

PLACING UNDER SAFE CONDITIONS THE SANMIHAIU ROMAN HYDRO-KNOT

TIMIS COUNTY

Beneficiary:

NATIONAL ADMINISTRATION "APELE ROMANE"

BANAT RIVER BASIN ADMINISTRATION

Contract nr. 38/20.09.2013

Technical Manager:

Head of Design Workshop

B.P.A.E. and U.C.C.

Head of project:

Eng. Gheorghe Bratianu

Eng. Elena Belciug

Eng. Daniela Zaiu





CONTENT

A. Written parts

Chapter I. General Data

1. Investment objective name
2. Location
3. Investment holder
4. Investment beneficiary
5. Designer

Chapter II. General information on the project

1. Present situation and information on the responsible entity with implementing the project
2. Investment description
 - a. The prefeasibility study conclusions or long term investment detailed plan concerning the present situation, necessity and opportunity for promoting the investment, as well as the selected technical-economic scenario
 - b. Constructive, functional and technological description
3. Investment technical data
 - a) Area and location
 - b) Legal status of land that will be occupied
 - c) Situation of permanent occupied lands
 - d) Field studies
 - e) Main characteristics of construction in the investment objective, specificity of activity domain and constructive variants for realizing the investment, recommending the optimum variant for approval
 - f) The utilities existing situation and consuming analyses
 - g) The conclusions on environment impact evaluation
4. Realising period and main phases. The investment schedule

Chapter III. Investment estimated costs

Chapter IV. Cost-Benefit analyzing

Chapter V. Investment financing sources

Chapter VI. Estimation on occupied labour by investment promoting

Chapter VII. Investment main technical-economic indicators

Chapter VIII. Approvals and agreements on principle

Chapter IX. Conclusions

Annexes:

Ministry of Culture – Notice nr.1118/Z/05.06.2015

Timis County Office - land book extract

Official address to the Ministry of Environment, Waters and Forestry

Notice nr. 2/29 July 2015 Inter-ministerial Council for National Interest Public Works and Housing

Annex nr.1 – General Estimate –Total prices 30.09.2012

Annex nr.2 – General Estimate Rest to be executed – Prices 30.09.2012

Annex nr.3 – Summary Table regarding the costs for the investment

“Pacing under safe conditions the Sanmihaiu Roman hydro-knot, Timis County”

Annex nr.4 - Object estimate 1.2. – Land arrangements

Annex nr. 5- Object estimate 1.3. – Environment protection arrangements
 Annex nr.6 – Object estimate 2.1. – Costs for objective necessary utilities
 Annex nr.7 – Object estimate 4.1.4. – Designed works demolishing
 Annex nr. 8 –Object estimate 4.1.5. – Access roads and platforms
 Annex nr. 9 – Object estimate 4.1.6. –Preliminary works
 Annex nr. 10 – Object estimate 4.1.7. – Hydro-technical works
 Annex nr. 11 – Object estimate 4.1.8. – Maneuver house rehabilitation
 Annex nr. 12 – Object estimate 4.1.9.- Rehabilitation complex and operating post
 Annex nr. 13 – Object estimate 4.1.10. – Hydro-technical works
 Annex nr. 14 – Object estimate 4.1.11. – Platforms and access roads
 Annex nr. 15 – Object estimate 4.1.12. – Hydro-technical works
 Annex nr. 16 – Object estimate 4.1.13 – Landscaping
 Annex nr. 17 – Object works evaluation 1.2. – Land arrangements
 Annex nr. 18 – Object works evaluation 1.3. - Environment protection arrangements
 Annex nr. 19 – Object works evaluation 2.1. – Cost for objective necessary utilities
 Annex nr. 20 – Object works evaluation 4.1.4. – Demolishing designed works
 Annex nr. 21 – Object works evaluation 4.1.5. – Platform and access roads
 Annex nr. 22 – Object works evaluation 4.1.6. - Preliminary works
 Annex nr. 23 – Object works evaluation 4.1.7.-Hydro-technical works
 Annex nr. 23' – List of work quantities – Rehabilitation hydro-mechanical equipments – dam
 Annex nr. 24 – Object works evaluation 4.1.8. – Rehabilitation maneuver house
 Annex nr. 25 – Object works evaluation 4.1.9. – Rehabilitation complex and operating post
 Annex nr. 26 – Object works evaluation 4.1.10. – Hydro-technical works
 Annex nr. 27 – Object works evaluation 4.1.11 – Platform and access roads
 Annex nr. 28 – Object works evaluation 4.1.12. – Hydro-technical works
 Annex nr. 28' – List of necessary quantities – Rehabilitation hydro-mechanical equipment – lock
 Annex nr. 29 – Object works evaluation 4.1.13. – Landscaping
 Annex nr. 30 – Justifying the cost chapter values 3, 5.2, 5.3 contained in the General Estimate

B. Drawn parts

1. General site plan with works location
2. Sections type bank consolidation, avant flood bed and apron rehabilitation, section placing cofferdam to dry Scale 1:100
3. A1-Site plan
4. A2-Post survey – ground floor plan, basement plan
5. A3-Post survey – penthouse arrangement plan and section
6. A4-Double operational building-Ground floor plan and section
7. 1/1 EH 2092 -0- Rehabilitation dam hydro-mechanical equipment
8. 2/2 –EH 2092 – 0- Rehabilitation lock hydro-mechanical equipment

Verified,

Eng. M. Ghihanis



Head of project,

Eng. D. Zaiu



SC AQUAPROIECT SA

Workshop 1-B.P.A.E.U.C.C.

“Placing under safe conditions
the Sanmihaiu Roman hydro-knot, Timis
County”

TECHNICAL MEMOIR

CHAPTER I. GENERAL DATA

1. investment objective name: “Placing the Sanmihaiu Roman Hydro-knot under safe conditions”
2. Location: The Sanmihaiu Roman hydro-knot is located on the Bega river course, upstream the Sanmihaiu Roman settlement, at km 28+200
3. Investment holder: A.N. Apele Romane – Banat River Basin Administration Timisoara
4. Investment beneficiary: AN Apele Romane – Banat River Basin Administration Timisoara
5. Survey developer: SC Aquaproiect Bucharest

CHAPTER II. GENERAL INFORMATION ON THE PROJECT

1. PRESENT SITUATION AND INFORMATION ON THE ENTITY RESPONSIBLE WITH PROJECT IMPLEMENTING

1. Total value of the investment (prices on 31st January 2016) 40,558.677 th. Lei

Of which:

-to be financed – rest to be financed 36,079.125 th. Lei

Of which:

-Constructions-assembling 26,896.752 th. Lei

2. Capacities: Placing the Sanmihaiu Roman Hydro-knot under safe conditions

Along the years there have been many attempts of works’ restoring and placing under safe conditions. In 1988 the investment for capital repairs of the knot has been promoted. In the first stage there have been designed, confectioned and procured the hydro-mechanical equipments and the necessary embedded parts, but later, due to lack of funds, the investment has been ceased.

In 2011 the hydro-knot has been the object of a new investment, financed by the World Bank, the main result being the deviation of waters through the locks and placing the objective to dry, in order to expertise and evaluate the necessary works.

Investment Beneficiary: AN Apele Romane – ABA Banat Timisoara

I. 2. INVESTMENT DESCRIPTION

a) The conclusions of the prefeasibility study or of the detailed plan for long term investment regarding the actual situation, necessity and opportunity of investment promoting

The navigable Bega, arranged almost 250 years ago is hydro-technically seen as a construction including special technical arrangements, and especially of historical significance, significant works which focus on the concept and execution progress in this field.

The navigable way Timisoara (Romania) – Klek (Serbia) has a total length of 114.5 km (71.5 mls), of which 44.5 km (27.8 mls) on Romanian territory and 70 km (43.7 mls) on Serbian territory.

The navigation on the canal on Romanian territory was closed down, due to the evolution of political situation in the year 1958, situation which is maintained up till present. On Serbian territory, the navigable sector of the Bega canal connects with the navigation and hydro –ameliorative system Danube-Tisa-Danube. This is the reason why the Bega canal has a strategic position and facilitates the connection between the western part of Romania with the North Sea and with the Black Sea through the Rhine-Main-Danube Canal.

On Romanian territory the navigation water races are created by Hydro-knot Sanmihaiu Roman and Sinmartinu Maghiar (Uivar).The water race UHE Timisoara-NH Sanmihaiu Roman is vital for the city of Timisoara, considering the functions of this work:

At present the hydro-knot ensures:

- maintaining a minimum level in the upstream water race to ensure the supplying with drinking water , industrial and fire- fighting water of economic companies in the city of Timisoara;

- realising a constant level in the water race to maintain aquatic life and ecological demands and health of the population;

- possibility to evacuate the flood without causing flooding in the water race, as well as evacuating the ice during 21st December-21st March. In the meantime it ensures the maintaining of the transited flows during the limits established by the Romanian-Yugoslav Agreement, regarding the operating regime of the Bega Canal (minimum and maximum);

-realising the level to ensure the navigation in the navigation water race;

-finally, but not least, it represent a history living page of hydro-technical arrangements in Europe and in the world;

Remaking of the Feasibility study was necessary :

-The advanced degradation status of the water evacuation systems and equipments affect the general safety of the hydro-technical arrangement and connected with the foresees of the Romanian-Yugoslav foresees on the Canal operating system - make the risk of stopping the functioning of the hydro-knot to be unacceptable.

-The flooding aspect, the impossibility or deficiencies of operating the equipments affect the objectives situated near the Canal (especially the Timisoara water race on the city's territory) and protection constructions (dikes). The result of dikes' breaking is 1,000 households flooding, 20 km of county road, 30 km of commune road and over 4,000 ha. agricultural land.

-The damage of the hydro-technical knot might lead to water level decreasing below the minimum level for assuring the utilities (drinking and industrial water supply), with negative impact on population and economy on one side and direct impact on the environment on the other side.

Not least, preserving the actual situation (the blocking of the cylindrical weir and deviation of water through the locks, without any possibilities of operating and dredging) leads to an increasing degradation of the upstream water race and hence reducing the transport capacity of the canal (rapid silting), reducing the flood protection below the admitted limit respectively.

Moreover, besides the above mentioned facts, the Sanmihaiu Roman hydro-knot is classified as a B class monument of national interest, situated at position 276 –TM II-m-B-06283 on the historical monuments list.

b) Constructive , functional and technological description

The Sanmihaiu hydro-knot was built between the years 1910-1912 .

The constructions and equipments are the original ones. The hydro-knot consists of following works:

- weir dam
- lock
- operational buildings

The weir dam – is located on the right bank of the Bega Canal, being a construction of concrete founded on wooden piles.

It has 3 openings:

- One equipped with a double plane weir for regulating the navigation levels – 5.0x4.5/4.5
- One equipped with a cylindrical weir for transitions of maximum flows – 15.0x3.45/3.5
- One equipped with plane weir to evacuate the floatings and ice – 1.6x4.5/4.5

In longitudinal section the weir dam is formed of:

- an antefloodbed of simple concrete with the length of 10 m and width of 20 m;
- the general flood bed of concrete with the length of aprox. 18 m and a width of 21 m;
- apron basin with the length of 20 m;
- rear of stones

Both banks are protected by a perree of rough stone of 30 cm.

The weir suprastructure is made of concrete and stone masonry presenting following dimensions:

- the right bank pile has a length of 12.0 m, the flood bed height 5.35 m and a width of 2.0 m;
- the left bank pile has a length of 13.6 m, an apron flood bed of 7.0 m and a width of 3.1 m;
- the abutments of left and right dike present a trapeze shape in cross section with the coping width of 1.5 m and at the contact with the flood bed of aprox. 2.5 m.

Part of the dam constructions assembly is also the chamber or house of maneuver and represents a building included in the technical and historical patrimony of Romania, realized of materials and presenting an architecture specific for the beginning of last century.

The chamber is realized of molons made of masonry with a roof framing four slopes and a covering of ceramic tiles. The wooden works is made of metallic profiles and the interior finishes are simple: smattering of lime plaster on walls and floor of ceramic tiles.

The lock – is located on the left bank of the weirs and is connected to the canal by 2 access canals (waiting harbours).

The upstream access canal has a length of aprox.22.0 m and the downstream one of aprox. 150.0 . The taluses of the canals are protected with stone perree.

The lock has a total length of 115.0 m and is formed of:

- connection zones to the upstream and downstream canals protected with stone perree;
- the lock chamber with a total length of 70.0 m has an opening of 10.0 m in cross section;
- the lock walls are of brick masonry protected at exterior with concrete, in cross section presenting a trapeze shape with a coping width of 1.0 m, at the base of 3.2 m and a height of 5.7 m;

-the upstream and downstream lock ends have a length of 10.0 m each, are executed of stone masonry plus concrete and foreseen with niches for gates and acicular cofferdam.

-The lock flood bed is of concrete, founded on wooden piles and presents a width of 2.0 m.

In order to fill and empty the lock two side galleries are foreseen, with a total length of aprox. 90.0 m each and a section of 1.5m².The galleries are equipped with valves at each ending for filling – emptying.

The mechanical equipments of the lock are operated manually and consist of:

- The upstream and downstream lock gates with mechanical control on the rack;
- Valves for filling and emptying the lock (4), 2 upstream and 2 downstream, located in chambers located at the ends of side galleries;

The valves handling is also manually.

Operational constructions

The complex is located on the left bank of the lock and was realised at the same time with the constructions that form the Sanmihaiu Roman hydro-knot and was destined for the personnel operating the arrangement.

The complex includes the operation post, building included in the technical historical patrimony of Romania, the double operating building used for hosting the operational and surveying personnel and some household annexes (stables, storage houses, workshops).

The post is a construction with basement and ground floor with the dimensions of 9.20x10.00 m with a small decra on the northern façade and is made of brick masonry and slope roof with ceramic tile cover. The joinery is of wood. The floors are made of wood in rooms, mosaic in the rest of chambers at the ground floor and of cement at the basement.

The double operational building is a construction with ground floor and basement, with the dimensions of 9.20x10.00 m and is made of brick masonry, slope roof and ceramic tiles cover. The joinery is of wood. The floors are made of wood in rooms, mosaic in the rest of chambers at the ground floor and of cement at the basement.

The surrounding is made of brick base and piles and metal panels.

Due to the almost total absence of interventions or of usual maintaining works, the constructions and hydro-mechanical equipments are in an advanced state of degradation.

II.3. TECHNICAL DATA OF THE INVESTMENT

a) Area and location

Works will be realized in the Bega-Timis-Caras river basin, on the Bega river course – cadaster code V-1, upstream the Sanmihaiu Roman settlement, at aprox. 950 m of the

Sanmihai bridge over the canal, at km 28+200 of the left dike measured from the border with Serbia.

b) Legal status of the land that will be occupied

The investment does not include new constructions, the new proposed works are mainly repairs, consolidations and replacement of some damaged constructive elements or presenting a high grade of wear.

The land on which works will be realized is administrated by AN Apele Romane – ABA Banat.

c) The situation of permanent occupied lands

In order to realize the investment it is not necessary to occupy permanently auxiliary land surfaces, but temporary an area of 5,000 m² of land will be occupied for technological roads and access ramp. The temporary occupied lands will be returned to their initial use after investment finishing.

d) Field studies

At present documentation issuing, site plan from the beneficiary were used. The technical expertise was taken into account regarding the technical status of works.

e) The main characteristics of the constructions of the investment objective, specific to its domain and the constructive variants to realize the investment with recommendation of the optimum variant for approval.

Area specific climate and natural phenomena

Timis County is dominated by a moderate continental temperate climate, characteristic to the SE part of Pannonian Depression, with Mediterranean and oceanic influences. The annual average temperature varies between 10°-11 ° C within the plains, 9°-10° C within the low hills, 8°-9° within the high hills and mountain areas 4°-7°.

The dominant winds in the area blow from NE and SV with annual average speeds of 2.2-3.8 m/s. Situated in the S-V part of the country, the territory is characterized by a moderate continental temperate climate, with short and calm winters, being frequent under the influence of air masses and cyclones from the Adriatic and Mediterranean seas.

Geology and seismicity of the area

Structurally seen the studied area is entirely situated in the SE sector of Pannonian Depression, on Carpathian crystalline foundation sunken in steps into the plain area (in Miocene – old styric movements)-graben and raised as horsts in the mountain area.

On the N-S fracture line, at west from Buzias and that separates the risen area from the sunken one from the west (which includes and Timis low plain), volcano appearances are found.

In the Pannonian as well in the Quaternary tectonic movements of subsidence took place which lead to some river course deviation (Bega, Poganis, Timis) to a convergent system, which is receptioned by the subsidence plains of Lugoj and Timis.

-Basement rock is of Pannonian age (Pliocene) is found at a depth of 120 m and is made up of a succession of sands, marl clays and clays, to which marls and are subordinated. The surface of rock layer has a relative slope to the west. Within the basic rock coarse insertions at different levels appear.

-The covering formations are of Quaternary age being represented at surface by superior Holocene deposits (qh2) made up of recent alluviums of flood plains – gravels, sands and fine clay deposits.

Seismically seen the interest area is included into the macrozone of seismic intensity 7)according SR 11.100/93 Seismic area- Macrozoning of Romanian territory), and according to normative P 100/92 (modified in 1996) into the calculation area D, with a coefficient of $K_s=0.16$

According to Seismic designing code – Indicative P 100-1/2004 the wedge period $T_c=0.71$, and the peak values of land acceleration a_g for earthquakes with the medium recurrence interval $IMR=100$ years are $a_g=0.16-0.20\text{ g}$

Geotechnical conditions

In the Sanmihaiu Roman area, due to specific geomorphological conditions (are of subsidence plain) the silting from the alluvial plain presents frequent variations of grading compositions, vertically as well as lateral.

Within the flood plain the covering deposits are made of clay grounds (3-5 m) that cover gross alluvial of sand type, sand with gravel, gravel with sands.

Generally the studied areas till 1.60-2.00 m deep the cohesive grounds from the surface are relative dry, plastic vigorous, with medium compressibility being influenced by the daily and seasonal humidity variations.

Below 1.60-2.00 m, depending of how close they are to the ground water level, the cohesive grounds are humid and very humid (even saturated at 3.5-4.00 m) and getting a higher plasticity and a reduced consistence respectively.

As reminded, in the studied locations, till 4.00 m the cohesive grounds present a certain grading variability due to the specific silting conditions from the Bega flood plain.

In the minor bed area, recent alluvial deposits are found, made of sands, sands with gravel, clay sands, sandy clays often saturated.

Following table presents the main geotechnical indexes that can be take into account at design works:

Lithologic type	Geotechnical indexes						
	Volumetric weight γ (kN/m ³)	Module of linear strain E (kPa)	Internal friction angle Φ (degree)	Cohesion C(kPa)	Conventional pressure (basic value) Pconv (kPa)	Friction coefficient on foundation sole μ	Permeability coefficient
Clay	17.70-18.50	12,000-16,000	10-12	40-50	225-250	0.20-0.25	10^{-7} - 5×10^{-7}
Dusty clay, Clay dust	17.50-18.30	9,000-13,000	12-14	30-40	225-250	0.25-0.30	5×10^{-7} - 5×10^{-7}
Sandy clay, clays with sandy	17.70-18.60	11,000-18,000	14-16	20-30	250-275	0.30	10^{-6} - 10^{-5}

films							
Clay sand	16.50-17.50	12,000-20,000	16-18	10-15	200-275	0.35	10^{-4} - 10^{-3}
Sand	18.80-19.30	18,000-25,000	22-28	-	300-350	0.35-0.40	5×10^{-3} - 10^{-2}
And with gravel	19.50-20.50	25,000-35,000	28-31	-	350-400	0.40-0.45	10^{-2} - 5×10^{-2}

• Erosion critical speeds of grounds in open river beds can present following values (W. Creager and J. Justin)

- Clay, dusty clay 1.00-1.50 m/s
 - Clay dust, sandy clay 0.75-1.50 m/s
 - Clay sands (with gravel elements) 0.50-1.00 m/s
 - Dusty sands, clay sands 0.40-0.85 m/s
 - Medium-big sands 0.35-0.60 m/s
 - Small gravel 0.60-1.30 m/s
 - Big gravel 1.30-2.00 m/s
- **Coarse grain materials** - coarse grain alluvials – gravels, sands used as mineral waterhouse for concretes or as drains for Bega river bank protection, can be purchased from ballast pits on the Timis river (Lugoj-Costei) – over 50 km from the location area. The stone necessity can be covered with rocks purchased from the Sanovita quarry, Timis County .Here Quaternary magmatic basalt is exploited – compact rocks, with physical and superior mechanic resistance and frost work (aprox. 30-35 km of Timis).
 - According to indicative consumption rules for estimate article for earth moving works – TS edition 1994 – the grounds on which diggings will be realized are classified into following categories:

No.	Name of ground	Cohesive properties	Category of ground according to its behavior at digging				Average weight in situ (in digging)	Aeration after digging i%
			Manual, with shovel, spade	Mechanic				
				Excavator	Buldozer	Motoscreper		
1	2	3	4	5	6	7	8	9
1	Surface vegetal ground till 0.30 cm (thickness)	weak	light	I	I	I	1,200-1.400	14-28

2	Mainly clay	Very cohesive	Very strong	II	II	-	1,800-2,000	24-30
3	Sandy clay	Medium	strong	I	I	I	1,800-2,000	26-32
4	Clay sand	Weak cohesive	medium	I	I	I	1,500-1,700	8-17
5	Clay dust	Weak cohesive	medium	II	II	II	1,600-1,700	8-17
6	Sand	Weak cohesive	medium	I	II	II	1,400-1,700	8-17
7	Sand with gravel	Not cohesive	medium	II	II	II	1,700-1,950	8-17

WORK DESCRIPTION OBJECT OF FEASABILITY STUDY UPDATING

According to STAS 4273/83 the work is classified in class III of importance.

According to HG 925/10/995 and Order MLPT 77/1996 the works are verified according to request on domain A7 - „Resistance and stability at static and dynamic load, including the seismic ones for constructions and hydro-technical arrangements” and B5 – “ Safety in operating for construction and hydro-technical arrangements”

The designed works are foreseen to be executed in 5 stages, including the land restorations after works finishing.

Phase 1: Deviation of waters through the lock and putting the weir dam to dry

Phase 2: Rehabilitation of weir dam

Phase 3: Placing the lock to dry

Phase: 4: Rehabilitation lock

Phase 5: Island restoration

The proposed works to be realized in the first stage were realized and receptioned

These consisted of realising a discharge sill in order to assure the transit in good conditions for the entire operating flows through the lock canal during the entire period of dam rehabilitation works. In the meantime a part of the necessary accesses were realized, the temporary bridge over the lock to permit the access to the island and the access road on the island to realise the works of placing the lock to dry.

The present project contains the works design for phases 2, 3, 4 and 5 and demolishing of temporary works at phase 1.

The demolishing works at phase 1 contain the existing discharge sill demolishing from the area upstream of the lock, of the cofferdam for placing the lock to dry as well as disassembling the temporary traffic bridge from the lock.

Phase 2 involves dam and operational buildings rehabilitation and repair works

As preliminary works, for cleaning in order to execute the dam repair works unsilting works upstream and downstream will be realized (massive bank siltings are present). The unsilting works consist of vegetation cutting, excavations as well as land cleaning along the banks.

The vegetation will be gathered and burned.

The silt will be transported to a properly built deposit for environment protection. The land is property of the beneficiary.

The water from the inside will be directly through dewatering pumps realized.

According to the technical expertise of 2011 at the dam weir there are no problems regarding its resistance and stability.

For the repair of the dam weir following works are proposed:

-The anteflood bed rehabilitation. Will be realized by rehabilitating the surface concrete; - breaking the degraded concrete, washing, bush hammering, brushing, air cleaning, hole drilling, mounting and fixing anchors, net mounting and pouring a 50 cm thick concrete layer.

To reduce the infiltrations and pressures below the anteflood bed sole in front of it, along its section till the bank embedment a screen of metallic piles will be foreseen. The screen depth will be of 4.00 m measured from the concrete wear.

In front of the screen a 1 m deep rock filling will be realized.

Because along the flood bed the peree is degraded, it will be rebuilt again, according to its degradation. The peree rebuilding solution will be identical to that initially designed.

-Rehabilitation of apron basin. Will be realized by rehabilitating the surface concrete, the same way as in the previous case. There are concrete surfaces which will be rehabilitated by applying special mortar. The degraded peree will be refurbished or newly rebuild.

-Rehabilitation of the rocks rear This will be entirely rebuilt along the river bed section on a length of 72.50 m till its connection with the island downstream area.

-Rehabilitation of dam abutment and piles Their rehabilitation takes into account the technical monument aspect of the building. Intervention such as general cleaning, completion gaps with mortar, replacing destroyed slabs with other of same form and dimension. The concrete area will be rehabilitated by applying special mortar. The pedestrian bridge will be also rehabilitated.

Demolition and rebuilding works for hydro-mechanical equipments concrete will be foreseen.

-Mechanism house The rehabilitation works' main purpose is to rebuild architectural and functional the space for cylindrical weir functioning and dam double weir, which might be considered minimum interventions by their nature, for preserving the exterior and interior architectural aspect.

Following works are proposed:

- Sloop roof repairs by replacing the degraded element, preserving its form
- Rebuilding the roof ceramic tiles cover and its accessories
- Cleaning exterior masonry and replacing the degraded elements
- Disaffecting the existing metallic joinery, the access door and windows and replacing it with a special metallic joinery, preserving its original aspect
- Interior refurbishment of walls, by cleaning and applying a new layer of emulsion paint
- Cleaning and refurbishing the protection paint at exiting metallic works
- Replacing the existing floor with a new identical one
- Entirely replacing of electric equipments (interior lightning, earth connections, lightning rod)
- Repairing the degraded element, cleaning and applying a protection painting at wrought iron fence
- New layer with metallic piles placed at 2.5 m and Buzau net panels (2.0 m width)
- Rebuilding the exterior slab platform

-Hydro-mechanical equipment

The expertise to establish the actual technical status of hydro-mechanical equipments for serving the hydro-knot has revealed the fact that they do not correspond anymore , thus designing and producing new ones according to the present technical norms should be considered.

Considering this and the fact that the dam is an historical monument preserving the same type of hydro-mechanical equipments is desired, the rehabilitation works consist in their complete replacing with new ones.

- a) Cylindrical weir 15.0x3.45/3.5 – 1 piece

-The embedded parts will be replaced except for the racks.

- the weir metallic construction as well as the sluice valve will be completely replaced, together with the wooden sealing elements

- the handling mechanism is manual, only rehabilitation works will be realized consisting in replacing the depreciated ones (chain, bush etc) and repairing their functionality

b) Double plane weir 5.0x4.5/4.5 – 1 piece

- the embedded parts will be replaced

- the weir panels will be rebuilt, preserving the initial model

- the handling mechanism will be rehabilitated and preserved within its original form adding electrical handlings

- two cofferdams of 5.0x4.5/4.5 will be executed and mounted including their elements for placing to dry the double plane weir

c) - the plane weir 1.6x4.5/4.5 – 1 piece

- the embedded pieces will be replaced

- producing and installation a new weir panel

- execution of handling grid Md 1.6/1.6 necessary to handle the plane weir

- rehabilitation and completion with missing parts from the weir handling mechanism

- execution and installation of a cofferdam 1.6x4.5/4.5 and embedded parts.

d) different metallic confections, consisting in rehabilitation and replacing access stairs, lids, frames etc.

All the new equipments that will be installed will present the same technical and functional features with the ones existing at the location.

-The access roads and platforms - concerns the access road on the right bank. This road will be rehabilitated on a length of 1,025.00 m, of which 770.00 within the settlement.

The rehabilitated road will preserve the actual route within the settlement street and on the rest of 325.00 m will preserve the actual island access road.

The geometrical elements of the rehabilitated road sector:

Platform width $l_p = 5.00$ m

Traffic way width $l_c = 3.5$ m

Side roads 2×0.75 m

Earth moving works will be done consisting of diggings, compactions and transport of excavated material.

In order to realize the road foundation flatworks and road platform preparing on an surface of 3,600 m² will be realized.

The access road supra-structure will be realized of 20 cm of ballast, after compaction, 20 cm of cement concrete C25/30 and 4 cm of asphalt concrete Ba 16. A layer of 10 cm ballast is foreseen on the side roads after compaction.

On the access road the proposed traffic system is needed to take over the foreseen heavy traffic during the Sanmihaiu Roman Hydro-knot rehabilitation works.

After ending the Hydro-knot works the road will be marked using white paint.

-Operational buildings - For the efficient use of the Hydro-knot, the post (operational main building) and the buildings inside the complex need following intervention works:

The post

- Rehabilitation the wooden roof slope by replacing the degraded ones
- Rehabilitation the ceramic tile cover and roof accessories, (water pipes) installed on a layer of coating and water proofing foil
- Constructing a partial penthouse in the existing attic with partition walls of gypsum cardboard RF of 15 cm, with mineral wool mats insulation and ceilings of gypsum cardboard RF fixed on rafters with a 15 thick mineral wool mat insulation inbetween
- Installing Velux lighters to lighten the penthouse area
- Realizing a thermal insulation of 15 thick mineral wool mats, installed in the attic area in order to realize an efficient insulation of the interior ground floor area
- repairing damaged exterior plasters, plating the external picket with a layer of polystyrene of 10 cm, over which a thermo-system is applied
- refurbishing the exterior finishes with structured plasters, preserving the initial exterior aspect
- Local repairs at interior plasters and cleaning existing finishes at walls and ground floor ceiling
- Installing a suspended ceiling at the ground floor at 50 cm from the existing ceiling, to reduce the height
- Cleaning the existing finishes at the basement and applying a hydro-insulation protection mortar to stop infiltrations into the building
- Replacing the exterior wooden joinery (doors, windows) with wood joinery and insulating glass, preserving the initial aspect
- Remaking the interior finishes at walls and ceiling by applying a new plaster layer and finish layers with emulsion paint in rooms and a faience plating at a height of 210 cm in bathrooms and kitchen

- Replacing the existing floor by restoration mortar screed support and installing a new laminate floor in rooms and tiles in the remaining space
- Repairing the access stairs to the basement and penthouse using skid tiles
- Repairs at electrical installations, including: interior lightning installations, exterior electrical connections, earth plate and lightning rod
- Installing interior sanitary appliances, building sanitary groups inside at ground floor and penthouse and connection to the water-meter manhole
- Replacing the wood stove heating system with gas heating and execution of a thermal power interior installation
- Replacing the existing brick alley and pouring a new alley of reinforced concrete with net STM

Double operational building

- Rehabilitation the wooden roof slope by replacing the degraded ones
- Rehabilitation the ceramic tile cover and roof accessories, installed on a layer of coating and water proofing foil
- Constructing a partial penthouse in the existing attic with partition walls of gypsum cardboard RF of 15 cm, with mineral wool mats insulation and ceilings of gypsum cardboard RF fixed on rafters with a 15 thick mineral wool mat insulation in between
- Installing Velux lighters to lighten the penthouse area
- Realizing a thermal insulation of 15 thick mineral wool mats, installed in the attic area in order to realize an efficient insulation of the interior ground floor area
- repairing damaged exterior plasters, plating the external picket with a layer of polystyrene of 10 cm, over which a thermo-system is applied
- remaking the exterior finishes with structured plasters, preserving the initial exterior aspect
- Local repairs at interior plasters and cleaning existing finish at walls and ground floor ceiling
- Installing a suspended ceiling at the ground floor at 50 cm from the existing ceiling, to reduce the height
- Cleaning the existing finish at the basement and applying a hydro-insulation protection mortar to stop infiltrations into the building
- Replacing the exterior wooden joinery (doors, windows) with wood joinery and insulating glass, preserving the initial aspect

- Remaking the interior finishes at walls and ceiling by applying a new plaster layer and finish layers with emulsion paint in rooms and a faience plating at a height of 210 cm in bathrooms and kitchen
- Replacing the existing floor by restoration mortar screed support and installing a new laminate floor in rooms and tiles in the remaining space
- Repairing the access stairs to the basement and penthouse using skid tiles
- Repairs at electrical installations, including: interior lightning installations, exterior electrical connections, earth plate and lightning rod
- Installing interior sanitary appliances, building sanitary groups inside at ground floor and penthouse and connection to the water-meter manhole
- Replacing the wood stove heating system with gas heating and execution of a thermal power interior installation
- Replacing the existing brick alley and pouring a new alley of reinforced concrete with net STM

Households annexes

- Rehabilitation of annexes by carrying out sanitation works, exterior and interior plastering works, cleaning existing finishes and refurbishing them using emulsion paint, repairs and painting the joinery, repairs at roof slopes and ceramic tile covers

Technological annex

- It is proposed the execution of new technological annexes, of 6.00x11.00, that will include a workshop and a deposit room
- The annex will be of brick masonry GVP, with piles, belts and reinforced concrete plate, slope roof with ceramic tile cover, structured plaster at the façade and emulsion paintings at interior, cement washed concrete floor, PVC profile joinery, earth plate an alley of plain poured concrete
- The annex will be equipped with interior electrical lightning installations, exterior electrical connections, earth plate and lightning rod.

Connection to utilities

- A sewerage system will be realized inside the complex, the discharge of waters will be directed into a monobloc waste water reset
- A connection to the commune existing gas network will be established, its length being of aprox. 100 m
- The existing electrical power connection will be rehabilitated.

Enclosure arrangements and fencing

- Vertical systematization of the enclosure and rehabilitation of rain waters collection
- Access road and work concrete platform will be executed and the existing alley will be rehabilitated
- The existing fencing will be rehabilitated with frame work and plated piles and metallic panels, including the access gates
- The landscaping will be rehabilitated by planting sod, shrubs and trees.

Close circuit TV system

- To protect from unauthorized entrance to the objectives as well as signaling these attempts video monitoring and theft preventing signaling for main points has been foreseen
- Video monitoring will be realized by exterior video cameras for maximum 50 m distances, PAL system, including lens, infrared and during the night, IP minimum 65 on rotating supports that will be supplied and connected for data transmission from watch case.
- The energy supplying and data transmission cables will be protected with a flexible metallic tube against vandalizing, fixed on construction elements on which it is posted
- At dispatch CCTV system control elements have been foreseen:
- A command desk with a recorder and a shareable monitor, the recorder has the possibility to store the images for 30 days.
- The theft preventing signaling will be for each protected objective as well as at the dispatch office. Thus, each video camera located in the risk area will have a movement detector that will survey the enclosure and will be connected to the respective watch case and will transmit via a special channel signals to the dispatch office. Additional, detectors will be installed in the dispatch area for preventing unauthorized entrance within the authorized personnel area. The station will collect these signals and according to the program will transmit to the indicated destinations or will start the alarms at the dispatch office or the local ones.
- The dispatch stations is foreseen with a redundant system, being operable by 2 DVR storing equipments with memory for events storing, self -diagnoses, own supply source with accumulator/battery, and for deactivating the alarms a separate keyboard with reconfigurable code for CCTV systems.
- Starting with offer submission, the equipment and system compatibility with the project will be considered a complete integrated system.

Rebuilding access road from the county road DJ

The access road from the county road will be realized using a traffic concrete layer.

Phase 3 foresees works for placing the lock to dry

The works consisted in demolishing the earth cofferdams necessary to place the dam to dry, extracting the metallic piles and moving them upstream and downstream the lock, as well as the access road on the left bank. This road will be rehabilitated on a total length of 235.00 m, ensuring the access on the left bank, parallel with the lock and the related canal.

The geometrical elements for the rehabilitated road sector will be:

- Platform width $l_p = 5.00$ m
- Traffic way width $l_c = 3.5$ m
- Side roads 2×0.75 m

Earth moving works will be done consisting of diggings, compactions and transport of excavated material.

In order to realize the road foundation flatworks and road platform preparing on an surface of 940 m² will be realized.

The access road supra-structure will be realized of 20 cm of ballast, after compaction and 10 cm macadam after compaction, the side roads being of earth.

This proposed traffic system is sufficient for the left bank road, it being mainly an operational and intervention road.

After realizing all the rehabilitation and arrangement works at the Sanmihaiu Roman hydro-knot and of existing island, the temporary bridge for the island access, situated on the left bank will be disaffected and transported outside the hydro-knot perimeter.

Phase 4 includes lock rehabilitation works

A part of the works were realized in phase 1.

The works in this stage consist of:

-Hydro-mechanical equipment – At present, at location the lock gates are deposited on the coping. The cassation of the existing equipments is wished and their replacement with new ones.

a) lock gate 10x5.3 upstream with 2 canals – 1 piece

- replacement of embedded parts
- execution metallic construction for the 2 canals
- replacement for the mechanical parts and valves equipment (2 pieces)
- replacement of manual handling mechanism (2 pieces)
- execution and installing a cofferdam 10x5.3 and its embedded parts.

b)) lock gate 10x5.3 upstream with 2 canals – 1 piece

- replacement of embedded parts

- execution metallic construction for the 2 canals
- replacement for the mechanical parts and valves equipment (2 pieces)
- replacement of manual handling mechanism (2 pieces)
- execution and installing a cofferdam 10x5.3 and its embedded parts.

c) plane valve 0.85x1.225/5.6 – 4 pieces

- replacement embedded parts
- procurement and installing rolling plane valve 0.85x1.225/5.6 with manual handling
- executing and installing a cofferdam necessary to place the valve to dry

d) different metallic confection, consisting in rehabilitating or replacing the access stairs, lids, frames etc.

Unsiltings, pier rehabilitations, slabs and deteriorated molons replacement will be realized.

In the meantime the realizing of boarding and landing stocking in the waiting area, upstream the existing discharge sill that will be demolished at works finalizing.

In the meantime demolishing and rebuilding of mounting concrete works are foreseen afferent to hydro-mechanical equipments.

Phase 5 includes island landscaping works

Within the rehabilitation works at the Sanmihaiu hydro-knot the arrangement of a recreation spot on the island between the lock and Bega river bed is proposed.

The arrangement consist of a surrounding alley and connection middle alleys foreseen with benches at a distances of 10 m from each other.

The works will be completed by landscaping works at the green area between the alleys, by planting trees, shrubs, flowers and sod sowing.

To ensure the objective protection and its safety around the hydro-knot a fence of net on metallic piles is foreseen.

Also on the island shore the realizing of a stone pier is proposed, the solution is identical to the piers existing in the dam area.

f) The existing utilities situation and consume analyses

The utilities to realize the investment will be provided from the area. Till present they have been provided, no additional works for assuring other utilities are necessary.

The access to the hydro-knot is made by DN 6 till Timisoara, DJ 59 till Sanmihaiu Roman respectively.

The access to the building site will be realized by access ramps and technological roads.

No special water sources to assure utilities for building site organization are necessary, the building site water supply will be done from the area.

The building site organization will be done to the local electric power and no new electric power lines are needed.

No new gas supply sources or phone lines are necessary.

g) Conclusion on environment impact evaluation

Pollution sources and environmental protection

Due to the specific of the designed objective, the pollution sources will be analysed on two different time periods:

- execution period

- operating period

The designed works do not produce additional negative effects on soil, drainage, microclimate, surface waters, vegetation, fauna or landscape.

No cultural or historical sites of interest are affected.

For an integrated approach of the measures for preventing, reducing and control of activities impact, during the works following will be respected:

- The works will be carried out to reduce at minimum the generated impact
- To diminish the generated impact during works execution, on following will be focused:
 - Reducing the investment execution period to diminish the period of negative effects producing
 - Direct transport of construction materials to the location and starting works right away
 - Optimizing the material transporting tillages route
 - Avoiding material losses from transport tillages
 - Using performant, silence, and non-pollutant tillages and transport means
 - Bringing to the initial status the land on which the pipe will be positioned during the works of bringing in safe conditions the drinking water supply pipe

Emissions of pollutants in waters and water quality protection

The eventual pollutions might be caused by seasonal rainfalls that engage suspensions into the surface waters, waters that can contain mineral origin substances.

As a result of seasonal meteorological phenomena, (rains, strong winds) the materials resulted from excavations and those brought to realize utilities, can influence the surface waters quality, by dislocated suspensions and transported into it.

As result of realizing the projects constructive stages substances, raw materials and finite products might appear, accidentally, might affect the ground and surface waters on the Bega Canal.

Among the materials might appear:

-primary construction materials: wooden materials, rests from supports, formworks, sand, ballast;
-secondary construction materials: saw-dust and other wooden materials
-materials in suspension, oil products (only accidental)
-other materials and substances used at building site organizing: mineral oils for the car park, car fuel, carbide, acetylene bottles, varnishes and painting in an extremely reduced percentage

Other polluting sources from the execution period:

-sewage waters resulted from sanitary activities from the building sites and working station
-accidental leaking from oil products and oils from machineries and tillages
-improper maintenance of tillages and machineries
-improper temporary depositing of household waste and filling materials in excess

These losses can be avoided by a proper maintenance of tillages and machineries and collecting the used oils in metallic recipients (metal barrels).

Measures to reduce the impact on water quality

Will be realized by:

-technical verifying of the equipments used at the construction activities
-obeying the work instructions
-obeying the instructions of managing the waste resulted during the construction process
Referring to pollutants that might accidentally affect the soil it will be mentioned the equipments and car park maintenance will be realized by authorized SERVICES, forbidding the maintenance, oil change within the works location.

In order to reduce/eliminate the waters pollution risk throughout the works carrying out following measures are imposed:

-solid waste, material resulted from excavations, fuels or oils will not be discharged into the water course; the waste will be selective collected for recovery/removal by authorized companies;

-the excavated vegetal earth from the construction area, of building site temporary roads will be deposited separately from the other categories of earth and will be used for rehabilitation and renaturation of the affected landscape.

-using by the working personnel of eco-toilettes that will be periodically dredged on behalf a contract signed with the local operator;

-the collection of sewage waters in basins will be assured in drainage tanks, on behalf of the contract signed with a local operator;

-avoiding accidental leaking of oil products from transport tillages

-using for maintenance and repair of transport tillage of specialised workshops

-applying a correct waste management, avoiding uncontrolled depositing for materials and waste

-absorbent material will be assured for interventions in case of accidental pollutions with oil products

The impact caused by hydro-technical works along the Bega canal is considered to present an insignificant impact.

After works endings no pollution sources for surface and ground waters are expected – long term positive impact.

Air pollutions emissions and air quality protection

- The atmosphere contamination sources during construction/execution period will be represented by excavating, transport, unloading, earth spreading and machines traffic mainly.

All these categories are uncontrolled, considered to be surface sources.

After finalizing the works of putting under safe conditions the Hydro-knot Sanmihaiu Roman, further activity will not produce pollution sources discharged into the atmosphere.

- gas treatment installation

No special installations for air treatment are necessary

- Concentrations and flows for atmosphere pollutants

As it has been specified the massive flows produced during execution, where H_2S , CH_4 , NO_2 etc might result are practically insignificant. producing a light olfactory discomfort nearby the source, where STAS 12574/78 is not applicable.

Even if it contained values that can be estimated, considering that these sources are not controlled, the estimated values for pollutants emissions can not be evaluated reported to the maximum admitted limits by Order 462/1993.

During building site execution works the air quality will be affected by the moving tillages activity: auto-transporter, graifers, tractors – direct impact of middle to low amplitude, temporary, cumulative.

During the objectives execution period, the works might have an negative impact on the atmosphere quality in the working and surrounding areas, caused by dust and exhaust gas from the tillages engines necessary for work and transport process.

The dust emissions that appear during constructions are connected with the excavation, ground manipulating, construction materials and compaction works.

The dust emissions are different from one day to the other, depending on the activity level, operations specificity and meteorological conditions.

For the works execution period following pollution sources are considered:

-Diffuse emission sources:

-The diggings execution works are limited in time, not only at working area, changing as work progress: pollutants emissions: dust, fine dust.

-Mobile emission sources:

-generated by mobile road and non-road equipments: pollutants: NO_x, SO_x, CO, particles of heavy metal, COV: the pollutants resulted during execution works do not affect the population in the area, the building site being located in an unpopulated area. Here might appear short term pollution situations with particles in suspension and with NO_x; in the same time critical situation might appear generated the synergies effect of NO₂ particles in suspension.

As a result of the applied constructive solutions within the contract, the atmosphere pollutants sources associated the construction works are represented by the construction materials and excavated ground handling, exhaust gas emissions from vehicles and construction mechanical equipments.

Measures to reduce the impact on the air

- technical verifying for the equipments used during the constructions
 - obeying the working instructions
 - the materials transport will be done with vehicles with tarpaulin
 - because the works will be carried out during the hot season the unpaved roads will be sprayed with water
 - performant transport, spraying and compaction tillages with low exhaust emission will be used
 - optimum routes for the ballast, sand source and working station will be used
- Hence the impact on the air will be positive and long lasting.

During the execution period as well as during the operation one no major climate changes are taken into account – non-significant impact.

Noise and vibrations protection sources

The noise sources are due to earthmoving, constructions and transport tillages throughout the construction execution works.

As compensatory measures, for population protection we recommend adapting the working program to the resting hours of the population.

During the operating period there is no sound pollution in the area.

Radiations protection sources

The proposed hydro-technical works specificity during construction and operating process do not include radioactive sources.

The electromagnetic radiations generated by the existing electrical engines at the building site are insignificant and entirely accepted as being not dangerous for the health at the working point.

Waste management

During the execution period usually different types of waste result, that are not dangerous and are coded according to the List regarding the waste foreseen in annex 2 of HG 856/2002 - evidence of waste management and waste approving list, including dangerous waste: waste from constructions (code 17), considered not dangerous: rests of concrete and bricks (code 17 01), rests of wood (code 17 02), metallic mixtures (17 04 07), earth and stones from excavations (17 05), insulation materials (17 06), other mixtures of unspecified waste (code 17 09): these will be deposited in metal containers of 4 m³ and then the constructors transports them to the area waste deposit.

Greatest part of the earth waste will be used to remake the surfaces affected by works.

Non-dangerous household waste might also result: biodegradable wastes produced by human activities (code 20 01 08), sludge from septic tanks used at building site organization (code 20 03 04) etc.

During the execution period metal waste, paints and wooden material etc. will result.

The quantity of these technological wastes depends on the constructor's execution technology. These must be temporary deposited in environment safe conditions, transported to the constructor's production unit or sent directly to specialized units.

A special attention is required from the beneficiary at final reception to oblige the constructor to execute properly the building site occupied land restoration works. An important volume of these works represented by technological waste collecting and removing resulted at different stages.

After works finalizing there will be no further waste sources on the location.

Toxic and dangerous substances management

The specific conditions of the designed construction do not impose toxic substance consume neither during the execution, nor during the operation period.

During the execution period the constructor uses an important quantity of fuels and oils for the earth moving tillages and transport vehicles.

During the operation period the work has not foreseen endowments for fuel storing and manipulating. The vehicles fuel supply is realized at specialized units.

As results from above, the impact on the environment is reduced and appears only during execution period.

The impact of designed works on environmental factors

The impact of designed works on the environment factors for the present investment is part of a complex study, study referring to the entire work complex, including the hydro-technical ones of the present documentations.

During the works execution period the impact is limited in time (30 months).

After hydro-technical works finalizing the area will be renatured.

These works will permit the elimination of severe deteriorating risk and eliminated the equipments deficiencies handling and connected with the Romanian-Yugoslav Agreement on the canal operating regime – the risk of stopping the functioning of the hydro-knot to be n acceptable.

The damaging of the hydro-knot might lead to reducing the water level below the minimum quote for assuring the utilities (industrial and drinking water supply), with negative impact on the population and economy on one side and direct impact on the environment on the other side.

Hence the works the impact is positive, as it does not destroy the burrows, nests, mammals, birds, reptiles, batrachians, insects shelter.

In this case, focusing on a relative small area it is estimated that till a new balance of the biotope, the realizing of this objective will present a small influence on the birds', gnawers, insects habitat, as the area is outside the built up area of the Sanmihaiu Roman settlement (the number of species is limited).

The designed hydro-technical works in the present documentation do not produce and emit environment pollutants.

The impact of hydro-technical works on the environment factors are different according to the works execution and operating periods

- The impact produced on the environment during the execution period:

The impact produced on the building site and while works are in progress present a negative effect on the environment factors:

The impact on the surface waters : accidental pollution with oil products caused by hydro-carbon loses from earth moving and transport tillages;

-Impact on ground waters during execution is insignificant;

The impact on air, during the execution period - is reduced and is caused by atmosphere pollution from transport and earth moving engines exhaust gases, as well as dusts particles resulted from vehicles circulation.

-Impact on soil and vegetation appears after temporary occupation of the land for building site and technological road organization, but also permanent occupation of some public declared lands. These land had been previously occupied with constructions and are no longer the study object of present project, even if they are part of it.

-During the execution period the impact on soil and vegetation is negative, temporary and of medium importance

-The impact produced on human environment during the execution period is very important, presenting negative effects

-The circulation of earth moving tillages and building site vehicles produce a negative effect on the area sound environment and might generate traffic conflicts

-the negative aspects of human-social impact is expressed by tensions and conflicts that might appear between the new comers and local population

During the execution period the building site generates a negative impact on the landscape.

- Impact produced on the environment during operation period

-The executed works do not produce and do not emit pollutants into the atmosphere during the operating period and have no impact on the air

-on soil and vegetation the produced impact by designed works is minor

-the impact on fauna is reduced and temporary: after works finalizing the biotope recover

-impact on human environment is positive and important by following effects:

-natural disasters protection produced by floodings, material loses and even human lives loses

-increasing the economic potential of the area

Ecological reconstruction works

At works execution the valid standards and norms will be obeyed.

The works will be realized on established areas and after finalizing only already existing human activities will be present.

Neither during construction period nor during the operation one there is no problem of extending the works impact on other geographical or sensitive areas

Biodiversity

South-west of Sanmihaiu Roman settlement starts the community interest protected natural area ROSCI0390 Saraturile Dinias.

The specific of this reservation are the wide spread halophytes and vegetal cover of the halophytes meadows. The presence of a large number of accidental halophytes, even if they are limited at phytocoenosis building, offer the possibility of forecasting directions of development of the vegetation favourable to the economy, the main factors guiding pedological factors providing high trophicity to soils.

Even present on a limited area and in an apparent monotonous floristical aspect region, there are a number of 216 species; of these 12 are halophyte bound, 31 are preferant halophyte, 57 are supported, 95 accidental halophytes and 21 are purely accidentally species within the halophyte vegetation coming especially from neighboring anthropogenic phytocoenosis.

Representative halophyte vegetation types for pannonian halophyte meadows and moorlands that develop randomized. In the past the land has been partial ameliorated for agricultural purposes. At present, on important areas the potential vegetation has installed again.

Vegetation

The area in which the Sanmihaiu Roman settlement is situated is part of the forest steppe that occupies the county western part, overlapping the plains and low terraces; the specificity if this area is the poor presence of wooden vegetation, frequent appearance of hydrophyle and hygrophyle vegetations (flood pains and excess humidity low plains) as well as halophyte vegetations.

The agricultural cultures alternate with heavily secondary modified meadows where associations of *F. sulcata*, *F. valesiaca*, *F. pseudovina*, *Chrysopogon gryllus*, *Artemisia austriaca* are present.

The wooden vegetation is present with oak, ash, elm forests within the Timis flood plain, that alternate with soft grass meadows, *Alopecurus* sp. *Pyrus* sp. Some hydrophyle associations and agricultural lands. On the Bega Timis interfluve and SE of Sannicolau Mare meadows associations with *Festuca pseudovina* and halophyte plants appear.

Fauna

The forest steppe fauna is extremely complex due to different ecological conditions..In dry areas appear: field lizzard and *coronelia austriaca* (reptiles), *Galerida cristata*, *Perdix perdix*, *Coturnix*, *coturnix*, *Alauridae* (birds), ground squirrel, field mouse, rabbits, (mammals), in wet sectors there is a wide range of amphibians and reptiles, herons, ducks, geese, sea-gulls etc. In the forest the fauna encounters a large number of species disposed on altitude: hill area forest, blind snake, field lizzard, wall lizzard (rare), *coronelia austriaca*; *Parus major*, *Garrulus glandarius*, *Turdus pilaris*, *Certhia fanularis*, deers, squirrels, dormouse, mice; in the mountain forests : mountain frog, tritons, salamanders, ravens, blackbird, bears, wolves, wild pigs, squirrels

II.4. EXECUTION PERIOD AND MAIN PHASES, THE INVESTMENT SCHEDULE

Works are proposed to be finalized in 30 months, more or less according to budgetary allocations

Main investment works are:

- Deviation of waters through the lock and putting the weir dam to dry
- Rehabilitation of weir dam
- Putting the lock to dry

[illegible]

Rescheduling work costs in years

Name	Total value (th. Lei)	EXECUTION PERIOD									
		year 1				year 2				year 3	
Building site org.	403.448	40.345	40.345	40.435	40.345	40.345	40.345	40.345	40.345	40.345	40.345
Utilities assuring	75.808										
Land arrang.	673.111	67.311	67.311	67.311	67.311	67.311	67.311	67.311	67.311	67.311	67.311
Costs for the main investment											
Phase 1	344.683									344.683	
Phase 2	14,087.627	2,817.525	2,817.525	2,817.525	2,817.525	2,817.525					
Phase3	1,703.561					1,703.561					
Phase 4	3,616.818						1,205.606	1,205.606	1,205.606		
Phase 5	5,991.695									2,995.848	2,995.848
Total C+M	26,896.751	2,925.181	2,925.181	2,925.181	2,902.505	4,666.646	1,313.262	1,313.262	1,313.262	3,448.186	3,103.503

CHAPTER IV – COST-BENEFIT ANALYSES

I.Introduction – Strategic approach and object defining

The present project' main purpose is to place under safe conditions the Sanmihaiu Roman Hydro-knot.

Along the year there have been many attempt to rebuild and place under safe conditions the works. In 1988 the hydro-knot capital repair investment was promoted. The first stage included designing, producing and acquisition of hydro-mechanical equipments and necessary embedded parts, but later, due to funds lack the investment was ceased.

In 2011 the hydro-knot has been the object of a new investment, financed by the World Bank when the waters were deviated through the lock and the objective was put to dry for necessary works evaluation and expertise.

The objective's main purpose is given by appropriate measures implementing for placing under safe conditions the hydro-knot, fighting and thus preventing its degradation.

II Options analyses

For present analyzing selected measures reliability, the variants are briefly presented:

- **Scenario S0**, " no investment" where no future investment at the hydro-knot will be promoted, being more and more exposed to degradation, later a bigger investment will be necessary.
- **Scenario 1** - „with investment" where repairing works and consolidation and replacing of damaged constructive elements or presenting an advanced degree of usage are proposed. Within the present scenario the hydro-knot rehabilitation works consist in:
 - flood bed rehabilitation
 - apron basin rehabilitation
 - rear of rocks rehabilitation

- dam piles and abutments rehabilitation
- hydro-mechanical equipment
- platforms and access roads

- **Technical and economic advantages of the proposed scenario**

By realizing the rehabilitation works the upstream water race continuously degradation will be prevented and hence the reducing of the canal's transport capacity (fast silting), of the flood protection degree below the admitted limit respectively.

The table presents comparatively the main characteristics for scenario 0 and scenario 1 for the analysed period:

Table 4

year	Invest cost	Maintenance cost	Avoided damages	Neto benefits	year	Invest costs	Maintenance cost	Avoided damages	Neto benefits	Proj implemim pact
1	0	0		0	1	3,023.46			-3,023.46	-3,023.46
2	0	0		0	2	3,023.46			-3,023.46	-3,023.46
3	0	0	0	0	3	1,511.73	56.88	2,747.50	1,178.89	1,178.89
4	0	0	0	0	4		113.75	2,747.50	2,633.75	2,633.75
5		0	0	0	5		113.75	2,747.50	2,633.75	2,633.75
25		0	0	0	25		113.75	2,747.50	2,633.75	2,633.75
26		0	0	0	26		113.75	2,747.50	2,633.75	2,633.75
27		0	0	0	27		113.75	2,747.50	2,633.75	2,633.75
28		0	0	0	28		113.75	2,747.50	2,633.75	2,633.75
29		0	0	0	29		113.75	2,747.50	2,633.75	2,633.75
30		0	0	0	30	-663.57	113.75	2,747.50	2,633.75	2,633.75
ENPV=				0	ENPV=				28,650.47	28,650.47

The proposed alternative has taken into account the optimum solution for designing theme respecting, the investment cost and project benefits,, at local level as well as it harmonizing with the flood management plans at the entire river basin level.

III Investment object identification

The main data of the investment objective are summarized in the following table:

Table 5 –Investment identification

Parameter	UM	Value
Total investment	Thousand Euro including VAT	7,957.986
Of which C+M	Thousand Euro including VAT	5,932.627
Investment period	months	30
Investment rescheduling		
Year I-year II	%	40%/year (80%)
Year III	%	20%

Reference period for analyses	years	30
Maintenance and operating annual costs	Thousand Euro including VAT	100.80
Equipments reinvestment costs	Thousand Euro including VAT	503.99

II. Project sustainability and financial analyses

The calculation for the financial analyses is in Annex 1

IV.1.Hypothesis

- The analyses has been realized over a time period of 30 years, applying the incremental method
- The analyses is realized in constant prices without VAT
- The used updating rate for the financial analyses is 5 %
- Annual maintenance cost have been taken into account at 2% of C+M
- The cost for major repair have been considered over a time period of 20 years, representing 10% of the C+M actual value
- The residual value has been taken into account at the analyses period ending, calculated according to the straight line depreciation method, the residual value representing the remained value of fixed assets according to their life duration. Thus, the construction works realized within the present project have been appreciated at an average life duration of 30 years, while for the capital repairs (estimated to be realized after 20 years, a life duration of 20 years has been considered).

IV.2 Profitability indicators

The results of financial analyses are presented below:

Table 6

Index	Full funding from own funds
Neto updated value (th. Euro) (VANF)	- 3,563.07
Rentability internal rate (%)(RIRF)	- 19.46%

Though the performance indicators of the project are financially negative, it is typical for this type projects that do not bring financial revenues once the investment is realized. In this case, the project justifying is based on economic analyses results that takes into account the benefits brought by project realizing considering the social and environmental aspect.

III. Social and economic analyses

Economic benefits

The project social and economic benefits are represented by placing under safe conditions the afferent areas and thus avoiding the potential damages estimated in the "no project" situation, with direct additional benefits at living standard of the population in settlements, agriculture, transport and not only.

The vulnerable objectives at these settlements level (previous the floodings in 2010) and defended by works proposed are presented in the following table:

Table 7

Objectives situated in vulnerable areas	UM	Unit price (Euro)	Quantity	Value Th. euro
Houses and households	number	60,000	1,000	60,000.0
Roads (DN, DJ, DE, streets)	km	250,000	50	12,500.0
Land	ha	1,500	4,000	6,000.0
Total				78,500.0

The annual average value of social and economic benefits brought by the proposed scenario implementing was evaluated at 2,747.5 thousand Euro, considering following:

- Direct benefits calculated at 1,962.5 thousand Euro and evaluated as benefit from the flooding damages that will be avoided with the works implementing foreseen in the proposed scenario.(the annual average damage in the proposed scenario was calculated on behalf the estimated damaged if case of dikes breaking:
 - Households flooding
 - County and commune roads
 - Agricultural lands
 - Reducing of water level below the minimum quote for assuring the utilities (drinking and industrial water supply) with negative impact on population and economy
- Indirect benefits at an estimated value of aprox. 40% (785.0 thousand euro) of the direct benefits value and resulted from indirect damages avoiding (represented by placing under danger of population, the percent they are affected and economic loses caused by roads and

infrastructure networks destroying, reconstruction costs for hydro-technical structure, yield losses in agriculture and other affected industries at minimum lost production time due to above mentioned factors).

Negative externalities

During the works execution stage the impact on environmental factors is minor and limited in space and time, and the protected areas, by respecting the legal foresees and direct surveillance from the natural protected areas managers, the impact is extremely diminished.

In implementing the projects foreseen in the proposed scenario it will be focused the forecasted impact on the environment for these objectives to be insignificant, the projects are themselves considered as an important measure to diminish the flood created impact.

For the projects' social-economic analyses, no negative externalities have been taken into account.

According to the present project realized impact study conclusions, the forecasted impact on environment for these objectives under project established conditions, is insignificant.

Other hypothesis

- Updating rate used in economic analyses is 5.5%
- The conversion factor used for economic analyses is 1 for all the estimated costs and incomes, in case of relevant data to motivate the usage of a different exchange factor;
- It was considered the project implementing starts to bring social and economic benefits from the third year.

Social and economic performance indexes

The social and economic calculations for the proposed variant are presented in Annex 3-Social and economic analyses. The proposed scenario social and economic indicators are presented in the table below:

Calculation of investments' financial indicators

Table 8

Investment social-economic net updated value (VANE)	27,409.07
Investment social-economic internal rate of return (RIRE)	35.96%
Cost-Benefit report (Rb/c)	5.32

Social –economic positive performance indicators prove the present project viability, present positive net value, an internal rate of return superior to the used updating rate (5.5%) and an over- un it cost-benefits report.

IV. Risk and sensitivity analyses

To identify the key variables whose variation will determine a significant change of project performance indicators, the effect of following variations from the analyses basic variant were analysed:

- Variation with 1% od costs for basic investment
- Variation with 1% of operating and maintenance costs
- Variation with 1% of economic benefits

The results of senisitivity analyses

Table 9

Variant	VANE (thousand Euro)	Variation(%) from the basis	RIRE (%)	Variation (%) from the basis	Rb/c	Variation(%) from the basis
Basic scenario	27,409.07		35.96%	-	5.32	-
Scenario investment variation +1%	27,347.48	0.22%	35.64%	0.91%	5.28	0.80%
Scenario investment variation -1%	27,427.74	-0.07%	36.13%	-0.46%	5.33	-0.24%
Scenario O&M costs variation with +1%	27,396.71	0.05%	35.95%	0.03%	5.31	0.17%
Scenario O&M costs variation with -1%	27,421.43	-0.05%	35.98%	-0.03%	5.33	-0.17%
Scenario benefits variation +1%	27,617.77	-0.76%	33.74%	6.17%	5.28	0.71%
Scenario benefits variation -1%	26,920.60	1.78%	33.14%	7.87%	5.18	2.67%

As a result of sensitivity analyses it can be noticed that social-economic benefits are the critical variable, a 1% variation of it causing a changing percent of over 1% for the VAN performances indicators values (net present value) and RIR (internal rate of return) respectively. For these the “change “ of the projects” performance indexes has been calculated. Thus, the project is maintaining the positive performance indicators (VAN positive and RIR bigger than the updating rate till reducing to maximum 78% of the social benefits besides their estimated value). In the following table the behaviour of critical variable indicators are presented:

- The variation of social –economic benefits
 - Decreasing benefits with 79%

VANE	-269.19
RIR	5.11%
Rb/c	1.11

Risk quality variation:

Besides the risks of critical variable appearance with their economic parameters, a series of main risks have been identified:

- Technically there is the risk that the realized protection works will not satisfy the works estimated protection degree, risk that might be caused either the works quality, or of an unexpected level of climate variability. This might lead to necessity of rebuilding the protection works more often than estimated initially, as well to additional damages.
- Financially there is the risk of funds lack to realize this project, as well as increasing the investment’s costs in case of delaying it
- From the point of view of environment factors there is the risk that during the execution period the recommendation of the impact study will not be respected and to exist negative externalities that might lead to sudden decrease of social benefits for the analysed period.

The following table presents the qualitative probability of risks appearance during the execution and operating period and a suggested feed back plan to minimize the risks

Table 20 Risks qualitative analyses

Risk factor	Probability to happen		Qualitative impact on the project		Financial impact on the projects		Risk feed back plan	
					Cost impact -IC			
					Time impact-IT			
					Resource Impact -IR			
	Execution	Operating	Execution	Operating	Execution	Operating	Execution	Operating

	period	period	period	period	period	period	period	period
Lack of funds to realize the project	medium	medium	high	medium	IC-high IT-high IR-high	IC-high IT-high IR-reduced	Introducing this project in the State budget annual budget .Works will not start without assuring the financing sources	Assuring an attentive surveillance of works during its entire functioning and evaluating the works after calamities
Increasing the execution period	medium	reduced	medium	reduced	IC-high IT-high IR-reduced	IC-high IT-high IR-reduced	Efficient management and organizing from the works executor	Assuring attentive surveillance of works during its entire functioning
Producing of extreme floods over the realized works protection level	medium	reduced	high	high	IC-high IT-high IR-reduced	IC-high IT-high IR-reduced	Accepting the risk	Evaluating the produced damages and efficient measures for recovery and eliminating them

V. Conclusions

The present project "PLACING UNDER SAFE CONDITIONS THE SANMIHAIU ROMAN HYDRO-KNOT, TIMIS COUNTY" brings significant social benefits by fighting and preventing its degradation, avoiding thus the dikes' breaking and hence the nearby objectives flooding.

Considering the social benefits have been estimated on behalf the potential damages, it is considered their estimation is prudent and realistic realized. More, the sensitivity and risk analyses of the present project demonstrates that the project is justified even considering a significant reducing of social and economic benefits.

CHAPTER V. INVESTMENT FINANCING SOURCES

The hydro-technical construction works to be executed will be financed through the Cross-border Romanian- Republic of Serbia IPA Programme and other legally constituted funds.

CHAPTE VI. ESTIMATION REGARDING THE OCCUPIED LABOUR BY INVESTMENT REALISING

- Number of jobs created during the execution stage: 50
- Number of jobs created during the operating stage: 10

CHAPTER VII. INVESTMENT MAIN TECHNICAL AND ECONOMIC INDICATORS

Investment total value: 40,558.677 thousand lei/8,946.042 thousand euro

Of which C+M: 26,896.752 thousand lei/5,932.627 thousand euro

Investment total value rest to be executed: 36,079.125 thousand lei/7,957.986 thousand euro

Of which C+M: 26,896.752 thousand lei/5,932.627 thousand lei

Value 1 euro=4.5337 lei on 31.012016

2. **Investment rescheduling (INV/C+M)**
 - Year 1 – 12,027.375 thousand lei/8,965.584 thousand lei
 - Year2 - 12,027.375 thousand lei/8,965.584 thousand lei
 - Year3 - 12,027.375 thousand lei/8,965.584 thousand lei
3. **Investment realizing period; 30 months**
4. **Capacities** Placing under safe conditions of the Sanmihaiu Roman Hydro-knot

CHAPTER VIII. APPROVALS AND AGREEMENTS IN PRINCIPLE

The necessary approvals and agreements will be obtained by the works' beneficiary on behalf the designer's issued documentations

CHAPTER IX. CONCLUSIONS

The feasibility study remaking was necessary:

-Considering the flooding aspect, impossibility or deficiency of the handling equipments affects the objectives nearby the canal (especially the Timisoara water race and its area) and protection constructions (dikes). By dikes' breaking 1,000 households, 20 km of county roads, 30 km of commune roads and over 4,000 ha of arable land will be flooded.

-The damaging of the hydro-knot might lead to water level decreasing below the minimum level for utilities assuring (drinking water and industrial water supply), with negative impact on population and economy on one side and direct impact on the environment on the other side.

Not least, preserving the actual situation (the blocking of the cylindrical weir and deviation of water through the slides, without any possibilities of operating and dredging) leads to an increasing degradation of the upstream water race and hence reducing the transport capacity of the canal (rapid silting), reducing the flood protection below the admitted limit respectively.

According to HG 925/10/995 and Order MLPT 77/1996 the works are verified according to request on domain A7 - „Resistance and stability at static and dynamic load, including the seismic ones for constructions and hydro-technical arrangements” and B5 – “ Safety in operating for construction and hydro-technical arrangements”.

According to Order 119 – procedure for conservation, post using or abandoning of dams – NTLH-033, after expiring the functioning period for the polder works existence, a new set of measures will be applied to assure the new functionality under safety conditions and population and environment protection.

The post -using necessary measures and works will be realized with the care of the river bank protection owner or administrator and must assure the flowing conditions existed previously the works execution.

Head of project,

Verified,

Eng. Daniela Zaiu



Eng. Monica Ghihanis



National Administration
Apele Romane
Technic-Economic Council

Approved,
Chairman of CTE
General Manager,
Dr. eng. Vasile Pintilie

NOTICE

Nr. 45/02.07.2013

Investment site: "Placing under safe conditions the Sanmihaiu Roman hydro-knot, Timis County"

Main credit release authority: Ministry for Environment and Climate Changings

Design stage: Background note

Designer: A.B.A. Banat

Location: proposed works are located within the Bega-Timis-Caras river basin, on the Bega river course – cadaster code V-1, upstream of Sanmihaiu Roman settlement, at km 28+200, at the Sanmihaiu Roman hydro-knot, Timis County.

NECESSITY AND OPPORTUNITY

The advanced degradation of the water evacuation systems and equipments affect the entire safety of the hydro-technical arrangement and connected with the Romanian-Yugoslav Agreement on the canal operating regime, make the risk of the hydro-knot closing down to be unacceptable.

Considering the floodings, the impossibility or deficiencies of equipment handling affect the canal nearby objectives (especially the Timisoara water race and across the city area) and protection construction (dikes). By dikes breaking aprox. 1,000 households, 20 km of county road, 30 km of commune road and over 4,000 ha agricultural lands are flooded.

The damaging of the hydro-knot might lead to decreasing the water level below the utilities assuring limit (drinking and industrial water supply), with negative impact on population and economy on one side and direct impact on the environment on the other side.

Not least, maintaining the present situation (the cylindrical weir blocked and canal water diverted through the lock without any possibilities of handling and self-dredging), leads to increasingly degradation of the upstream water race and hence the decreasing of the canal transport capacity (by fast silting), of the flood protection capacity below the admitted limit respectively.

Besides those mentioned above, the Sanmihaiu Hydro-knot is considered a B class monument of the national patrimony.

PROPOSED WORKS

The proposed works to be executed are:

Phase1

Includes works of water diverting through the lock and placing the weir dam to dry – works realized and receptioned

The construction of the overfall sill will be demolished after dam intervention works finalizing.

Phase II

This phase includes weir dam rehabilitation works and of the operating complex on the left bank of the arrangement.

Thus, road works, hydro-technical and hydro-mechanical construction works as well as civil engineering and architectural works are included.

-Road works

Represents an extension of the road works and access road arrangements from stage I and are necessary to assure the connection and ongoing works according to complex work technologies.

It includes:

1. Access road rehabilitation to the operating building from DJ Timisoara-Sanmihaiu Roman, preseting following features: L=200m; width l=5.00m, road system: ballast foundation layer, 15 cm thick, over which binder layers will be poured (10 cm) and asphalt 4 cm; on the right side of the road a discharge runway will be foreseen
2. existing roads reinforcements left and right bank with road cover of macadam, 10 cm thick. The right bank road will continue on aprox. 700 m till the inside of Sanmihaiu Roman commune.

-Hydrotechnical – construction works

Include prior works to final works and rehabilitation works for the weir dam and to assure the connection with the works in progress on the Bega canal (bank protection restoring, dam upstream and downstream river bed reinforcement)

Main works:

1. Dam avantflood bed consolidation and reinforcement
2. weir upstream and downstream peree rehabilitation: dam upstream and downstream peree restoring and completion works are proposed. The weir area peree rehabilitation works will continue with the minor river bed rearrangement works, upstream and downstream the Bega river. These works consist in river bed unsilting and recalibration, as well as bank protection realizing, at present being eroded on vas surfaces. Works will be realized on aprox. 250 m upstream the terminal sill of the flood bed and 150 m downstream of the dam stone rear end.
3. improving the flowing conditions downstream the discharge sill; it implies consolidation of the dam discharge sill, entire restoring of the apron and stone rear downstream. The apron will be of reinforced concrete.
4. dam piles and abutments rehabilitation
5. other works – include preparing works for the basic works (dredgings and excavations at the dam inner part and river bed upstream and downstream the dam, closing the island are between the cofferdam upstream the dam and lock, under crossing the existing collector dam right bank, compressed air installations and equipments, realizing a crane platform for mounting the dam hydro-mechanical equipment.

Phase III

Represents a preliminary phase for the fourth phase, including works of placing to dry the lock inner part for lock rehabilitation works, especially rehabilitation and replacement of hydro-mechanical equipment.

Phase IV

Include lock rehabilitation works, hydro-mechanical constructions and equipments for reintroducing the Bega canal into the navigable ways. Once the Sanmihaiu Roman lock rehabilitation is finished the navigation on the canal can restart (to mention the locks upstream – Topolovat and downstream – Sanmartinu maghiar are at present functional).

The works in this phase will complete the works at phase I already realized (consolidation the lock chamber) and repairings of the peree upstream and downstream the lock chamber).

Construction works

- filling galleries rehabilitation
- repairs at manholes and mechanism niches
- lock accessories – coping railing, lock side walls and upstream and downstream head, fenders, and -ships damping systems

Hydro-mechanical systems

For the lock functioning a hydro-mechanical equipment has been foreseen (manual handling) made of:

- Upstream lock gate with two folds
- downstream lock gate with two folds
- emptying and filling valves supply galleries
- embedded parts

At present the lock gates are in an advanced degradation state. They cannot be reused, their cassation being necessary.

The investment site is of public interest and its financing will be realized with funds from the State Budget, as well as other legal constituted sources, according to the public investment program, approved according to the legal foresees.

Capacities:

Placing the Hydro-knot under safe conditions

Main credit release authority: M.M.S.C.

Financing: state budget and European funds. Technical assistance for preparing projects AXA PRIORITARA 5 - implementing proper structures for preventing natural risks in most risk exposed area – Major intervention domain 1 – Flood protection

Considering the presented documentation and the discussions during the notifying meeting, Law nr. 200/2002 regarding public finances with additional completion and modifyings, on behalf of Order 1502/30.05.2012 of the Ministry of Environment and Forestry and Decision nr. 237 of 20.05.2013 of the General manager of the National Administration APELE ROMANE, the Technic-Economic Council of the National Administration Apele Romane

NOTIFIES

Background Note regarding necessity and opportunity of updating the Feasibility Study

“Placing the Sanmihaiu Roman hydro-knot under safe conditions, Timis County”

Vicepresident CTE,

Vicepresident CTE.

Ovidiu Gabor

Ioan Oprean

Members,

Guests,

Secretary CTE,

NATIONAL ADMINISTRATION
Apele Romane
Banat River Basin Administration

Timis County Council
ADETIM -Agency for Economic-
Social Development Timis

Ministry For Environment, Water and Forestry

To the attention of: General Deputy Manager – Gheorghe Tuluc

To the information of: National Administration Apele Romane

Ref: Project Placing under safe conditions the Sanmihaiu Roman hydro-knot, Timis County, for analysing the possibility of financing through the programme POIM 2014-2020

For analysing the possibility of financing the project Placing under safe conditions the Sanmihaiu Roman hydro-knot, Timis County through POIM 2014-2020, we send you attached:

- Project fiche
- Copy of the notice from the Ministry of National Defence –General Army Staff
- Copy of the Notice from the Ministry for Culture-Direction for Culture Timis County
- Copy of the land book extract regarding the lands legal status
- Notice nr. 2/29 July 2015 of the Interministereal Council for approving National Interest Public Works and Housing
- What concerns the environment agreement we are in the proceeding of obtaining it

On this occasion we want to inform you on following aspects concerning the possibility of financing the project:

The Timis County Council – via ADETIM – Agency for Economic and Social Development Timis is preparing for financing - Technical-economic study regarding the navigation and harbour infrastructure rehabilitation and development on the sector Timisoara – Republic Serbia border for valuing and developing the common touristical potential

The financing of the works contained in this study is proposed to be realised through **The Cross border programme IPA Romania-Serbia 2014-2020**, deadline for launching, the latest 15 March 2016.

Among the proposed works proposed to be financed within this study is Placing under safe conditions the Sanmihaiu Roman hydro-knot, Timis County, for which it is estimated a **partial** financing of the works in value of 6,330 thousand Euro, that will ensure the realising of the rehabilitation works for the weir dam and lock (including tillages –equipments and their mounting), it will remain unfinanced the rehabilitation works at operating buildings and island landscaping , contained in the present project.

The total value of the project is 9,457.3/7,199.3 thousand euro.

Besides those presented above we kindly request your opinion regarding the opportunity and necessary conditions for choosing the financing source, for continuing the procedures of realising this investment objective.

We thank you,

Yours sincerely,

Banat River Basin Administration

Agency for Economic –Social Development Timis

MANAGER,

MANAGER,

Eng. Luci Ervin

Sergiu Balasa

INTERMINISTERIAL COUNCIL FOR APPROVING NATIONAL INTEREST PUBLIC WORKS AND HOUSING

NOTICE NR.2

29 July 2015

Legal base HG nr. 150/2010 – regarding the setting up, organization and functioning of the Interministerial Council for Approving National Interest Public Works Works and Housing, with later modifying and completion; Law nr. 186/2014 – Law of state budget for 2015; Law nr. 500/202 – regarding public finances with later modification and completions.

THE INTERMINISTRY COUNCIL FOR APPROVING NATIONAL INTEREST PUBLIC WORKS AND HOUSING

- FAVORABLE APPROVES-

Name of investment objective: Placing under safe conditions the Sanmihaiu Roman hydro-knot, Timis County

Stage: Feasibility Study up dating

Main credit release authority: Ministry for Environment, Waters and Forestry

Note: Present Notice replaces Notice nr. 156/30.06.2011

President,
Interministerial Council for Approving National Interest Public Works and Housing
Minister For Regional Development and Public Administration

SEVIL SHHAIDEH

Annex to Notice nr. 2/29 July 2015

Main characteristics and technical-economic indicators of the investment objective

Name: Placing under safe conditions the Sanmihaiu Roman hydro-knot, Timis County

Main credit release Authority: Ministry for Environment, Waters and Forestry

Beneficiary: National Administration Apele Romane –Banat River Basin Administration

Location: The Sanmihaiu Roman Hydro-knot is located on the Bega river course, upstream of Sanmihaiu Roman settlement, at km 28+200, Timis County

Technical-economic indicators

Investment total value (inclusive VAT):	42,388.635 thousand lei
Of which C+M (inclusive VAT):	31,909.492 thousand lei

Value rest to be executed (inclusive VAT):	37,909.084 thousand lei
Of which C+M (inclusive VAT):	28,276.843 thousand lei

Capacities:

Placing under safe conditions the Sanmihaiu Roman hydro-knot

Duration for investment realising – total:	40 months
---	------------------

Of which:

Duration for investment realising – rest to be executed:	30 months
---	------------------

**Secretary of the Interministry Council for Approving
National Interest Public Works and Housing**

**General Manager,
Diana TENEA**

**MINISTRY FOR CULTURE
TIMIS COUNTY DIRECTION FOR CULTURE**

Approved,

Dr. Sorin Vlad PREDESCU

**National Administration APELE ROMANE
Banat River Basin Administration
Bd. Mihai Viteazu nr.32, Timisoara**

To the information: Ministry for Culture –Legal and Cultural Patrimony General Direction

NOTICE nr. 118/Z/05.06.2015

Ref: Placing under safe conditions the Sanmihaiu Roman hydro-knot, Timis County on the Bega Canal, Sanmihaiu Roman settlement, Sanmihaiu Roman commune, Timis County

Objective: Imobil at pos.276, code TM-II-m-B-06283 on the Historical Monuments List-2010
Settlement: Timis County, Sanmihaiu Roman, Sanmihaiu Roman settlement, on the Bega Canal
Project: Placing under safe conditions the Sanmihaiu Roman hydro-knot, Timis County
Stage: Feasibility Study
Designer: SC AQUAPROIECT SA, spl. Independentei 295, sector 6, Bucharest
Beneficiary: National Administration Apele Romane – Banat River Basin Administration, Bd. Mihai Viteazu 32, Timisoara
Financing: Attracted funds

The documentation is registered at Timis County Direction for Culture under nr. 1507/25.05.2015 and contains:

Written parts: explanatory memoir, technical expertise, annexes
Drawn parts: site plan, foto documentary

It is proposed: repairing works: roof slope repairs, ceramic tile cover and replacing degraded elements rehabilitation, rain water pipes cleaning exterior molons masonry and replacing degraded elements, disassembling existing metal joinery, access door and windows and replacing them with metal joinery specially confectioned with similar characteristics to the original one, restoring interior finishes at walls by cleaning the existing ones, cleaning and restoring the protection paint at metallic existing confections, disassembling existing floor, restoring the support frame of cement mortar and mounting new floors, identic to the initial ones; entire restoring of interior electric installations and exterior lightning, earth plate and lightning rod; repairing degraded elements, cleaning and applying protection paint at wrought iron fence, new fencing with metal piles and panels of Buzau net with a height of 2.00m; restoring the exterior slabs platform.

On behalf Law 422/201, title III, chapter II, art. 35, line 5 and after analysing the documentation:

FAVORABLE NOTICE

For FEASIBILITY STUDY – Placing under safe conditions the Sanmihaiu Roman hydro-knot, Timis County, with the conditions that:

For the next design stage – documentation for obtaining the Expert Notice and Construction Permit for establishing the correct intervention solutions upon an industrial monument to be issued in cooperation with a MCC specialist

The documentation for the next approvement stages will be submitted for analysing and obtaining the Expert Notice of the Area Historical Monument Comission -12 at Timis County Direction for Culture.

IMOBIL PATRIMONY,

Arch. Doina ANTONIUC

**LAND BOOK EXTRACT
TO INFORMATION**

Timis Cadaster and Land Registration Office
Timisoara Cadaster and land Registration Bureau

A. Part 1 (Wealth Paper)

Land: intravilan

Address: Sanmihaiu Roman

No.	Cadaster no. Topografic no.	Area (m2)	Observations/References
A1	402636	From documents:- Measured: 11563	-

CONSTRUCTIONS

No	Cadaster no Topografic no	Address	Observations/References
A1-1	402636 C1	Sanmihaiu Roman	Administrative Building
A1-2	402636 C2	Sanmihaiu Roman	Hydrotechnical operating building
A1-3	402636 C3	Sanmihaiu Roman	Annex
A1-4	402636 C4	Sanmihaiu Roman	Annex
A1-5	402636 C5	Sanmihaiu Roman	Annex
A1-6	402636 C6	Sanmihaiu Roman	Annex
A1-7	402636 C7	Sanmihaiu Roman	Annex
A1-8	402636 C8	Sanmihaiu Roman	Annex
A1-9	402636 C9	Sanmihaiu Roman	Annex

B. PART II (Property Paper)

Register concerning property		Observations/References
743/14.02.1923		
	Law	
B1	Registration, property right, given by law, actual quoe 1/1	A1
	1 Romanian State public domain	Resulted from conversion extract bok 1458
69776/12.05.2011		
	Administrative document nr. Certificate 3718 of 11.05.2010 issued by Sanmihaiu Roman mayor hall, legal act nr.1 107/24.09 1996 issued by the Romanian Parliament; legal document nr. L 213/16.11.1998 issued by the Romanian Parliament; legal document nr. OUG 107/04.09.2002 issued by the Romanian Government; legal document nr. HG 1705/28.11.2006 issued by the Romanian Government	

B3	Registration property right obtained by building actual quote 1/1	A1.1, A1.2 A1.3,A1.4 A1.5,A1.6 A1.7,A1.8,A1.9
	1. Romanian State public domain	
	46500/24.03.2014	
	Legal document nr. Hot 1705 of 29.11.2006 issued by the Government, legal document nr. Hot 107/05.09.2002 issued by the Government	
B5	Registration administration right, previous closing nr. 743/1923 and 69776/2011	A1.1, A1.2 A1.3,A1.4 A1.5,A1.6 A1.7,A1.8,A1.9
	1. NATIONAL ADMINISTRATION APELE ROMANE – BANAT RIVER BASIN ADMINISTRATION CIF 23886284	

C PART III (Task Paper)

Registers concerning tasks	Observation/References
There are not any	

Annex 1 to PART I

Land: intravilan

Address: Sanmihaiu Roman

Cadaster no	Measured area (m ²)	Observations/References
402636	11563	

DETAILS IMOBIL

Data referring to the land

No	Category use	Intravilan	Area m ²	No field	N o plot	Topografic no	Observations/References
1	arable	yes	From document:- Measured: 11563	273/2	273/2	273/2	Intravilan land no fencing

Data referring to constructions

No	Number	Construction destination	Area m ²	Legal status	Observation/References
A1.1	402636 C1	Administrative and social cultural constructions	From documents:122 Measured: 159	With documents	Administrative building
A1.2	402636 C2	Industrial and urban constructions	From documents:122 Measured: 122	With documents	Hydrotechnical operating building

A1.3	402636 C3	Annex construction	From documents:41 Measured: 41	With documents	annex
A1.4	402636 C4	Annex construction	From documents:19 Measured: 19	With documents	annex
A1.5	402636 C5	Annex construction	From documents:16 Measured: 16	With documents	annex
A1.6	402636 C6	Annex construction	From documents:44 Measured: 44	With documents	annex
A1.7	402636 C7	Annex construction	From documents:43 Measured: 43	With documents	garaje
A1.8.	402636 C8	Annex construction	From documents:11 Measured: 11	With documents	annex
A1.9.	402636 C9	Annex construction	From documents:41 Measured: 41	With documents	annex

Length segments

1. Value of segment length are obtained from plan projection

Starting point	Ending point	Segment length (m)
1	2	91.1
2	3	59.6
3	4	54.9
4	5	85.3
5	6	41.7
6	7	37.8
7	8	56.9
8	1	11.3

We certify hereby the present extract corresponds entirely to the valid positions in the original land book, preserved by this office.

Present land book extract is not valid at legal documents authentication by the public notar, and presented information are susceptible to any changing, under present law.

The fee of 60 Ron was paid, fee nr. TM 382570/24.03.2014 for the service land book registration code 242

Settlement date,
01/04/2014

Registrar assistant,

Referrent,

GENERAL ESTIMATE
 regarding the necessary costs for realising the investment objective
PLACING UNDER SAFE CONDITIONS THE SANMIHAU ROMAN HYDRO-KNOT, TIMIS COUNTY

1 Euro = 4,5337

31.01.2016

Nr.	Chapter and subchapter costs name	Value (exclusive VAT)		VAT	Value (inclusive VAT)	
		thousand lei	thousand euro	thousand lei	thousand lei	thousand euro
1	2	3	4	5	6	7
Chapter 1 - Costs for obtaining and land arrangement						
1.1.	Land obtaining	0,000	0,000	0,000	0,000	0,000
1.2.	Land arrangement	96,918	21,377	19,383	116,301	25,653
1.3.	Environment protection arrangement	464,008	102,346	92,801	556,809	122,816
TOTAL CHAPTER 1		560,926	123,724	112,184	673,111	148,468
CHAPTER 2 - Costs for assuring the objective necessary utilities						
2.1	Cheltuieli pt. utilitatii necesare obiectivului Costs for objective necessary utilities	33,262	7,337	6,652	39,914	8,804
2.2	Lea and phone lines moving	29,912	6,598	5,982	35,894	7,917
TOTAL CHAPTER 2		63,173	13,934	12,635	75,808	16,721
CHAPTER 3 - Costs for design and technical assistance						
3.1.	Field study and expertise	463,817	102,304	92,764	556,581	122,765
3.2.	Obținerea de avize, acorduri și autorizații Obtaining notices, agreements and authorisations	371,084	81,850	0,000	371,083	81,850
3.3.	Designing and engineering	1.483,972	327,320	319,048	1.803,020	397,693
3.4.	Organising procedures of public aquisition	87,108	19,213	17,915	105,023	23,165
3.5.	Consultancy	214,200	47,246	43,667	257,867	56,878
3.6.	Technical assistance	498,665	109,991	101,127	599,792	132,296
TOTAL CHAPTER 3		3.118,848	687,925	574,521	3.693,368	814,647
CHAPTER 4- Costs for basic investment						
4.1	Constructions and installations					
	Phase I					
4.1.1.	Ob. 1-1. Demolishing existing works	54,841	12,096	13,162	68,003	14,999
4.1.2.	Ob. 1-2. Access roads and platforms	499,145	110,097	119,795	618,940	136,520
4.1.3.	Ob. 1-3. Hydro-technical works	2.179,769	480,792	523,145	2.702,913	596,183
4.1.4.	Ob. 1-4. Demolishing designed works	322,886	71,219	66,003	388,889	85,777
TOTAL PHASE 1		3.056,641	674,205	722,103	3.778,746	833,479
	Phase 2- Dam weir					
4.1.5.	Ob. 2-1. Access roads and platforms	272,943	60,203	54,589	327,532	72,244
4.1.6.	Ob. 2-2. Preliminary works	684,788	151,044	136,957	821,745	181,253
4.1.7.	Ob. 2-3. Hydrotechnical works	8.793,363	1.939,556	1.758,672	10.552,035	2.327,467
4.1.8.	Ob. 2-4. Maneuver house rehabilitation	104,110	22,964	20,822	124,932	27,556
4.1.9.	Ob. 2-5. Complex and operating post rehabilitation de exploatare	1.667,227	367,741	333,446	2.000,673	441,289
TOTAL PHASE 2 (constructions)		11.522,432	2.541,507	2.304,486	13.826,918	3.049,809
	Phase 3					
4.1.10.	Ob. 3-1. Hydrotechnical works	1.256,915	277,238	251,383	1.508,298	332,686
4.1.11	Ob. 3-2. Access roads and platforms	162,719	35,891	32,544	195,263	43,069
TOTAL PHASE 3 (constructions)		1.419,634	313,129	283,927	1.703,561	375,755
	Phase 4					
4.1.12	Ob. 4-1. Hydrotechnical works	2.559,359	564,519	511,872	3.071,231	677,423
TOTAL PHASE 4 (constructions)		2.559,359	564,519	511,872	3.071,231	677,423
	Phase 5					
4.1.13	Ob. 5-1. Landscaping works	4.993,079	1.101,325	998,616	5.991,695	1.321,591
TOTAL PHASE 5(constructions)		4.993,079	1.101,325	998,616	5.991,695	1.321,591
TOTAL PCT. 4.1.		23.551,145	5.194,685	4.821,004	28.372,151	6.258,056
4.2	Mounting technological tillages	671,915	148,205	134,383	806,297	177,845

4.2.1.	Mounting hydro-mechanical equipment dam weir	207,387	45,743	41,478	248,865	54,892
4.2.2.	Mounting equipment hydromechanic mounting lock hydro-mechanical equipment	454,657	100,284	90,931	545,588	120,341
4.2.3.	Mounting and tillages close circuit TV system	9,871	2,177	1,974	11,845	2,613
4.3	Tillages, technical and functional equipments with mounting	2.215,952	488,773	443,191	2.659,142	586,528
4.3.1.	Hydromechanical equipment baraj stavilar	927,260	204,526	185,452	1.112,712	245,431
4.3.2.	Lock hydromechanical equipment	1.156,582	255,108	231,317	1.387,899	306,129
4.3.3	Operating complex and post	132,110	29,140	26,422	158,532	34,967
4.4	Tillages without mounting and transport equipment	0,000	0,000	0,000	0,000	0,000
4.5	Endowments	103,694	22,872	20,738	124,432	27,446
TOTAL CHAPTER 4		26.542,706	5.854,535	5.419,318	31.962,023	7.049,876
CHAPTER 5						
5.1.	Building site organising	496,357	109,482	105,677	602,034	132,791
	5.1.1. Construction works	496,357	109,482	105,677	602,034	132,791
	5.1.2. Cost afferent building site org	0,000	0,000	0,000	0,000	0,000
5.2.	Comissions, quotes, taxes, credit cost	329,466	72,670	0,000	329,466	72,670
5.2.1.	Comissions, taxes and legal quotes	329,466	73	0	329,465	73
5.2.2.	Credit cost (40% of investment)	0,000	0,000	0,000	0,000	0,000
5.3.	Miscellaneous and unforeseen costs	2.685,722	592,391	537,144	3.222,866	710,869
TOTAL CHAPTER 5		3.511,544	774,543	642,821	4.154,366	916,330
CHAPTER 6						
6.1.	Training operating personnel	0,000	0,000	0,000	0,000	0,000
6.2.	Technological sampling and tests	0,000	0,000	0,000	0,000	0,000
TOTAL CHAP 6.		0,000	0,000	0,000	0,000	0,000
TOTAL GENERAL		33.797,195	7.454,661	6.761,482	40.558,677	8.946,042
of which C + M		25.343,516	5.590,029	5.185,885	30.529,401	6.733,882

BENEFICIARY
ADMINISTRATIA BAZINALA DE APA BANAT

MANAGER
eng. Ervin LUCI

TECHNICAL MANAGER
eng. Dumitru HEPES

HEAD OF INVESTMENT OFFICE
eng. Doru PURDEA

NATIONAL ADMINISTRATION " APELE ROMANE "
GENERAL MANAGER
VICTOR SANDU

DEPUTY GENERAL MANAGER
eng. GHEORGHE CONSTANTIN RUSU

DEPARTMENT DEVELOPMENT, INVESTMENTS AND AQUISITIONS
MANAGER

Dr. eng. RODICA COLCERIU

DESIGNER
S.C. AQUAPROIECT S.A.
BUCURESTI

TECHNICAL MANAGER
eng. Ghe. BRATIANU

HEAD OF WORKSHOP
eng. E. BELCIUG

HEAD OF PROJECT
eng. D. ZAIU

GENERAL ESTIMATE
 regarding necessary cost for investment objective realising
PLACING UNDER SAFE CONDITIONS THE SANMIHAIU ROMAN HYDRO-KNOT, TIMIS COUNTY
REST TO BE EXECUTED

1 Euro = 4,5337 31.01.2016

Nr.	Chapter and subchapter costs name de cheltuieli	Value (exclusive VAT)		VAT	Value (inclusive VAT)	
		th. lei	th. euro	th. lei	th. lei	th. euro
1	2	3	4	5	6	7
CHAPTER 1 -Costs for obtaining and land arrangement						
1.1.	Land obtaining	0,000	0,000	0,000	0,000	0,000
1.2.	Land arrangement	96,918	21,377	19,384	116,301	25,653
1.3.	Environment protection arrangement	464,007	102,346	92,801	556,809	122,816
TOTAL CHAPTER 1		560,926	123,724	112,185	673,111	148,468
CHAPTER 2 - Costs for assuring objective necessary utilities						
2.1	Costs for objective nec utilities	33,261	7,336	6,652	39,914	8,804
2.2	LEA and phone lines moving	29,912	6,598	5,982	35,894	7,917
TOTAL CHAPTER 2		63,173	13,934	12,635	75,808	16,721
CHAPTER 3-Costs for designing and technical assistance						
3.1.	Field studies and expertise	463,817	102,304	92,764	556,581	122,765
3.2.	Obtaining notices, agreements and authorisations	336,210	74,158	0,000	336,210	74,158
3.3.	Design and engineering	927,634	204,609	185,527	1.113,161	245,530
3.4.	Public acquisition procedures organising	74,779	16,494	14,956	89,735	19,793
3.5.	Consultancy	193,567	42,695	38,712	232,280	51,234
3.6.	Technical assistance	463,817	102,304	92,764	556,581	122,765
TOTAL CHAPTER 3		2.459,824	542,564	424,724	2.884,550	636,246
CHAPTER 4 - Costs for basic investment						
4.1	Constructions and installations					
	Phase 1					
4.1.1.	Ob. 1-1. Demolishing existing works	0,000	0,000	0,000	0,000	0,000
4.1.2.	Ob. 1-2. Access roads and platforms	0,000	0,000	0,000	0,000	0,000
4.1.3.	Ob. 1-3. Hydrotechnical works	0,000	0,000	0,000	0,000	0,000
4.1.4.	Ob. 1-4. Demolishing designed works	287,236	63,356	57,447	344,683	76,027
	TOTAL PHASE 1	287,236	63,356	57,447	344,683	76,027
	Phase 2 - Dam weir					
4.1.5.	Ob. 2-1. Access roads and platforms	272,943	60,203	54,589	327,532	72,244
4.1.6.	Ob. 2-2. Preliminary works	684,787	151,044	136,957	821,745	181,253
4.1.7.	Ob. 2-3. Lucrari hidrotehnice	8.793,363	1.939,555	1.758,673	10.552,035	2.327,467
4.1.8.	Ob. 2-4. Maneuver house rehabilitation	104,110	22,964	20,822	124,932	27,556
4.1.9.	Ob. 2-5.complex and post rehabilitation de exploatare	1.667,227	367,741	333,445	2.000,673	441,289
	TOTAL PHASE 2 (constructions)	11.522,431	2.541,507	2.304,486	13.826,917	3.049,808
	Phase 3					
4.1.10.	Ob. 3-1. Hydrotechnical works	1.256,915	277,238	251,383	1.508,298	332,686
4.1.11	Ob. 3-2. Access roads and platforms	162,719	35,891	32,544	195,263	43,069
	TOTAL PHASE 3 (constructions)	1.419,634	313,129	283,927	1.703,561	375,755
	Phase 4					
4.1.12	Ob. 4-1. Hydrotechnical works	2.559,360	564,519	511,872	3.071,231	677,423
	TOTAL PHASE 4 (constructions)	2.559,360	564,519	511,872	3.071,231	677,423
	Phase 5					
4.1.13	Ob. 5-1. Landscaping works	4.993,079	1.101,325	998,616	5.991,695	1.321,590
	TOTAL PHASE 5 (constructions)	4.993,079	1.101,325	998,616	5.991,695	1.321,590
	TOTAL PCT. 4.1.	20.781,739	4.583,836	4.156,348	24.938,088	5.500,604
4.2	Mounting technological tillage	671,914	148,204	134,383	806,297	177,845

4.2.1.	Mounting dam weir hydromechanical equipment	207,387	45,743	41,477	248,864	54,892
4.2.2.	Mounting lock hydromechanical equipment	454,656	100,284	90,931	545,587	120,340
4.2.3.	Mounting and tillage close circuit TV system	9,871	2,177	1,974	11,846	2,613
4.3	Tillages, tunc. and techn. equipments with mounting	2.215,952	488,773	443,190	2.659,142	586,528
4.3.1.	Dam weir hydromechanical equipment	927,260	204,526	185,452	1.112,712	245,431
4.3.2.	Lock hydromechanical equipment	1.156,582	255,108	231,316	1.387,899	306,129
4.3.3	Operating complex and post	132,110	29,139	26,422	158,532	34,967
4.4	Tillages without mounting and transport equipment	0,000	0,000	0,000	0,000	0,000
4.5	Endowments	103,694	22,872	20,739	124,433	27,446
TOTAL CHAPTER 4		23.773,300	5.243,686	4.754,660	28.527,961	6.292,423
CHAPTER 5						
5.1.	Building site organisation	336,207	74,157	67,241	403,448	88,989
	5.1.1. Construction works	336,207	74,157	67,241	403,448	88,989
	5.1.2. Cheltuieli conexe organizării şantierului Costs	0,000	0,000	0,000	0,000	0,000
5.2.	Comissions, taxes, legal quotes	291,381	64,270	0,000	291,381	64,270
5.2.1.	Comissions, taxes, legal quotes	291,381	64	0	291,381	64
5.2.2.	Credit cost (40% of total investment)	0,000	0,000	0,000	0,000	0,000
5.3.	Miscellaneous and unforeseen costs	2.685,722	592,391	537,144	3.222,867	710,869
TOTAL CHAPTER 5		3.313,309	730,818	604,386	3.917,695	864,128
CHAPTER 6						
6.1.	Training operating personnel	0,000	0,000	0,000	0,000	0,000
6.2.	Technical samples and tests	0,000	0,000	0,000	0,000	0,000
TOTAL CHAP. 6.		0,000	0,000	0,000	0,000	0,000
TOTAL GENERAL		30.170,531	6.654,726	5.908,592	36.079,125	7.957,986
of which C + M		22.413,960	4.943,856	4.482,791	26.896,752	5.932,627

BENEFICIARY
BANAT RIVER BASIN ADMINISTRATION

MANAGER
eng. Ervin LUCI

TECHNICAL MANAGER
eng. Dumitru HEPES

HEAD OF INVESTMENT OFFICE
eng. Doru PURDEA

NATIONAL ADMINISTRATION " APELE ROMANE "
GENERAL MANAGER
VICTOR SANDU

DEPUTI GENERAL MANAGER
eng. GHEORGHE CONSTANTIN RUSU

DEPARTMENT DEVELOPMENT, INVESTMENT AND AQUISITIONS
MANAGER

DESIGNER
S.C. AQUAPROIECT S.A.
BUCHURESTI

TECHNICAL MANAGER
eng. Ghe. BRATIANU

HEAD OF WORKSHOP
eng. E. BELCIUG

HEAD OF PROJECT
eng. D. ZAIU

Chapter 4
Ob. 4.1.7. Hydrotechnical works

in thousand lei/thousand euro at an exchange rate of 4.5337 lei/euro on 31.01.2016

Nr.	Chapter and subchapter costs name	Value (without VAT)		VAT	Value (inclusive VAT)	
		thousand lei	thousand euro	thousand lei	thousand lei	thousand euro
1	2	3	4	5	6	7
I. CONSTRUCTION WORKS						
1	Earth moving	0.000	0.000	0.000	0.000	0.000
2	Constructions: resistance (foundations, resistance structure) and architecture (exterior closings, partitions, finishes electric power post1x63kVA)	0.000	0.000	0.000	0.000	0.000
3	Insulations	-	-	-	-	-
4	Electric installations	-	-	-	-	-
5	Sanitary installations	-	-	-	-	-
6	heating, ventilation, climate, PSI, radio -tv, internet installations	-	-	-	-	-
7	Gas supply installations	-	-	-	-	-
8	Telecommunication installations	-	-	-	-	-
TOTAL I		0.000	0.000	0.000	0.000	0.000
II. MOUNTING						
	Electric tillages and installations	0.000	0.000	0.000	0.000	0.000
TOTAL II		-	-	-	-	-
III. PROCUREMENT						
	El inst. Tillages and equipments	0.000	0.000	0.000	0.000	0.000
	Transport tillages and equipments	-	-	-	-	-
	Endowments	-	-	-	-	-
TOTAL III		-	-	-	-	-
TOTAL (TOTAL I + TOTAL II + TOTAL III)		0.000	0.000	0.000	0.000	0.000

Head of project,

Ing. D. Zaiu

Designer: S.C. AQUAPROIECT S.A.

**"PLACING UNDER SAFE CONDITIONS THE
SANMIHAIU ROMAN HYDRO-KNOT, TIMIS
COUNTY"**

OBJECT ESTIMATE**Object 4.1.8. - Maneuver house rehabilitation**

**In RON/EURO at BNR EUROexchange
rate of 31.01.2016: 4.5337**

TVA 24%

Nr.	Chapter and subchapter costs name	Value exclusive VAT		VAT	Value (inclusive VAT)	
		thousand lei	thousand euro	thousand lei	thousand lei	thousand euro
1	2	3	4	5	6	7
I. -CONSTRUCTION WORKS						
1.	Maneuver house rehabilitation	0.000	0.000	0.000	0.000	0.000
TOTAL I		0.000	0.000	0.000	0.000	0.000
II. - MOUN TING						
1.	Tillages and technological equipments mounting	0.000	0.000	0.000	0.000	0.000
TOTAL II		0.000	0.000	0.000	0.000	0.000
III. - PROCUREMENT						
1.	Mounting tillages and technological equipments	0.000	0.000	0.000	0.000	0.000
2.	Transport tillages and equipments	0.000	0.000	0.000	0.000	0.000
3.	Endowments	0.000	0.000	0.000	0.000	0.000
TOTAL III		0.000	0.000	0.000	0.000	0.000
TOTAL (TOTAL I + TOTAL II + TOTAL III)		0.000	0.000	0.000	0.000	0.000

**DRAFTED,
arch. M. Cioata**

OBJECT ESTIMATE

Object 4.1.9 - Rehabilitation complex and operating post

In RON/EURO at BNR exchange EURO of
31.01.2016:

4.5337 RON/EURO

TVA 20%

Nr.	Name of costs chapters and subchapters	Value exclusive VAT		VAT	Value (inclusive VAT)	
		thousand lei	thousand euro	thousand lei	thousand euro	thousand euro
1	2	3	4	5	6	7
I. - CONSTRUCTION WORKS						
1.	Post rehabilitation	0.000	0.000	0.000	0.000	0.000
1.	Double operating building rehabilitation	0.000	0.000	0.000	0.000	0.000
1.	Household annexes rehabilitation	0.000	0.000	0.000	0.000	0.000
1.	Technologic annex	0.000	0.000	0.000	0.000	0.000
1.	Close circuit TV system	0.000	0.000	0.000	0.000	0.000
1.	Inner side arrangements and fencing	0.000	0.000	0.000	0.000	0.000
1.	DJ access road rebuilding	0.000	0.000	0.000	0.000	0.000
TOTAL I		0.000	0.000	0.000	0.000	0.000
II. - MOUNTING						
1.	Tillages and technological equipments mounting	0.000	0.000	0.000	0.000	0.000
TOTAL II		0.000	0.000	0.000	0.000	0.000
III. - PROCUREMENT						
1.	Mounting tillages and technological equipments	0.000	0.000	0.000	0.000	0.000
2.	Transport equipments and tillages	0.000	0.000	0.000	0.000	0.000
3.	Endowments	0.000	0.000	0.000	0.000	0.000
TOTAL III		0.000	0.000	0.000	0.000	0.000
TOTAL (TOTAL I + TOTAL II + TOTAL III)		0.000	0.000	0.000	0.000	0.000

DRAFTED,
arch. M. Cioata

Chapter 4
Ob. 4.1.10. Hydrotechnical works stage 3

in thousand lei/thousand euro at an exchange rate of 4.5337lei/euro on 31.01.2016

Nr.	Chapter and subchapter costs name	Value (without VAT)		VAT	Value (inclusive VAT)	
		thousand lei	thousand euro	thousand lei	thousand lei	thousand euro
1	2	3	4	5	6	7
I. CONSTRUCTION WORKS						
1	Earth moving	-	-	-	-	-
2	Constructions: resistance (foundations, resistance structure) and architecture (exterior closings, partitions, finishes, transformation post 1x63kVA)	0.000	0.000	0.000	0.000	0.000
3	Insulations	-	-	-	-	-
4	Electric installations	-	-	-	-	-
5	Sanitary installations	-	-	-	-	-
6	Heating, ventilation, climate, PSI, radio-tv, internet installations	-	-	-	-	-
7	Gas supplying installation	-	-	-	-	-
8	Instalații de telecomunicații	-	-	-	-	-
TOTAL I		0.000	0.000	0.000	0.000	0.000
MOUNTING						
	Electric tillages and installation mounting	-	-	-	-	-
TOTAL II		-	-	-	-	-
PROCUREMENT						
	El. Inst tillages and technological equipments	-	-	-	-	-
	transport tillages and equipments	-	-	-	-	-
	Endowments	-	-	-	-	-
TOTAL III		-	-	-	-	-
TOTAL (TOTAL I + TOTAL II + TOTAL III)		0.000	0.000	0.000	0.000	0.000

Head of project,

Ing. D. Zaiu

ChapterI 4
Ob. 4.1.11. Platforms and access roads

in thousand euro/thousand lei at an exchange rate of 4.5337 lei/euro on 31.01.2016

Nr.	Chapter and subchapter costs name	Value (without VAT)		VAT	Value (inclusive VAT)	
		thousand lei	thousand euro	thousand lei	thousand lei	thousand euro
1	2	3	4	5	6	7
I. CONSTRUCTION WORKS						
1	Earth moving	-	-	-	-	-
2	Constructions: resistance (foundations, resistance structure) and architecture (exterior closings, partitions, finishes, transformation post 1x63kVA)	0.000	0.000	0.000	0.000	0.000
3	Insulations	-	-	-	-	-
4	electric installations	-	-	-	-	-
5	Sanitary installations	-	-	-	-	-
6	Heating, ventilation, climate, radio-tv, internet installation	-	-	-	-	-
7	gas supplying installation	-	-	-	-	-
8	telecommunication installation	-	-	-	-	-
TOTAL I		0.000	0.000	0.000	0.000	0.000
MOUNTING						
	electric installation and tillages mounting	-	-	-	-	-
TOTAL II		-	-	-	-	-
PROCUREMENT						
	el. Inst. Tillages and technological equipment	-	-	-	-	-
	transport tillages and equipment	-	-	-	-	-
	Endowment	-	-	-	-	-
TOTAL III		-	-	-	-	-
TOTAL (TOTAL I + TOTAL II + TOTAL III)		0.000	0.000	0.000	0.000	0.000

Drafted,
Ing. P. Ghindaru

Chapter 4
Ob. 4.1.12. Hydrotechnical works

in thousand euro/thousand lei at an exchange rate of 4.5337 lei/euro on 31.01.2016

Nr.	Chapter and subchaptercosts name	Value (witjout VAT)		VAT	Value (inclusive VAT)	
		thousand lei	thousand euro	thousand lei	thousand lei	thousand euro
1	2	3	4	5	6	7
CONSTRUCTION WORKS						
1	Earth moving	0.000	0.000	0.000	0.000	0.000
2	Constructions: resistance (foundations, resistance structure) and architecture (exterior closings, partitions, finishes, transformation post 1x63kVA)	0.000	0.000	0.000	0.000	0.000
3	Insulations	-	-	-	-	-
4	Electric installations	-	-	-	-	-
5	Sanitary installations	-	-	-	-	-
6	Heating, ventilation, climate, PSI, radio-tv, internet installation	-	-	-	-	-
7	Gas supply installations	-	-	-	-	-
8	Telecommunication installation	-	-	-	-	-
TOTAL I		0.000	0.000	0.000	0.000	0.000
II. MOUNTING						
	Electric installations and tillages mounting	0.000	0.000	0.000	0.000	0.000
TOTAL II		-	-	-	-	-
III. PROCUREMENT						
	El. Inst. Tillages and technological equipments	0.000	0.000	0.000	0.000	0.000
	Transport tillages and equipments	-	-	-	-	-
	Endowments	-	-	-	-	-
TOTAL III		-	-	-	-	-
TOTAL (TOTAL I + TOTAL II + TOTAL III)		0.000	0.000	0.000	0.000	0.000

Head of project,

Ing. D. Zaiu

Designer: S.C. AQUAPROIECT S.A.

**"PLACING UNDER SAFE CONDITIONS THE
SANMIHAIU ROMAN HYDROTEHNICAL-KNOT,
TIMIS COUNTY"**

OBJECT ESTIMATE

Object 4.1.13 - Lanscaping works

**In RON/EURO at BNR EURO
exchange rate of 1.10.2013: 4.5337 RON/EURO**

TVA 24%

Nr.	Chapter and subchapter costs name	Value without VAT		VAT	Value (inclusive VAT)	
		thousand lei	thousand EURO	thousand lei	thousand lei	thousand euro
1	2	3	4	5	6	7
I. - CONSTRUCTION WORKS						
1.	Island leisure place arrangement	0.000	0.000	0.000	0.000	0.000
TOTAL I		0.000	0.000	0.000	0.000	0.000
II. - MOUNTING						
1.	Tillages and technological equipments	0.000	0.000	0.000	0.000	0.000
TOTAL II		0.000	0.000	0.000	0.000	0.000
III. - PROCUREMENT						
1.	Mounting tillages and technological equipment	0.000	0.000	0.000	0.000	0.000
2.	Transport tillages and equipments	0.000	0.000	0.000	0.000	0.000
3.	Endowments	0.000	0.000	0.000	0.000	0.000
TOTAL III		0.000	0.000	0.000	0.000	0.000
TOTAL (TOTAL I + TOTAL II + TOTAL III)		0.000	0.000	0.000	0.000	0.000

**DRAFTED,
arch. M. Cioata**

S.C. AQUAPROIECT S.A.

**Placing under safe conditions the Sanmihaiu
Hydro-knot**

LIST OD WORK QUANTITIES AND UNIT PRICES

FOR WORKS OF C+M, PRICES 31.01.2016

1 EURO = 4,5337 LEI on 1.10. 2013 - Ob. 1.2

NR.	Work	UM	Quantity	Unit price (without VAT)	Value exclusive VAT	
					thousand lei	thousand euro
0	1	2	3	4	5	6
Ob.1.2. Landscaping						
1	Land clearing	100 mp	80.00	0.000	0.000	0.000
2	Loading unloading wooden material	to	2.50	0.000	0.000	0.000
3	Wooden material transport	to	2.50	0.000	0.000	0.000
4	Vegetal layer stripping	100 mc	24	0.000	0.000	0.000
5	Covering with grass	mp	8,000.00	0.000	0.00	0.000
TOTAL 4.1.1.					0.000	0.000
VAT					0.000	0.000
TOTAL 4.1.1. with VAT					0.000	0.000

Drafted,
Eng. D. Zaiu

S.C. AQUAPROIECT S.A.

**Placing under safe conditions the Sanmihaiu
hydro-knot**

LIST OF WORK QUANTITIES AND UNIT PRICES

FOR WORKS OF C+M - PROCES ON 31.01.2016

1 EURO = 4,5337 LEI on 31.01. 2016 - Ob. 1.3

NR.	WORK	UM	quantity	Unit Prices (without VAT)	VALUE, EXCLUSIVE VAT	
					thousand lei	thousand euro
0	1	2	3	4	5	6
Ob.1.3. Environment protection arrangements						
1	Drain tube Ø 315 mm	m	110.00	0.00	0.00	0.00
2	Drain tube Ø 250 mm	m	228.00	0.00	0.00	0.00
3	Geotextile for drain wrapping	mp	550.90	0.00	0.00	0.00
4	Armature for realizinf circular gabions	to	0.63	0.00	0.00	0.00
5	Gravel for gabions and drain prism for horizontal drains	100mc	2.91	0.00	0.00	0.00
6	Connection parts - teuri 250/250	piece	5.60	0.00	0.00	0.00
7	Connection parts - teuri 315/250	piece	2.80	0.00	0.00	0.00
8	Elbows Ø 250 at 90°	piece	2.10	0.00	0.00	0.00
9	Geotextile	m2	635.78	0.00	0.00	0.00
10	Geocomposite with bentonite insertions	m2	9,907.80	0.00	0.00	0.00
11	Geomembrane	m2	9,907.80	0.00	0.00	0.00
12	Crane geotextile laying	hours	35.00	0.00	0.00	0.00
13	Labour material posing	hours	175.00	0.00	0.00	0.00
TOTAL 4.1.1. without VAT					0.000	0.000
VAT					0.000	0.000
TOTAL 4.1.1. with VAT					0.000	0.000

Drafted,
Eng. D. Zaiu

S.C. AQUAPROIECT S.A.

**Placing under safe conditions the Sanmihaiu
Roman hydrotechnical-knot**

LIST OF WORK QUANTITIES AND UNIT PRICES

FOR WORKS OF C+M - PROCES ON 31.01.2016

1 EURO = 4,5337 LEI on 31.01.2016 - Ob. 1.3

NR.	WORKS	UM	Quantities	Unit price (without VAT)	Value, exclusive VAT	
					thousand lei	thousand euro
0	1	2	3	4	5	6
Ob.2.1. Costs necessary for objective utilities						
1	Sewerage networks, including connection and manholes	piece	1.00	0.00	0.00	0.00
2	Water network, including connections and manholes	piece	1.00	0.00	0.00	0.00
3	Gas connection	m	90.00	0.00	0.00	0.00
TOTAL 4.1.1. without VAT					0.000	0.000
VAT					0.000	0.000
TOTAL 4.1.1. with VAT					0.000	0.000

Ob.2.2. Aerial electrical transport lines relocation and phone lines - mii lei

Drafted,
Arch. M. Cioata

S.C. AQUAPROIECT S.A.

**Placing under safe conditions the Sanmihaiu
Roman hydrotechnical-knot**

LIST OF WORK QUANTITIES AND UNIT PRICES

**FOR WORKS OF C+M -PRICES 31.01.2016
1 EURO = 4,5337 LEI ON 31.01. 2016 - Ob. 4.1.4**

NR.	WORKS	UM	Quantities	Unit price (without VAT)	VALUE, EXCLUSIVE VAT	
					thousand lei	thousand euro
0	1	2	3	4	5	6
Works demolishing works at finalizing stage I						
Hydrotechnical works - 4.1.4						
	Clearing land existing cofferdam	100 m2	6.00	0.00	0.00	0.00
	Exc. Below the water level discharged into the deposit	100 m3	10.20	0.00	0.00	0.00
	Transport 4 km	to	1,632.00	0.00	0.00	0.00
	Deposit arrangements	100 m3	10.20	0.00	0.00	0.00
	Demolishon concrete sill	m3	638.20	0.00	0.00	0.00
	Transport 1 km	to	1,531.68	0.00	0.00	0.00
	piles extracting	100 m2	8.10	0.00	0.00	0.00
	Loading piles in trucks with autocranes 9 t. from the deposit and transporting to them to building site	hours	40.00	0.00	0.00	0.00
	Transport with trucks piles at 1 km to the building site	to	111.21	0.00	0.00	0.00
	Unloading piles from trucks with autcrane 9 t. to the building site	hours	40.00	0.00	0.00	0.00
	Transport metallic piles	to	111.21	0.00	0.00	0.00
	Disaffecting temporary traffic bridge (demoloshing, transport outside the	pieces	1.00	0.00	0.00	0.00
Total hydrotechnical works (without VAT)					0.000	0.000
VAT					0.000	0.000
Total hydrotechnical works (without VAT)					0.000	0.000

Head of project,
Eng. D. Zaiu

NH SÂNMIIHAIU ROMÂN
DN ACCESS ROAD REBUILDING (RIGHT BANK)
Ob. 4.1.5 - List of work quantities

Nr.	Works	U.M.	Quantities	Value (lei)	
				unit	total
CONSTRUCTION WORKS					
1	DN ACCESS ROAD REBUILDING (RIGHT BANK)) - L = 1025 m, lp=6,00m, lc=5,00 m				
1.1	Road earth moving (diggings, fillings, platform preparations, transport)	mc	494	0.00	0
1.2	Foundation and road suprastructure rebuilding(20 cm ballast, 20 cm concrete C25/30, 4 cm Ba16, 10 cm ball on road side), inclusive traffic signs	mp	1106.89	0.00	0
	TOTAL ACCESS ROAD REBUILDING				0

Drafted,

Eng. Paul Ghindaru

S.C. AQUAPROIECT S.A.

**Placing under safe conditions the Sanmihaiu
Roman hydrotechnical-knot**

LIST OF WORK QUANTITIES AND UNIT PRICES

FOR WORKS OF C+M-PROCES 31.01.2016

1 EURO = 4,5337 LEI on 31.01.2016 - Ob. 4.1.6 - 4.1.7

NR.	WORKS	UM	Quantity	Unit prices (without VAT)	Value, EXCLUSIVE VAT	
					thousand lei	thousand euro
0	1	2	3	4	5	6
Ob.4.1.1. Repairings dam weir Stage 2						
Preliminary works - Unsilting - Ob. 4.1.6						
	removing reed from the inside areas	ha	2.00	0.00	0.00	0.00
	Exc.below water level discharged	100 m3	350.00	0.00	0.00	0.00
	Deposit arrangements	100 m3	350.00	0.00	0.00	0.00
	Access ramps	100 m3	65.00	0.00	0.00	0.00
	decommissioning ramps	100 m3	65.00	0.00	0.00	0.00
	Transport 4 km	to	56,000.00	0.00	0.00	0.00
	Peree clearing	100 m2	31.50	0.00	0.00	0.00
Total preliminary works (exclusive VAT)					0.000	0.000
VAT					0.000	0.000
Total preliminary works (exclusive VAT)					0.000	0.000

Head of project,
Eng. D. Zaiu

NR.	WORKS	UM	Quantity	Unit prices (without VAT)	Value, EXCLUSIVE VAT	
					thousand lei	thousand euro
0	1	2	3	4	5	6

S.C. AQUAPROIECT S.A.

**Placing under safe conditions the Sanmihaiu
Roman hydrotechnical-knot**

LIST OF WORK QUANTITIES AND UNIT PRICES

FOR WORKS OF C+M-PROCES 31.01.2016

1 EURO = 4,5337 LEI on 31.01.2016 - Ob. 4.1.6 - 4.1.7

Annex nr. 23

Hydro-technical works - 4.1.7						
	Concrete demolishing	m3	710.50	0.00	0.00	0.00
	Transport demolished concrete 1 km	to	1,705.20	0.00	0.00	0.00
	Concrete, apron, flood bed, piles driving platforms, execution	m3	1,905.60	0.00	0.00	0.00
	Transport concrete 20 km	to	4,573.44	0.00	0.00	0.00
	Concrete rehabilitation	m2	996.00	0.00	0.00	0.00
	Scaffolding	pieces	4.00	0.00	0.00	0.00
	Slabs platform rebuilding	m2	99.00	0.00	0.00	0.00
	Molons-procurement	m2	277.20	0.00	0.00	0.00
	Molons mounting	m2	277.20	0.00	0.00	0.00
	Transport moloane - 20 km	to	110.88	0.00	0.00	0.00
	Welded net (armature Ø 10)	to	53.65	0.00	0.00	0.00
	Anchors 16 mm	100 piece	46.32	0.00	0.00	0.00
	sealing joints	100 ml	2.00	0.00	0.00	0.00
	Straight formworks	m2	100.80	0.00	0.00	0.00
	Riprap of stone - rear procurement	m3	4,119.22	0.00	0.00	0.00
	Riprap of stone rear mounting	100 m3	41.19	0.00	0.00	0.00
	Stone perree-procurement	m2	2,363.00	0.00	0.00	0.00
	Pereu piatra - punere in opera	m2	2,363.00	0.00	0.00	0.00
	Stone transport 100 km	to	9,656.24	0.00	0.00	0.00
	Drain layer	m2	2,363.00	0.00	0.00	0.00
	Finishing	100 m2	23.63	0.00	0.00	0.00
	Palplanse metalice	to	43.94	0.00	0.00	0.00
	Piles unloading with auto crane 9 t. in the building site deposit	hours	11.11	0.00	0.00	0.00
	Truck loading piles with autocrane of 9 t. from the deposit to the operating place	hours	11.11	0.00	0.00	0.00
	Piles truck transport at 1 km from mounting	to	43.94	0.00	0.00	0.00
	Unloading piles from trucks with autocrane 9 t. at mounting place	hours	11.11	0.00	0.00	0.00
	Driving metal piles	100 m2	3.20	0.00	0.00	0.00
	Dewatering equipments	hours	4,000.00	0.00	0.00	0.00
	Crane hour functioning	hours	4,500.00	0.00	0.00	0.00
	Fencing	m	500.00	0.00	0.00	0.00
	Cleaning and metal structure paint restoring (foot bridge)	m2	135.00	0.00	0.00	0.00
	Wooden floor (timber)	m2	50.00	0.00	0.00	0.00
	Drillings for reinforcing the dam foundation			0.00	0.00	0.00
TOTAL 4.1.1. exclusive VAT					0.000	0.000
VAT					0.000	0.000
TOTAL 4.1.1. including VAT					0.000	0.000

Head of project,
Eng. D. Zaiu

LIST OF WORK QUANTITIES - DAM HYDRO-MECHANICAL EQUIP, EMT REHABILITATION

1 € = 4,5337 lei / 31.01.2016		Value, exclusive VAT		VAT	Value including VAT	
		lei	euro	lei	lei	euro
4.1 CONSTRUCTIONS AND INSTALLATION		0	0	0	0	0
1	Disassembling existing equipments embedded parts	0	0	0	0	0
2	Disassembling existing equipments embedded parts	0	0	0	0	0
3	Rehabilitation equipments handling mechanisms	0	0	0	0	0
4	Different metallic confections	0	0	0	0	0
5	Corrosion protection	0	0	0	0	0
6	Samples	0	0	0	0	0
4.2 MOUNTING TILLAGES		0	0	0	0	0
1	Cylindric weir embedded parts	0	0	0	0	0
2	Cylindric weir 15,0x3,45	0	0	0	0	0
3	Double plane weir embedded parts 5,0x4,5	0	0	0	0	0
4	Double plane weir 5,0x4,5	0	0	0	0	0
5	Cofferdam embedded parts 5,0x4,5	0	0	0	0	0
6	Cofferdam 5,0x4,5	0	0	0	0	0

7	Plane weir embedded parts 1,6x4,5	0	0	0	0	0
8	Plane weir 1,6x4,5	0	0	0	0	0
9	Maneuver beam Md 1,6/1,6	0	0	0	0	0
10	Cofferdam embedded parts 1,6x4,5	0	0	0	0	0
11	cofferdam 1,6x4,5	0	0	0	0	0
12	Electric handlings	0	0	0	0	0
4.3 TILLAGES WITH MOUNTING		0	0	0	0	0
1	Cylindric weir embedded parts	0	0	0	0	0
2	Cylindric weir 15,0x3,45	0	0	0	0	0
3	Double plane weir embedded parts 5,0x4,5	0	0	0	0	0
4	Double plane weir 5,0x4,5	0	0	0	0	0
5	Cofferdam embedded parts 5,0x4,5	0	0	0	0	0
6	Cofferdam 5,0x4,5	0	0	0	0	0
7	Plane weir embedded parts 1,6x4,5	0	0	0	0	0
8	Plane weir 1,6x4,5	0	0	0	0	0
9	Maneuver beam Md 1,6/1,6	0	0	0	0	0
10	cofferdam embedded parts 1,6x4,5	0	0	0	0	0
11	cofferdam 1,6x4,5	0	0	0	0	0
12	Electric handlings	0	0	0	0	0

Intocmit

Ing. A. Dima

Designer: S.C. AQUAPROIECT S.A.

EVALUATION

OB 4.1.8. : MANEUVER HOUSE REHABILITATION

Nr.	DESIGNED WORKS	U.M.	Quantity	Unit price lei	Total price lei
0	1	2	3	4	6
1	Cleaning molon masonry	m ²	520.00	0.00	0.00
2	Repairs of molon masonry at facades	m ²	100.00	0.00	0.00
3	Decommissioning ceramic tiles cover	m ²	60.00	0.00	0.00
3	Decommissioning existing floor	m ²	30.00	0.00	0.00
4	Careful disassembling of metal door and windows	m ²	20.00	0.00	0.00
5	Rehabilitating roof slope by replacing degraded elements	m ²	47.00	0.00	0.00
6	Pressed roof tiles cover, inclusive support elements, foil and accesories	m ²	60.00	0.00	0.00
7	Cleaning and plaster repairs at interior walls	m	95.00	0.00	0.00
8	Finishes at interior walls with washable paint	m ²	95.00	0.00	0.00
9	Cleaning protection paint at metal confections	m ²	170.00	0.00	0.00
10	Ceramic skid tiles floor	m ²	30.00	0.00	0.00
11	Metal joinery at door and windows, inclusive protection paint	m ²	20.00	0.00	0.00
12	Electric installation restoring, inclusive earth plate and energy supply	m	160.00	0.00	0.00
13	Slabs platform restoring	m ²	20.00	0.00	0.00
14	Cleaning, repairs protection painting at wrought iron fence	m	30.00	0.00	0.00
TOTAL					0.00

Drafted,

Arch. M. Cioata

Annex nr. 25

**Placing under safe conditions the
Sanmihaiu Roman hydrotechnical-knot**

Designer: S.C. AQUAPROIECT S.A.

Evaluation

OB: REHABILITATION OPERATING BUILDINGS - ob. 4.1.9.

Nr.	DESIGNED WORKS	U.M.	Quantity	Unit price lei	Total price lei
0	1	2	3	4	6
POST REHABILITATION					
1	Cleaning exterior finishes and existing plaster repairs	m ²	270.00	0.00	0.00
2	Refurbishment exterior finishes with thermo-system and structured plaster	m ²	270.00	0.00	0.00
3	Replacing existing joinery (windows, doors) with stratified wood joinery with double glazed windows, including disassembling existing joinery	m ²	28.20	0.00	0.00
4	Wooden shutters at windows	m ²	19.50	0.00	0.00
5	Replacing interior wooden doors inclusive disassembling existing doors	m ²	19.80	0.00	0.00
6	Cleaning ground floor interior finishes at walls and ceiling and existing plaster repairs	m ²	615.00	0.00	0.00
7	Suspended ceiling of gypsum plasterboard at the ground level to reduce the height	m ²	125.00	0.00	0.00
8	Interior finishes remaking at ground floor with washable paint	m ²	565.00	0.00	0.00
9	Cleaning interior finishes basement at walls and ceiling and existing plaster repairs	m ²	175.00	0.00	0.00
10	Basement protection by applying waterproofing mortar	m ²	117.00	0.00	0.00
11	Penthouse partition with ligh walls of gypsum plasteboard RF, 15 cm thick, including mineral cotton insulation	m ²	125.00	0.00	0.00
12	Thermic insulation with mineral cotton mattresses atic and penthouse ceiling	m ²	124.00	0.00	0.00
13	Suspended ceiling of gypsum plasterboard at the groundfloor to reduce the height	m ²	124.00	0.00	0.00

14	Finishes walls and penthouse ceiling with washable paint	m ²	315.00	0.00	0.00
15	Faince tiles placking in sanitary groups and kitchen	m ²	85.00	0.00	0.00
16	Tiles floor inclusive support layer and disassembling existing floor	m ²	115.00	0.00	0.00
17	Parquet floor, inclusive support layer and disassembling existing floor	m ²	163.00	0.00	0.00
18	Rehabilitating wooden slope and replacing degraded element	m ²	212.00	0.00	0.00
19	Roof tile with support accesoires and disassembling existing cover	m ²	270.00	0.00	0.00
20	Pennthouse windows Velux 1,00 x 1,50 m	buc	4.00	0.00	0.00
21	Repairs at basement and penthouse access stairs and tile plating	m	76.00	0.00	0.00
22	Existing stove repairs	buc	4.00	0.00	0.00
23	Concrete path way inclusive brick pathway decommissioning	m ²	67.00	0.00	0.00
24	Interior electric installation remaking	m	400.00	0.00	0.00
25	Interior sanitary installations	buc	1.00	0.00	0.00
26	Interior thermic installations	piece	1.00	0.00	0.00
TOTAL					0.00
Double OPERATING BUILDING REHABILITATION					
1	Cleaning exterior finishes and existing plaster repairs	m ²	160.00	0.00	0.00
2	Refurbishment exterior finishes with thermo-system and structured plaster	m ²	160.00	0.00	0.00
3	Replacing existing joinery (windows, doors) with stratified wood joinery with double glazed windows, including disassembling existing joinery	m ²	15.50	0.00	0.00
4	Wooden shutters at windows	m ²	9.20	0.00	0.00
5	Replacing interior wooden doors inclusive disassembling existing doors	m ²	18.10	0.00	0.00
6	Cleaning ground floor interior finishes at walls and ceiling and existing plaster repairs	m ²	404.00	0.00	0.00
7	Ground floor interior finishes remaking with washable paint	m ²	328.00	0.00	0.00
8	Cleaning basement interior finishes at walls and ceiling and existing plaster repairs	m ²	125.00	0.00	0.00
9	Basement protection by applying waterproofing mortar	m ²	125.00	0.00	0.00

10	Sanitary group partition with light walls of gypsum plasterboard, 10 cm thick, inclusive minera; cotton insulation	m ²	13.00	0.00	0.00
11	Faince plating in sanitary groups and kitchen	m ²	76.00	0.00	0.00
12	Tiles floor inclusive support layer and disassembling existing floor	m ²	52.00	0.00	0.00
13	Parquet floor, inclusive support layer and disassembling existing floor	m ²	42.00	0.00	0.00
14	Rehabilitating wooden slope and replacing degraded element	m ²	147.00	0.00	0.00
15	Roof tile with support accesoires and disassembling existing cover	m ²	180.00	0.00	0.00
16	Basement protection by applying waterproofing mortar	m	50.00	0.00	0.00
17	Existing stove repairs	buc	2.00	0.00	0.00
18	Concrete path way inclusive brick pathway decommissioning	m ²	52.00	0.00	0.00
19	Interior electric installation remaking	m	260.00	0.00	0.00
20	Interior sanitary installations	piece	1.00	0.00	0.00
21	Interior thermic installations	piece	1.00	0.00	0.00
TOTAL					0.00
HOUSEHOLD ANNEXES REHABILITATION					
1	Rehabilitation existing household annexes - hygenisation works (plaster repairs, façade cleaning, painting)	m ²	178.00	0.00	0.00
TOTAL					0.00
PROPOSED TECHNOLOGICAL ANNEX					
1	Annex construction for workshop and deposit house, made of brick masonry, 25 cm thick, with slope roof with tile cover, façade structured plaster, plaster and washable painting at the interior, washed cement floor, PVC joinery	m ²	66.00	0.00	0.00
TOTAL					0.00
INNER SIDE AND FENCING ARRANGEMENTS					
1	Earth moving for traffic platforms, walkways and green areas (diggingd, fillings, platform preparations, transport)	m3	510	0.00	0.00
2	Traffic platforms foundation and suprastructure restoring (20 cm ballast, 20 cm concrete C25/30, 4 cmBa16) inclusive 520m precast concrete curbs 25x25 on concrete foundation 30x15 cm and traffic signs	m2	270	0.00	0.00

3	Foundation and walkways suprastructure restoring (10 cm ballast, 8 cm concrete C25/30, 4 cm Ba16)	m2	345	0.00	0.00
4	Landscape restoring (20 cm vegetal ground, sod sowing and watering)	m2	1120.000	0.00	0.00
5	Exterior perimetral lightning	m	200.00	0.00	0.00
6	Fencing restoring	m	200.00	0.00	0.00
TOTAL					0.00
CLOSE CIRCUIT TV SYSTEM					
1	Electric energy supply installations	m	450	0.00	0.00
2	Data sending installations	m	400	0.00	0.00
3	Zinc coated metallic confections	kg.	150	0.00	0.00
4	System auxiliary elements	buc.	2	0.00	0.00
5	Protection elements and tubing	piece	400	0.00	0.00
6	Atmosphere protection and earth platings	m	80	0.00	0.00
7	Remote control installation elements	piece	1	0.00	0.00
8	Specific protections	piece	4	0.00	0.00
TOTAL					0.00
DN ACCESS ROAD REBUILDING (LEFT BANK)					
1	Earth moving for road and trapeze drain h=0.40, b=0.40, B= 1.60 m (diggings, dillings, platform preparations, transport)	m3	410	0.00	0.00
2	Traffic platform suprastructure and foundation rebuilding (20cm ballast, 20 cm concrete C25/30, 4 cm Ba16, 10 cm roadside ballast), inclusive traffic signs	m2	950	0.00	0.00
TOTAL					0.00
TOTAL - CONSTRUCTIONS AND INSTALLATIONS					0.00
TECHNOLOGIC TILLAGE MOUNTING					
CLOSE CIRCUIT TV SYSTEM					
1	Mounting and start up control and monitoring elements	piece	20	0.00	0.00
2	Data conversion mounting and start-up elements	piece	2	0.00	0.00
3	Mounting and start-up auxiliary elements	piece	20	0.00	0.00
TOTAL					0.00
MOUNTING TILLAGES AND TECHNOLOGICAL EQUIPMENTS					
1	Thermic power station	piece	1.00	55,037.37	55,037.37
2	Minibloc wastewater reset station	piece	1.00	28,715.15	28,715.15
TOTAL					83,752.52
CLOSE CIRCUIT TV SYSTEM					
1	Control and monitoring elements procurement	buc.	20	0.00	0.00
2	Data conversion elements procurement	buc.	2	0.00	0.00

3	Auxiliary elements procurement	buc.	20	0.00	0.00
TOTAL					0.00
TOTAL - TECHNOLOGIC EQUIPMENTS AND TILLAGES					83,752.52
ENDOWMENTS					
1	PSI and furniture	piece	1.00	0.00	0.00
2	Close circuit TV system endowment	piece	1.00	0.00	0.00
TOTAL					0.00

Drafted,

Arch. M. Cioata

Eng. D. Cristea

S.C. AQUAPROIECT S.A.

**Placing under safe conditions the Sanmihaiu
Roman hydrotechnical-knot**

LIST OF WORKS QUANTITIES AND UNIT PRICES

**FOR WORKS OF C+M, PRICES 31.01.2016
1 EURO = 4,5337 LEI on 31.01. 2016 - Ob. 4.1.10**

NR.	WORKS	UM	Quantities	Unit price (exclusive VAT)	Value.exclusive VAT	
					thousand lei	thousand euro
0	1	2	3	4	5	6
Placing the lock to dry						
Hydro-technical works - 4.1.10- Stage 3						
	Clearing existing cofferdam land	m2	18	0.00	0.00	0.00
	Exc. Below the water level discharged in to the deposit	100 m3	44.45	0.00	0.00	0.00
	Concrete demolishing	m3	800.00	0.00	0.00	0.00
	Transport demolished concrete 1 km	to	1,920.00	0.00	0.00	0.00
	Concrete, platforms, piles driving	m3	500.00	0.00	0.00	0.00
	Transport concrete 20 km	to	1,200.00	0.00	0.00	0.00
	Transport 1 km	to	7,555.65	0.00	0.00	0.00
	Extragere palplanse	100 m2	4.80	0.00	0.00	0.00
	Loading piles into truck with autocrane 9 t. from the deposit to the operating place	hours	20.00	0.00	0.00	0.00
	Pile truck transport at 1 km to the operating place	to	65.90	0.00	0.00	0.00
	Unloading piles from trucks with autocrane 9 t. at operating place	hours	20.00	0.00	0.00	0.00
	Metal piles driving	100 m2	4.80	0.00	0.00	0.00
Total hydro-technical works (exclusive VAT)					0.000	0.000
VAT					0.000	0.000
Total hydro-technical works (including VAT)					0.000	0.000

Head of project,
Eng. D. Zaiu

NH SÂNMIIHAIU ROMÂNESC
RIGHT BANK ROAD REBUILDING
Ob. 4.1.11 - List of work quantities

Nr.	Works	U.M.	Quant.	Value (lei)	
				unit	total
LUCRĂRI DE CONSTRUCȚII					
1	RIGHT BAN ROAD REBUILDING - L = 235 m, Ip=5,00m, Ic=3,50 m				
1.1	Road earth moving (diggings, fillings, platform preparations, transport)	mc	270	0.00	0
1.2	Road foundation and suprastructure rebuilding (20 cm ballast, 10 cm macadam)	mp	830	0.00	0
	TOTAL ACCESS ROAD REBUILDING				0

Drafted,

Eng. P. Ghindaru

S.C. AQUAPROIECT S.A.

**Placing under safe conditions the Sanmihaiu
Roman hydrotechnical-knot, Timis County**

LIST OF WORKS QUANTITIES AND UNIT PRICES

FOR WORKS OF C+M PRICES 31.01.2016

1 EURO = 4,5337 LEI on 31.01. 2016 - Ob. 4.1.12

NR.	WORKS	UM	Quantities	Unit prices (exclusive VAT)	Value, exclusive VAT	
					thousand lei	thousand euro
0	1	2	3	4	5	6
Ob.4.1.1. Lock reparings						
Hydrotechnical works - 4.1.12						
1	Clearing upstrea-downstream land	100 m2	20	0.000	0.000	0.000
2	Exc. Below the water level discharged into the deposit	100 m3	60	0.000	0.000	0.000
3	Transport 4 km	to	9600	0.000	0.000	0.000
4	Deposit arrangements	100 m3	60	0.000	0.000	0.00
5	Concrete demolishing	100 m3	1.80	0.000	0.000	0.00
6	Transport demolished concrete 1 km	to	432.00	0.000	0.000	0.00
7	Concrete (hydro equipments)	m3	412.80	0.000	0.000	0.00
8	Armature	to	24.77	0.000	0.000	0.00
9	Transport concrete 20 km	to	990.72	0.000	0.000	0.00
10	Rehabilitation concrete	m2	600.00	0.000	0.000	0.00
11	Slab platform rebuilding	m2	380.00	0.000	0.000	0.00
12	Scaffolding	pieces	4.00	0.000	0.000	0.00
13	Estacade boarding-landing	pieces	1.00	0.000	0.000	0.00
14	Molons-procurement	m2	702.00	0.000	0.000	0.00
15	Molons mounting	m2	702.00	0.000	0.000	0.00
16	Transport molons - 20 km	to	280.80	0.000	0.000	0.00
17	Joints sealing	100 ml	0.40	0.000	0.000	0.00
18	Straight formworks	m2	70.00	0.000	0.000	0.00
19	Transport stone 100 km	to	768.00	0.000	0.000	0.00
20	dewatering sytems	hours	1,500.00	0.000	0.000	0.00
21	Crane functioning hours	hours	1,500.00	0.000	0.000	0.00
22	Peree mounting	m2	960.00	0.000	0.000	0.00
23	Peree procurement	m2	1,200.00	0.000	0.000	0.00
24	Drain layer	m2	960.00	0.000	0.000	0.00
25	Finishing	100 m2	9.60	0.000	0.000	0.00
TOTAL 4.1.1. exclusive VAT					0.000	0.000
VAT					0.000	0.000
TOTAL 4.1.1. inclusive VAT					0.000	0.000

Head of project,

Eng. D. Zaiu

LIST OF WORK QUANTITIES_ HYDROMECHANIC EQUIPMENT REHABILITATION -LOCK

1 € = 4,5337 lei / 31.01.2016		Value exclusive VAT		VAT	Value Inclusive VAT	
		lei	euro	lei	lei	euro
4.1 CONSTRUCTIONS AND INSTALLATIONS		0	0	0	0	0
1	Disassembling existing equipments embedded parts	0	0	0	0	0
2	Disassembling existing equipments	0	0	0	0	0
3	Different metallic confections	0	0	0	0	0
4	Corrosive protection	0	0	0	0	0
5	Samples	0	0	0	0	0
4.2 TILLAGE MOUNTING		0	0	0	0	0
1	Lock gates embedded parts	0	0	0	0	0
2	Upstream lock gate	0	0	0	0	0
3	Downstream lock gate	0	0	0	0	0
4	Gates handling mechanisms	0	0	0	0	0
5	Plane valves embedded parts	0	0	0	0	0

6	Plane valves 0,85x1,225	0	0	0	0	0
7	Cofferdam 0,85x1,225	0	0	0	0	0
4.3 TILLAGES WITH MOUNTING		0	0	0	0	0
1	Lock gates embedded parts	0	0	0	0	0
2	Upstream lock gate	0	0	0	0	0
3	Downstream lock gate	0	0	0	0	0
4	Mechanic parts and gate handling mechanisms	0	0	0	0	0
5	Plane valves embedded parts	0	0	0	0	0
6	Plane valves 0,85x1,225	0	0	0	0	0
7	Cofferdam 0,85x1,225	0	0	0	0	0

Drafted,
Eng. A. Dima

EVALUATION**Ob.4.1.13: LANDSCAPING WORKS
ISLAND LEISURE PLACE ARRANGEMENTS**

Nr.	DESIGNED WORKS	U.M.	QUANTITY	Unit price lei	Total price lei
0	1	2	3	4	5
CONSTRUCTION WORKS					
1	Land clearing	100 m2	72	0.00	0.00
2	Loading and unloading wooden material	to	3.6	0.00	0.00
3	Transport wooden material at 1 km	to	3.6	0.00	0.00
4	Excavation vegetal layer	100 m3	360	0.00	0.00
5	Drain layer	m2	7200	0.00	0.00
6	Geotextile	m2	7200	0.00	0.00
7	Stone perree - procurement	m2	7200	0.00	0.00
8	Stone perree - mounting	m2	7200	0.00	0.00
9	Stone transport 100 km	to	4320	0.00	0.00
10	Concrete beam	m3	900	0.00	0.00
11	Armature	to	36	0.00	0.00
12	Earth moving for walkways and green areas (diggings, fillings, platform preparations, transport)	m3	2,420.00	0.00	0.00
13	Walk ways suprastructure and foundation execution (15 cm ballast, 10 cm concrete C25/30, includind 15x25 cm precast concrete curbs on concrete foundation 25x15 cm)	m2	1,450.00	0.00	0.00
14	Landscape restoring, (20 cm vegetal ground, sod sowing, 400 trees, 300 shrubs and watering)	m2	6,850.00	0.00	0.00
15	Leisure place electric lightning	piece	50.00	0.00	0.00
16	Protection fencing	m	1,100.00	0.00	0.00
TOTAL					0.00
ENDOWMENTS					
1	Metal frame wooden benches	pieces	85.00	0.00	0.00
2	Wooden waste basket	pieces	40.00	0.00	0.00
TOTAL					0.00
TOTAL ISLAND LEISURE PLACE ARRANGEMENT					0.00

ESTIMATE
OB. 1.2. LAND ARRANGEMENTS

in thousand lei/thousand euro at an exchange rate of 4.5337 lei/euro on 31.01.2016

Nr.	COSTS ON WORK CATEGORIES	Value without VAT		VAT	Value (incl. VAT)	
		th.lei	th. euro	th. Lei	th.lei	th.euro
0	1	2	3	4	5	6
I. CONSTRUCTION WORKS						
1	Earth moving	0.000	0.000	0.000	0.000	0.000
2	Constructions					
3	Insulation					
4	Electric installations					
5	Sanitary installations					
6	heating, ventilation, climate, PSI, radio-tv, internet installations					
7	Gas supplying installations					
8	Communication installations					
Total I		0.000	0.000	0.000	0.000	0.000
II MOUNTING						
9	Tillages and technological equipment mounting					
Total II						
III PROCURMENT						
10	Tillages and technological equipment					
11	Tillages and transport equipment					
12	Endowment					
Total III						
TOTAL (TOTAL I + TOTAL II + TOTAL III)		0.000	0.000	0.000	0.000	0.000

HEAD OF PROJECT,
Ing. D. Zaiu

ESTIMATE
OB. 1.3. ENVIRONMENT ARRANGEMENTS

in thousand lei/thousand euro at an exchange rate of 4.5337 lei/euro on 31.01.2016

Nr.	Costs on work categories	Value without VAT		VAT	Value (inclusive VAT)	
		th.lei	th. euro	th. Lei	th.lei	th.euro
0	1	2	3	4	5	6
I. LUCRARI DE CONSTRUCTII						
1	Earth moving	0.000	0.000	0.000	0.000	0.000
2	Constructions					
3	Insulations					
4	Electric installations					
5	Sanitary installations					
6	Heating, airing, climate, PSI, radio-tv, internet installations					
7	Gas supplying installations					
8	Communication installations					
Total I		0.000	0.000	0.000	0.000	0.000
II MOUNTING						
9	Tillages and technological equipment mounting					
Total II						
III PROCUREMENT						
10	Tillages and technological equipment mou					
11	Transport equipments and tillages					
12	Endowment					
Total III						
TOTAL (TOTAL I + TOTAL II + TOTAL III)		0.000	0.000	0.000	0.000	0.000

Head of project,
Ing. D. Zaiu

ESTIMATE

OB.2.1. Costs for objective necessary utilities

in thousand lei/thousand euro at an exchange rate of 4.5337 lei/euro on 31.01.2016

Nr.	Costs on work categories	Value without VAT		VAT	Value (inclusive VAT)	
		th.lei	th. euro	th. lei	th. lei	th. euro
0	1	2	3	4	5	6
I. CONSTRUCTION WORKS						
1	Earth moving	0.000	0.000	0.000	0.000	0.000
2	Constructions					
3	Insulations					
4	Electric installations					
5	Sanitary installations					
6	Heating, airing, climate, PSI, radio-tv, internet installations					
7	Gas supplying installations					
8	Communication installations					
Total I		0.000	0.000	0.000	0.000	0.000
II MOUNTING						
9	Tillages and technological equipment mounting					
Total II						
III PROCUREMENT						
10	Tillages and technological equipment					
11	Transport tillages and technological					
12	Endowments					
Total III						
TOTAL (TOTAL I + TOTAL II + TOTAL III)		0.000	0.000	0.000	0.000	0.000

Head of project,
Ing. D. Zaiu

Chapter 4
Ob. 4.1.4. Demolishing designed works

in thousand lei/thousand euro at an exchange rate of 4.5337 lei/euro on 31.01.2016

		Value (without VAT)		VAT	Value (inclusive VAT)	
Nr.	chapter and					
	subchaptercost name	thousand lei	thousand euro	thousand lei	thousand lei	thousand euro
1	2	3	4	5	6	7
I. CONSTRUCTION WORKS						
1	Earth moving	-	-	-	-	-
2	Constructions: resistance (foundations, resistance structure) and architecture (exterior closings, partitions, finishes, electric power post) 1x63kVA)	0.000	0.000	0.000	0.000	0.000
3	Insulation	-	-	-	-	-
4	Electric installations	-	-	-	-	-
5	Sanitary installations	-	-	-	-	-
6	Heating, airing, climate, PSI, radio-tv, internet installations	-	-	-	-	-
7	Gas supplying installations	-	-	-	-	-
8	Telecommunication installations	-	-	-	-	-
TOTAL I		0.000	0.000	0.000	0.000	0.000
II. MOUNTING						
	Electric tillages and installations mounting	-	-	-	-	-
TOTAL II		-	-	-	-	-
III. PROCUREMENT						
	Tillages and technological equipments for el. inst	-	-	-	-	-
	Transport tillages and equipments	-	-	-	-	-
	Endowments	-	-	-	-	-
TOTAL III		-	-	-	-	-
TOTAL (TOTAL I + TOTAL II + TOTAL III)		0.000	0.000	0.000	0.000	0.000

Drafted,
Eng. D. Zaiu

Chapter 4
Ob. 4.1.5. Access roads and platforms

in thousand lei/thousand euro at an exchange rate of 4.5337 lei/euro on 31.01.2016

Nr.	chapter and subchapter cost name	Value (without VAT)		VAT	Value (inclusive VAT)	
		thousand lei	thousand euro	thousand lei	thousand lei	thousand euro
1	2	3	4	5	6	7
I. CONSTRUCTION WORKS						
1	Earth moving	-	-	-	-	-
2	Constructions: resistance (foyndations, resistance structure) and architecture (exterior closings, partitions, finishes, ellectric power post 1x63kVA)	0.000	0.000	0.000	0.000	0.000
3	Insulation	-	-	-	-	-
4	Electric installations	-	-	-	-	-
5	Instalații sanitare	-	-	-	-	-
6	heating, airing, climate, PSI, radio-tv, internet installations	-	-	-	-	-
7	gas supplying istallations	-	-	-	-	-
8	telecommunications installations	-	-	-	-	-
TOTAL I		0.000	0.000	0.000	0.000	0.000
II. MOUNTING						
	electric installations, tillages mounting	-	-	-	-	-
TOTAL II		-	-	-	-	-
III. PROCURARE						
	electric inst. Tillages and technological equipmer	-	-	-	-	-
	transport tillages and equipments	-	-	-	-	-
	Endowments	-	-	-	-	-
TOTAL III		-	-	-	-	-
TOTAL (TOTAL I + TOTAL II + TOTAL III)		0.000	0.000	0.000	0.000	0.000

Drafted,
Ing. P. Ghindaru

Chapter 4
Ob. 4.1.6. Preliminary works

in thousand lei/thousand euro at an exchange rate of 4.5337 lei/euro on 31.01.2016

Nr.	Chapter and subchapter costs name	Value (without VAT)		VAT	Value(inclusive VAT)	
		thousand lei	thousand euro	thousand lei	thousand lei	thousand euro
1	2	3	4	5	6	7
I. CONSTRUCTION WORKS						
1	Earth moving	0.000	0.000	0.000	0.000	0.000
2	Constructions:Resistance (foundations, resistance structure) and architecture (exterior closing), partitions, finishes electric power post 1x63kVA)	0.000	0.000	0.000	0.000	0.000
3	Insulations	-	-	-	-	-
4	Electric installations	-	-	-	-	-
5	Sanitary installations	-	-	-	-	-
6	Heating, ventilation, climate, PSI, radio-tv, internet installations	-	-	-	-	-
7	Gas supplying installations	-	-	-	-	-
8	telecommunication installations	-	-	-	-	-
TOTAL I		0.000	0.000	0.000	0.000	0.000
II. MOUNTING						
	Electric installations, tillages mounting	-	-	-	-	-
TOTAL II		-	-	-	-	-
III. PROCUREMENT						
	el. Inst tillages and technological equipments	-	-	-	-	-
	transport tillages and equipments	-	-	-	-	-
	Endowment	-	-	-	-	-
TOTAL III		-	-	-	-	-
TOTAL (TOTAL I + TOTAL II + TOTAL III)		0.000	0.000	0.000	0.000	0.000

Head of project,

Ing. D. Zaiu