of ventilation fungus DN160 | m2 | 0.08 |
| 3.7.9 | Installation and dismantling up a profiled fence letters | m2 | 50 |
| 3.7.10 | Installation and dismantling of a metal fence made of welded mesh panels on reinforced concrete pillars without a base, up to 2.2 m high | m | 25 |