**VOLUME 3**

**TECHNICAL SPECIFICATIONS**

**For the** **Construction works in front of the sport-business centre in Bojnik**

INVESTOR: The Municipality of Bojnik

OBJECT: Hard landscaping within existing project of construction of sport-business centre in Bojnik on property register no: 1770/3 and 4581/2 land registry Bojnik

CONSTRUCTION SITE: Bojnik

In accordance with investors’ requirements, and current planning documentation, Approval planning for hard landscaping of the plateau in front of the sport centre and walk along the Pusta reka River in Bojnik on property register no: 1770/3 and 4581/2 land registry Bojnik.

**PARKING LOT AND WALKWAY/ PROMENADE:**

**PARKING LOT**: On the space between the existing sport hall and newly-designed trade-business centre, parking lot for 52 vehicles and two parking spaces for buses has been designed.

Plateau for parking is done in the following way:

* Rolling the surface by combination compactor and crimping cover roller
* Supplying, transport, filling, spreading, planning and rolling of gravel ballast in layer thickness of 10-80 cm in rolled state. Rolling is performed by vibrating rollers with gradual drenching in layers up to required compaction of MS 550 Mpa.
* Construction of bituminous layer BNS sA 22 d=7cm . The layer should be done according to current standards. The manufacturing of the mixture is done mechanically. All characteristics of building in and the quality of built mixture must respond to standard for BNS sA.
* Construction of road ballast from asphalt concrete AB 11s, thickness=4cm at the entrance plateau. Type of built, quality and amount of binder, and all other necessary processes should be done according to standards.

**WALKWAY**: the entrance plateau in front of sport hall and promenade along the Pusta reka River is tiled in the following layers:

* Granite slabs, thickness=6cm, dimensions: 40x60cm and 60x60cm
* Cement screed, thickness=5cm
* Reinforced concrete slab thickness=12 cm
* Gravel

STAGE ASSEMBLY: In the south-eastern part of the site (towards the future sport-business building), the space for prefabricated stage is calculated. Also, according to investors’ requirements, children’s playing can be organised there.

Drainage of parking lot, walkway and the whole plateau is done via gutter outlet, which are linked to stormwater sewage.

At this site, there is an open stormwater course, which drains water into the Pusta reka River and it is placed on the site of the future sport-business centre. The project includes moving of the course, and construction of two waterpipes, ø1000 mm and around 55m in length.

The project includes drainage of atmospheric precipitations from the plateau and walkway surface into stormwater sewage. Also, the construction of one hydrant is calculated (there are two overhead hydrants), for the purpose of extinguishing possible fire on the plateau and future business centre.

**SURFACE PREVIEW**

1. Hard landscaping
2. Parking lot for cars 1407.00 m2
3. Parking lot for buses 95.85 m2
4. Pedestrian kerb 135.88 m2
5. Space for movable street furniture 130.28 m2
6. Entrance plateau and walkway 590.63m2
7. Greenery 278.16 m2

**Total: 2359.64 m2**

**SUMMARY:**

1. **net object surface area –** landscaping **1638.73 m2**

**Total net object surface area: 1638.73 m2**

1. **gross object surface area:**

* landscaping **1638.73 m2**

**Total gross object surface area: 1638.73 m2**

**GENERAL TERMS FOR PERFORMING OF CONSTRUCTION AND CONSTRUCTION-FINISHING WORKS**

All items for estimated bill of quantities consider each work position to be unconditionally performed in a professional, precise way and with exceptional quality and according to approved drawings, technical description and description in this bill of quantities, technical terms and details from analysis for engineering physics, statistic calculation, details as well as later details of contractor, valid technical regulations, JUS and instruction of supervising authority and contractor, unless it is differently regulated in certain situation.

All regulations of these general terms as well as other general description are part of the contract signed by the investor and contractor.

All works and materials listed in the description of certain positions in this bill of quantities have to be included in offered contractors' price.

Negotiated prices are selling prices of contractors and they cover : all expenses for work, material with usual waste (unless the investor gets material for certain positions), inner and outer transport, scaffolding and formwork for works performing (unless they are calculated in this bill of quantities for certain work positions), water, light, fuels and lubricants and energy for machines, digging and filling of lime pit, warehouse for material storage, temporal construction premises, contractor management, social fees, all state and municipal taxes, contractor's profit and all other expenses regulated by valid regulations for forming of selling price of construction product and all expenses which resulted form certain work conditions defined as norms in construction engineering as well as terms mentioned in two items above.

The contractor does not have any rights to demand any additional payment for offered and negotiated price, unless it is specifically said that in certain position, some listed work is paid separately and it is not calculated in other position. Also, no fees or additional payment on negotiated price as increasing of standardized values from average standards in construction engineering will be accepted.

Billing and classification of performed works will be done according to average standards in construction engineering, which is compulsory both for the investor and contractor, unless it is differently signed in descriptions of certain positions in the bill of quantities.

Also, all descriptions from mentioned standards are compulsory for the contractor unless it is predicted differently in descriptions of certain positions or in general description.

General description given for one type of work and material binds contractor to perform all these works in certain positions according to this description no matter whether certain position appeals to general description, unless work descripiton is differently listed in that position.

All construction and construction-finishing works demand using appropriate work force and good materials which have to correspond to technical regulations, JUS and descriptions in positions in the bill of quantities.

For each material which is built in, the contractor has to submit test certificates to the supervising authority. In controversal situations related to quality, the samples will be delivered to the Institute for testing of materials, whose results are valid/applicable both for the investor and contractor. If the contractor uses and builds in bad material even though the Institute for testing of material has given negative results, the investor will order demolishing and all material damage from demolition will be at the contractor's expense. The contractor does not have any rights for reclamation and complaint to the resolution which is provided by the investor or construction inspection.

All materials for which the investor representative claims that it does not correspond to negotiated bill of quantities and prescribed quality, the contractor is obliged to remove it immediately from the construction site, and the investor will suspend work if the contractor tries to use it.

All construction and construction-finishing works demand using appropriate professional, qualified work force as it is calculated for certain work positions in average standards in construction engineering. The contractor is obliged to remove careless and unqualified worker from the construction site.

Prior to each work, the construction site manager is obliged to ask the investor representative on time for necessary explaination of plans and announcement for all works which are not sufficiently defined by the project analysis.

If the contractor performed certain works without previous consulting the investor, or he performed them contrary to given instructions according to a construction log book, i.e.contrary to calculated description, plans and given details, no justifications will be taken into consideration.

In this case, the contractor is obliged to order and remove everything at his own expense regardless the amount of performed work, and then, again at his own expense, to perform as it is calculated in plans, descriptions and details, unless these changes are approved by the investor.

If the contractor performs work in a a better and more expensive way than it is calculated, he does not have right to ask for an additional payment, if it is done on his own, without previously obtained permission or order from the investor representative via construction log book.

The contractor must maintain the object and whole construction site to be neat and competely clean, and after the finished works, before handing over the object, all holes, WC tank and holes from scaffolding, the contractor is obliged to fill in, ram and consolidate and to do this well so that later slumps do not appear.

For technical inspection and handover, the contractor must clean the whole object and construction site from rubble, excesive material, all means for work and additional objects.

All access ways to the object, plateau, stairs and paths, and floors in premises must be completely clean as well as carpentry, locksmiths, glass surface and roof surface.

Driveway and pavements which are damaged during works performing, also must be brought into valid state for technical inspection and handing over the object. All listed finishing works are not paid separately, because they have to be included into negotiated price.

Any possible damage, which can be made by the contractor during works perfroming within construction site or on neigbouring buildings, he is obliged to remove and bring them to their original condition at his own expense.

Special attention is drawn to the fact that contractor is the only person responsible for all the damage made by his careless and irresponsible work to neighbouring objects.

In case of constructive changes, as well as increasing, decreasing and cancellation/reversing of certain works from bill of quantities, new variations to the scope of construction works , the contractor is obliged to accept without complaint and limitations, and without right for compensation. Variations will be calculated according to negotiated prices.

In case there is a need for works which do not have negotiated price in the bill of quantites , the contractor i s obliged to get permission for them from the investor representative, establish the price and put this into a construction log book. The price for these works is determined based on the price list of all materials and work force, and the contractor is obliged to enclose it with the offer.

The investor has rights to demand written guaranty for special works (roof isolation, new materials etc.) that they will be permanent and of excellent quality.

The contractor is obliged to coordinate the work of subcontractors who individually perfrom certain types of works, so that they do not make any damage to each other, and if this happens, he is obliged to regulate the elimination and damage compensation at the guilty side expense. Otherwise, expenses for damage ellimination will be paid by the contractor himself.

This is related to all interference and damages which can appear due to non-compliance of agreed order and deadlines for certain works performing. Supervising authority has a right to demand from the contractor to submit samples for inspection; then, the supervising authority will make a selection. Supply of these samples is not paid separately.

Besides all temporally made objects which are necessary for the contractor to perform works, the contractor is obliged to provide premises for the supervising authority office. This office is maintained regularly during the construction of building with the necessary lightning, heating, cleaning and necessary office stationery.

If the contractor needs to occupy neighbouring land and pavements besides the lot in order to organize the construction site or to storage the material, the contractor will get the permission from supervising authority i.e. the owner. All necessary expenses for this use will be contractor's and cannot be calculated for the investor.

The contractor is obliged to make analysis about occupational safety at the construction site according to the 'Rulebook of occupation safety in construction engineering', The Official Gazette no.42/68.

The contractor is obliged to provide the investor with all confirmations at technical inspection which are foreseen by the law and regulations (setting the object at regulation line, connecting to energetic sources, water and sewerage network etc.) All expenses related to obtaining these documents are contractor's. The contractor is obliged to submit the confirmation for payment of spent water, electricity and other fees that he is charged with during performing of works.

Measurement book and construction log book will be written by the contractor based on valid lawful regulations; daily writing of all necessary data will be checked and signed on each page by the investor representative. In case of agreement 'under key', the contractor is obliged to perform previous check of the amounts given in the bill of quantities.

Special terms of the investors, existing technical and lawful regulations and complete analysis of technical documentation as well are also the constituent part of the agreement besides these general terms.

All works have to be performed with all necessary constructive parts completely impeccable according to the contractor's details.

Until the object is handed over to the investor, the contractor is responsible for everything on it and in case of any damage or malfunction, he is obliged to fix everything and bring it to a proper state.

During construction, the contractor is obliged to put in charge a highly qualified and professional expert who will be responsible for professional checking and accurate performing of all contractor's obligations.

For all works in the bill of quantities where formwork and scaffolding are necessary, the contractor is obliged to get them and solidly make them which is not paid separately but it is calculated into offered price of certain works.

All necessary holes and gutters in walls and attics for implementing the installations and other devices, the contractor is obliged to perform according to details and dispositional plans, and after the pipes are set, gutters and holes should be walled up and plastered. This is not paid separately but it is included in the price of related constructions, building and plastering.

All obligations in these general terms should be accepted by the contractor as a part of the agreement signed with the investor and he is obliged to accept them without any restrictions and to perform them without objections and complaints.

**HYDRAULIC ENGINEERING INSTALLATIONS** **– General part**

Works on water supply system and sewage should be done according to revised project and negotiated estimated bill of quantities.The constituent part of negotiated bill of quantities is a complete project with estimated bill of quantities and all necessary details and drawings. Works should be done according to instructions of supervising authority, without whom neither changes nor significant phases could be performed (for exampe: filling the ditches, pipes and installation testing etc.). This bill of quantities and terms for starting and performing these works are constituent parts of the Contracting Agreement. Price units of these work positions in the bill of quantities are selling prices of the contractor and they include:

a) all necessary preparation and finishing works which include completely finished work with excellent quality.

b) all expenses for performing the works: workforce, material with waste of tools, formwork and scaffolding, fittings, expenses of assembling, transport, managing, social fees, and other expenses according to current regulations for price structuring.

c) assembling expenses include the following:all necessary material and workforce, spreading of pipes along ditches in the object, transport of tools, all fittings, cutting, processing of pipes and fittings, making of windings (screw thread) and other necessary parts which are included in completely finished work and perforation of the walls and floor constructions,chase cutting of grooves, temporal closing of pipe holes and sanitary parts and insulation of the pipes and parts in the ditch along with mending and plastering of damaged parts and surfaces during chase cutting.

d) in assembling expenses of sanitary parts (devices), all necessary parts for completely assembled sanitary object, supply and drain pipes are included (EK vent pipe), additional material and dyeing.

e) the contractor is obliged to test the pipes and installations at his own expense, according to current technical regulations; water system should be tested on the pressure of 15 bars for 60 min.

f) excavation expenses include: excavation of the ditch with regular vertical cutting of sides and bottom of the ditch, all additional works, securing the ditches from collapsing and atmospheric precipitations, pumping of atmospheric or underground water by bucket, planning of excavation and consolidation of soil in layers ranging 20-30cm, transport of left ground out of the construction site to a place chosen by supervising authority, spreading and planning, marking the ditches etc.

g) concrete works include: all expenses for workforce, material and tools for making and embedding of concrete and other necessary works calculated by technical regulations. Price unit of concrete includes: formwork and scaffolding and they are not charged separately. If works are done with materials which does not correspond to technical regulations of the project or instructions of supervising authority, the contractor is obliged to perform these works at his own expense without compensation. All these works are calculated in basic positions and they will not be charged separately. Exceptions from the project which can cause price increasing of object construction will not be accepted and paid off if prior to this, the supervising authority or the investor did not approve any of this.

h) before handing over water system installation and after testing on pressure, the contractor is obliged to rinse all installations with chlorine according to technical regulations and to do chemical and bacterial water analysis by taking three samples from the spot for 24h, and then, to deliver the results to a commission for technical inspection.

IMPORTANT:

All works must be implemented in accordance with investment design and corresponding standarts.

In case that in investment design - explanatory notes, bills of quantities, drawings, specifications, and everywhere in the documentation for tendering are set specific brand/mark, model, type, standard materials and products to be considered that whereas and equivalent.

The Contracting Authority does not require specific make, model, type, standard materials and products that will be in the works as long as you comply with the specifications of the designers and the essential requirements for building works.

Annex 1 – Bill of quantities

**Annex 1**

**BILL OF QUANTITIES**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **DESCRIPTION** | **UNIT** | | | **QUANTITY** | | | | |
| 1. CONSTRUCTION WORKS: | | | | | | | | |
| 1.1 EARTHWORKS  All earthworks should be performed by appropriate professional work force with complete use of modern mechanisation designed for this type of work.  Earthworks should be done from ground level, unless it is regulated otherwise by certain laws. Earthwoks are performed only under object and additionally 1.00m from the object. All other earthworks are subject of a separate project.  All performed works should be done regularly, have given geometrical shapes, i.e. correspond to the terms of technical documentation, regarding the type of land. Work positions are sorted out according to the land category.  In filling of land, gravel etc.materials should be refined from impurities. If digging of subsoil appears, the soil has to be stabilized and filled with gravel or concrete MB 10.  If the works are performed in unfavourable weather conditions, the contractor has to take full measures of protection for all earthworks. These measurements shoud last as long as it is necessary. Measurements conducted in this way does not influence the negotiated price of works.  Calculation is done per unit of measurement, specified in each work position. Unit of price for works should include performing of complete work position (material supply, outer and inner transport, embedding, measurement for occupational safety and workers, all horizontal and vertical transfer, necessary work scaffolding, formwork for shoring, and shoring and maintenance of landfil for all unloading of land and other operations that are necessary for quality work performing.  This description is a constituent part of each, individually described work position and it does not exclude the usage of standardized regulations and valid technicalities in construction engineering in this field of work.  \* The amount of earthworks is approximate, and precise amount will be established based on recorded profiles and construction log book.  \* The contractor is obliged to comply with recommendations and instructions in geodetic survey.  \* Possible previous demolishing of existing objects and securing of lot borders are included in specific surveys. | | | | | | | | |
| 1. Marking of road allignement and object, all geodetic measurements, data transfer from the project to the field and vice versa, securing, renewing and maintaining of marked signs on field during the whole time of construction i.e until the works are handed over to the investor. | m2 | | | 2697,00 | | | | |
| 2. Prior to construction, clearing the terrain by removing the shrubs and weeds, digging of surface layer of humus up to 30 cm in thickness. Calculation per m3 with humus transport to the landfill up to 10 km far with loading and unloading from the vehicle and rough planning of ground on the landfill.  2697.00\*0.30 | m3 | | | 809,10 | | | | |
| 3. III category ground excavating in wide stoping 90% mechanically and 10% manually with leveling of the bottom of foundation pit and its transport to town landfill up to 5km. Calculation per m3 of excavating in grassroots state.  2697.00\*0.10 | m3 | | | 269,70 | | | | |
| 4. Transport of excess material from excavation left after filling and rammering, and material unsuitable for filling as well. Load the material and transport it to the permanent landfill chosen by supervising authority of the municipal asssembly up to 10 km with rough planning at the landfill. Calculation per m3 of the transported material in grassroots state.  2697.00\*0.10 | m3 | | | 269,70 | | | | |
| 5. Fine field planning of the plateau mechanically after excavation with ±3cm accuracy, and according to projected vertical and horizontal inclination. Calculation per m2. | m2 | | | 2697,00 | | | | |
| 6. Rolling of subsoil mechanically by combination compactor and crimping cover roller up to a projected compression. Calculation per m2. | m2 | | | 2697,00 | | | | |
| 7. Supply, transport, filling, spreading, planning and rolling of gravel ballast layer thickness ranging from 10-80cm in rolled state. Rolling is performed by vibratory rollers with gradual drenching, in layers, up to necessary compression of MS 550 Mpa. Calculation per m3.  under granite slabs: (590.63+58.64)\*0.15  under asphalt: (135.88+1407.00+95.85)\*0.27 | m3 | | | 97,35  442,46  TOTAL: 539,85 | | | | |
| 8. Supply, filling and spreading of humus in layers of 10,0cm in thickness with simultaneous semination of park grass (athletic field mixture etc.) with rolling. The composition of the grass where English ryegrass (Lolium perenne), common meadow grass (Poa pratensis), red fescue (festuca rubra) dominate. Mixture must have germination over 80% and to be less than 12 months old since production date. Consumption around 30g/m2. Calculation per m2.  130.28+32.69+112.34+133.74 | m2 | | | 409,05 | | | | |
| 1.2. CONCRETE WORKS | | | | | | | | |
| 1. Concrete laying of floor slab by cast concrete Mb30, thickness=12cm, reinforced by steel fibres type Dramix RC 80/60 BN in ammount of 14kg/m3. Calculation per m2. | m2 | | | 590,63 | | | | |
| 2. Supply and embedding of concrete curb, 18x24cm, 80cm long, set in concrete layer of average thickenss of 10cm. Calcuation per m1.  95.54+7.85+7.90+3.05+15.40+1.20+2.90 | m1 | | | 133,84 | | | | |
| 3. Supply and embedding of concrete flume, 40x50cm,12cm thick, set in concrete layer of average thickness of 10cm. Calcuation per m1 | m1 | | | 30,00 | | | | |
| 1.3 STONECRAFT WORKS  Note: In the bill of quantittes, surface area of the curb is measured according to the new shopping centre altogether with the needed curb.  Note: Prior to construction, the contractor of stonecraft works must submit all certificate tests by authorizing institutions about physical and mechanical properties with the analysis of quality grade of stone for paving of outer horizontal surfaces with the intensive pedestrian traffic and great load. | | | | | | | | |
| 1. Paving of the roads and plateau by granite slabs, 60x60, 6cm thick (slabs type Mariovo KRIN i Roze KRIN- red tone). Laying should be done in the layer of cement screed 5cm thick, across concrete slabs which is not included in the price. Joints between granite slabs should be max 5mm, and stone aggregate with granulation 0-2mm with carbonate composition is used as a material for joints. Calculation per m2.  a) slabs, 60x60x6cm, type Mariovo KRIN  590.63-74.16  b) slabs, 60x60x6cm, type Roze KRIN  206\*0.60\*0.60 | m2 | | | 516,49  74,16 | | | | |
| 2. Supply and embedding of curbs, 24x12cm, made of granite type Mariovo KRIN, length=50cm, set in concrete layer of average tickness =10cm. Calculation per m1.  81.40+16.40+4.90+2.55+8.95+8.51+10.70+8.40+4.62+8.45 | m1 | | | 154,88 | | | | |
| 3. Supply and embedding of concrete flume, 40x50cm, 12cm thick, made of granite type Mariovo KRIN, set in concrete layer of average thickness =10cm. Calculation per m1.  31.00+37.6 | m1 | | | 68,60 | | | | |
| 1.4 WORKS ON ASPHALTING | | | | | | | | |
| 1. Construction of bitumen layer BNS sA 22, 7cm long. at the entrance plateau. It is necessary to do everything according to current standards. Production of mixture is done mechanically. All characteristics of embedding and quality of embedded mixture must be according to the standard for BNS sA. It is paid per m2 of embedded layer. Calculation per m2  1407.00+135.88+95.85 | m2 | | | 1638,73 | | | | |
| 2. Construction of road surface from asphalt-concrete AB 11s, 4cm thick, at the entrance plateau. The way of embedding, quality and amount of binder, and all necessary methods as well should be done according to JUS U.E4.014 standards. It is charged per m2 of embedded layer. Calculation per m2  1407.00+135.88+95.85 | m2 | | | 1638,73 | | | | |
| 1.5 URBAN STREET FURNITURE | | | | | | | | |
| 1. Supply and embedding of urban street furniture according to the type "KORALI" Kraljevo. Calculation per piece.    a) benches 160x45x50cm (type PKDB027)  b) waste bins (type KOAB018)  c) mast | pcs | | | 6  8  3 | | | | |
| 1.6 OTHER WORKS | | | | | | | | |
| 1. For different odd jobs which are unpredicted 3% from total estimated bill of quantities values. | sum | | | 1 | | | | |
| 2. HYDRAULIC ENGINEERING INSTALLATIONS | | | | | | | | |
| 2.1. HYDRANT NETWORK  Assembling of PVC water pipes and fittings includes: a) distribution - preparation of the necessary material according to the details, construction of elements for assembling of water supply installations, tranfer to a place of embedding. Distribution network for sanitary parts must be fixed so that rosette for flush valves and battery are completely even to the final wall surface. Horizontal network below the ceiling will be fixed with hanging yokes at maximum distance of 2m. In order to prevent noise transmission and vibrations below each joint and yoke, elastic pads made of rubber should be put. Pipes laid into the ground should be secured by 10 cm layer of sand, below (consolidated) and above (spread). All holes on the network should be closed by plugs until the reinforcement is embedded. Pipes should be thermally insulated by ''plamaflex'' according to pipes' diameter. It being charged per m1 of completely finished position, with embedding and insulation of the pipes depending on profiles (fi) for pipes. | | | | | | | | |
| 1. Supply and assembling of PE water pipes f100mm with all necessary fittings and additional material. Calculation and paying off per m1 of assembled pipe. | m1 | | | 38,00 | | | | |
| 2. Supply and assembling of outer overhead hydrant f80mm. Calculation and paying off per embedded and tested piece. | pcs | | | 1 | | | | |
| 3. Construction of connector on existing outer hydrant. The price includes all necessary additional tools and material. Calculation and paying off per piece of the derived connector. | pcs | | | 1 | | | | |
| 4. Manual excavation of III category land for ditches of water supply system, width 0.80m and depth according to length profiles. Sides should be regularly cut, and the bottom of the ditch should be aligned in certain fall. Excavated ground should be discarded at least 1,00m from the ditch edge and only on one side. In the position price the following are included: -pumping of atmospheric precipitations and decreasing the level of underground water  -excavation of the expanding and depth of 0,20m for manholes/inspection chambers. Excavation of 0-2m in depth. It is being calculated and charged per m3. | m3 | | | 36,00 | | | | |
| 5. Fine planning of the bottom of the ditch for setting of water pipes with appropriate inclination of the ditch bottom. It is calculated and charged per m2 of the planned ditch. | m2 | | | 36,00 | | | | |
| 6. Supply, transport and throwing the sand into the ditch on consolidated and planned base. The height of the sand is10cm below and 10cm above the pipes. Busting of the sand around pipes should be done carefully in order not to damage the pipes. It is calculated and charged per m3. | m3 | | | 9,00 | | | | |
| 7. After finished assembling and testing on waterproofing of the joints, the ditch should be filled with gravel in layers with consolidation in the following order: -first layer 0,30m high should be consolidated carefully and manually  -other layers are 0,10 and 0,20m high and their consolidation can be done mechanically. It is calculated and charged per m3. | m3 | | | 27,00 | | | | |
| 8. Left ground should be transported to a landfill up to 5km far. The price should include loading, transport, unloading with rough planning on the landfill. It is calculated and charged per m3. | m3 | | | 9,00 | | | | |
| 2.2. STORMWATER SEWAGE | | | | | | | | |
| 1. Construction of the connector to concrete collector. Calculation and paying off per piece of constructed connector. | Pcs | | | 5 | | | | |
| 2. Supply and assembling of water pipes DN200mm from PVC joined by rubber seal and all necessary fittings and additional material. Calculation and paying per m1 of the assembled pipe. | m1 | | | 95,00 | | | | |
| 3. Supply and assembling of water pipes DN110mm from PVC joined by rubber seal and all necessary fittings and additional material. Calculation and paying per m1 of the assembled pipe. | m1 | | | 5,00 | | | | |
| 4. Supply and assembling of gully f100mm with a mask in the level of plateau. Calculation and paying per piece of the assembled gully. | Pcs | | | 11 | | | | |
| 5. Mechanically excavation of III category land for ditches of sewage system 0,80m wide and necessary depth. Sides should be regularly cut, and the bottom of the ditch alighed in certain fall. Excavated ground should be discarded at least 1,00m from ditch edge and only on one side. It is calculated and charged per m3. | m3 | | | 72,00 | | | | |
| 6. Fine planning of the ditch bottom for laying sewage pipes with appropriate inclination of the ditch bottom. It is calculated and charged per m2 of planned ditch. | m2 | | | 96,00 | | | | |
| 7. Supply, transport and throwing the sand into the ditch on consolidated and planned base. The height of the sand is10cm below and 10cm above the pipes. Busting of the sand around pipes should be done carefully in order not to damage the pipes. It is calculated and charged per m3. | m3 | | | 22,00 | | | | |
| 8. Supply and assemling of pre-cast concrete half-battered kerb, dimension 50h40h12 cm with all necessary elements and additional material. Calculation and paying per m1 . | m1 | | | 55,00 | | | | |
| 9. Supply and assembling of mica flap. Calculation and paying per piece. | Pcs | | | 1 | | | | |
| 10. Left ground should be transported to a landfil up to 5km far. The price includes loading, transport, unloading with rough planning on the landfill. It is calculated and charged per m3. | m3 | | | 22,00 | | | | |
| 2.3. STORMWATER DRAIN/CHANNEL | | | | | | | | |
| 1. Construction of drain and inflow of concrete collector.At drain, the joint of channel duct and existing regulated river channel should be adequately processed.Calculation and paying per piece of constructed connector. | Pcs | | | 1 | | | | |
| 2. Supply and assembling of concrete pipes DN1000mm and all necessary additional material. Calculation and paying per m1 of assembled pipe. | m1 | | | 108,00 | | | | |
| 3. Concreting of the base by concrete MB 20. Calculation and paying per m3. | m3 | | | 45,00 | | | | |
| 4. Mechanically excavation of the III category ground for ditches of stormwater drain of average width 5,25m and depth 2,45 m. Sides should be regularly cut and the bottom of the ditch should be aligned in certain fall. Excavated ground should be discarded at least 1,00m from the ditch edge and only on one side. It is calculated and charged per m3. | m3 | | | 721,00 | | | | |
| 5. Fine planning of the bottom ditch with appropriate inclinatio MB15 base. It is calculated and charged per m2 of the planned ditch. | m2 | | | 160,00 | | | | |
| 6. Supply, transport and throwing the sand into the ditch with consolidation and planning of the base. The height of the sand is 50cm. It is calculated and charged per m3. | m3 | | | 110,00 | | | | |
| 7. Throwing the ground from excavation into the ditch with consolidating and planning. It is calculated and charged per m3. | m3 | | | 380,00 | | | | |
| 8. Left ground should be transported to a landfil up to 5km far. The price includes loading, transport, unloading with rough planning on the landfill. It is calculated and charged per m3. | m3 | | | 231,00 | | | | |
| 3. ELECTRO INSTALLATIONS | | | | | | | | |
| 3.1. SYSTEM OF URBAN LIGHTING  The following positions are related to all necessary works and equipment (poles, arms, street lamps...) because of the construction of urban lighting system Thylia – Minel Shreder or other that are suitable. | | | | | | | | |
| 1. The construction of foundation plinth, 800x800x1000mm, for assembling the poles of projected urban lighting system. In workprice the following should be included: manual excavation of foundation plinth in III category land and concreting of foundation plinth MB 20, with setting of anchor and anchor slabs of poles of the given lighting system. Before concreting, setting of certain pipes should be done because of later infitration of power cable (entry-exit) type PP00-A 4x16mm2. The excessive land from excavation should be spread in surrounding space according to landscaping. Calculation per piece of done foundation plinth. | Pcs | | | 9 | | | | |
| The following positions should include supply, transport, delivery and embedding of poles of the projected urban lighting system which are embedded on previously made foundation plinths. All poles are delivered with plug-in slab of insulation material, for connectors of cables up to 4x25mm2 in section and for accommodating at least two clips type FRA (clip board type PP-3 – Amiga or other suitable) and appropriate arms. Poles are made of grey casting along with final process according to the contractor's choice. Calculation is per piece of embedded pole: | | | | | | | | |
| 2. The pole of 8.10m with one (1) arm with shape and dimensions that enable embedding of street lamps at 8,10m height and 1400mm far from pole axis. | Pcs | | | 3 | | | | |
| 3. The pole 8.10/4.20m with two arms(2): the arm has a shape and dimensions which enable embedding of street lamps at 8,10m height and 1400mm far from pole axis; the arm has a shape and dimension which enable embedding of street lamp at 4,20m height and 650mm far from pole axis. | Pcs | | | 5 | | | | |
| 4. Pole 8.1/8.1/8.1m with three (3) arms with shape and dimensions that enable embedding of street lamps at 8,10m height and 400mm far from pole axis. | Pcs | | | 1 | | | | |
| 5. Supply, transport, delivery and embedding of elements of urban street furniture (semicircular bench in pole foundation) with the same design as previously defined poles.  Calculation per piece of embedded element. | Pcs | | | 4 | | | | |
| The following positions are related to supply, transport, delivery, assembing and connecting of street lamps which are embedded on previously set poles. Street lamps are composed of the case made of aluminium alloy casted under pressure, protector made of thermally and mechanically reinforced glass, micro-reflectors made of electropolished and anode protected aluminium tin of high clearance with veneers. Optical block is IP 66 level of protection, impact resistence of IK 08. Street lamp should be delivered together with metal-halogen source of light of certain strength and appropriate pre-switched device.Street lamp look is given in graphic attachement. Calculation is per piece of embedded and connected street lamp. | | | | | | | | |
| 6. Street lamp type Thylia – Minel Shreder 1659/MH 70W/222713 or any other corresponding, the height of assembling is 4,20m. | Pcs | | | 5 | | | | |
| 7. Street lamp type Thylia – Minel Shreder 1754/MH 150W/224051 or any other corresponding, the height of assembling is 8,10m | Pcs | | | 9 | | | | |
| 8. Street lamp type Thylia – Minel Shreder 1659/MH 150W/22602 or any other corresponding, the height of assembling is 8,10m | Pcs | | | 2 | | | | |
| 9. Supply, transport, delivery and embedding of clips type FRA 10A in connecting slabs of poles. Calculation per piece of embedded clip. | Pcs | | | 15 | | | | |
| 3.2. EARTHWORKS, CABLES AND GROUNDING | | | | | | | | |
| 1. Manual excavation of the ditch, 0,4x0,8m, in the III land category, on a terrain with partial barriers. Total calculation per m3 of the ditch 0,4x0,8m. | m3 | | | 54,00 | | | | |
| 2. Supply, transport, delivery and setting of reinforced PVC (juvidur) protective pipes in previously excavated ditch for infiltration of cables at crossing below future traffic road. Calculation includes material, transport and work per meter of set pipe. | m1 | | | 18,00 | | | | |
| 3. Supply, transport, delivery and embedding of the cable type PP00-A 4x25mm2 for connecting distribution boards RO-JR and RO-Bine. The cable is set manually in previously dug ditch. It is paid per length meter of set cable. The connection at both endings of the cable should be included in price. | m1 | | | 67,00 | | | | |
| 4. Supply, transport, delivery and embedding of the cable type PP00-A 4x16mm2 for power supply of the poles of the urban lighting system. The cable is set manually into previously dug ditch. On each pole spot (9 in total), the cable is infiltrated into previously set pipes because of making a connection entry-exit on connecting box. It is paid per meter of the set cables. | m1 | | | 225,00 | | | | |
| 5. Making of connection of the cable PP00-A 4x16mm2 in connecting box of the pole of urban lighting system according to 'entry-exit' principle . Work and all the necessary material should be included into the price. Calculation per connecting. | Pcs | | | 9 | | | | |
| 6. Supply, transport, delivery and embedding of Fe-Zn P25x4mm strip in previously dug ditch. The strip is set because of the poles grounding and connecting with earth wire of the object and connection to „PE“ rails of distribution boards of the parterre space. It is paid per meter of set strip | m1 | | | 165,00 | | | | |
| 7. Supply, transport, delivery and embedding of the material for connecting from earth wire. The connecting should be done with one cross piece 'band-band' with three plates for linking striped lines of maximum width 30mm and band P25x4mm Fe-Zn. Calculation per piece of set connection.  for grounding the poles of urban lighting system  for connection with „PE“ rails of free distribution boards of parterre space.  for connection with grounding of the object of trade-business centre | pcs | | | 9  2  2 | | | | |
| 8. Delivery and set of caution strio in two layers | m1 | | | 340,00 | | | | |
| 9. Delivery and embedding of concrete signs with metal plates on ground surface, in the section axis above the cable with appropriate cable signs (cable section, cable turning etc…) | Pcs | | | 6 | | | | |
| 10. Filling of the ditch with selected fine-grained ground from excavation in layers 20-30cm with manual consolidation of the soil. Calculation per m3 of the ditch. | m3 | | | 54,00 | | | | |
| 11. Petty earthworks which are not included in previous positions of the excavation and filling; however, they are necessary for returnig the terrain into its original state. Calculation is lump sum for the whole section. | Lump sum | | | 1 | | | | |
| 3.3. DISTRIBUTION BOARDS  3.3.1. Supply, transport, delivery and embedding of freelance distibution board RO-JR. The board is made of double refined sheet of metal from rust of minimum thickness 1,5mm, equipped with lock and key, resistant to atmospheric influences, and level of protection IP65. Complete equipment is assembled within the board (on DIN rails) except for connectors whose assembling is done on the sides of the board. Dimensions of the board should be coordinated according to the following specified basic equipment: | | | | | | | | |
| drum-type switch 3p, 63A, 400VAC with position „0“ i „1“ | | | | pcs | | | 1 | |
| drum-type switch 3p, 40A, 400VAC with position „0“ i „1“ | | | | pcs | | | 1 | |
| drum-type switch 3p, 25A, 400VAC with position „0“ i „1“ | | | | pcs | | | 2 | |
| drum-type switch 1p, 25A, 400VAC with position „0“ i „1“ | | | | pcs | | | 3 | |
| drum-type switch 1p, 10A, 230VAC with position „1“, „0“ i „2“ | | | | pcs | | | 1 | |
| 3p NV00 fuse breaker | | | | pcs | | | 3 | |
| NV fuse 25A/400VAC, size 00 | | | | pcs | | | 6 | |
| NV fuse 40A/400VAC, size 00 | | | | pcs | | | 3 | |
| contractor 20A/230VAC, 1NO potential coil 230VAC | | | | pcs | | | 2 | |
| photo relay with photo probe | | | | pcs | | | 1 | |
| RCD 4p, 40A/30mA | | | | pcs | | | 1 | |
| RCD 4p, 25A/30mA | | | | pcs | | | 2 | |
| RCD 2p, 25A/30mA | | | | pcs | | | 3 | |
| installation 3p switch type „B“, 32A, 400VAC, 10kA | | | | pcs | | | 1 | |
| installation 3p switch type „B“, 16A, 400VAC, 10kA | | | | pcs | | | 2 | |
| installation 1p switch type „B“, 16A, 230VAC, 10kA | | | | pcs | | | 3 | |
| installation 1p switch type „B“, 6A, 230VAC, 10kA | | | | pcs | | | 1 | |
| installation 1p switch in function of a limiter type „C“, 50A, 230VAC, 10kA | | | | pcs | | | 3 | |
| direct three-phase multifunctional electricity meter with active energy with sa DLMS protocol 3x230/400VAC, 5-60A (assembling of electricity meter shold be done on appropriate electroinsulation panel) | | | | pcs | | | 1 | |
| industrial connector with protective contact 5p, 32A, 400VAC, IP67 | | | | pcs | | | 1 | |
| industrial connector with protective contact 5p, 16A, 400VAC, IP67 | | | | pcs | | | 2 | |
| industrial connector with protective contact 3p, 16A, 230VAC, IP67 | | | | pcs | | | 3 | |
| rails for „N“ i „PE“ and all necessary petty material for embedding, connecting and construction of signs for marking the elements and lines. | | | | complete | | | 1 | |
| It is being paid per piece of wired, assembled, connected and tested board. | | | | pcs | | | 1 | |
|  | | | |  | | |  | |
| 3.3.2. Supply, transport, delivery and embedding of freelance distibution board RO-Bina. The board is made of double refined sheet of metal from rust of minimum thickness 1,5mm, equipped with lock and key, resistant to atmospheric influences, and level of protection IP65. Complete equipment is assembled within the board (on DIN rails) except for connectors whose assembling is done on the sides of the board. Dimensions of the board should be coordinated according to the following specified basic equipment: | | | | | | | | |
| drum-type switch 3p, 63A, 400VAC with position „0“ i „1“ | | | | pcs | | | 1 | |
| drum-type switch 3p, 40A, 400VAC with position „0“ i „1“ | | | | pcs | | | 1 | |
| drum-type switch 3p, 25A, 400VAC with position „0“ i „1“ | | | | pcs | | | 2 | |
| drum-type switch 1p, 25A, 400VAC with position „0“ i „1“ | | | | pcs | | | 3 | |
| RCD 4p, 40A/30mA | | | | pcs | | | 1 | |
| RCD 4p, 25A/30mA | | | | pcs | | | 2 | |
| RCD 2p, 25A/30mA | | | | pcs | | | 3 | |
| installation 3p switch type „B“, 32A, 400VAC, 6kA | | | | pcs | | | 1 | |
| installation 3p switch type „B“, 16A, 400VAC, 6kA | | | | pcs | | | 2 | |
| installation 1p switch type „B“, 16A, 230VAC, 6kA | | | | pcs | | | 3 | |
| industrial connector with protective contact 5p, 32A, 400VAC, IP67 | | | | pcs | | | 1 | |
| industrial connector with protective contact 5p, 16A, 400VAC, IP67 | | | | pcs | | | 2 | |
| industrial connector with protective contact 3p, 16A, 230VAC, IP67 | | | | pcs | | | 3 | |
| rails for „N“ i „PE“ and all necessary petty material for embedding, connecting and construction of signs for marking the elements and lines. | | | | complete | | | 1 | |
| It is being paid per piece of wired, assembled, connected and tested board. | | | | pcs | | | 1 | |
|  | | | |  | | |  | |
| 3.4. FINISHING WORKS - PARTERRE | | | | | | | | |
| 1. Geodetic recording of section of set cables, drawing in the cadastre of underground installations, handing over the record and obtaining the confirmation about registration in cadastral record. Recording of characteristic profiles (points of passing and crossing with other installations and objects). | Lump sum | | | 1 | | | | |
| 2. Testing, measuring and issuing of professional finding for performed works. Calculation as lump sum. | Lump sum | | | 1 | | | | |
| 3. Total recording, drawing and project design of calculated state. The project must be signed by the main design engineer of electro-energetic installations of law and medium voltage. Three sheets (3) with authenticated signatures and printed project and one (1) sheet of project in e-form are given to the investor. | Lump sum | | | 1 | | | | |
| 4. Commissioning of installations, handing over of finished works, participating in commission for technical inspection. Calculation as lump sum. | Complete | | | 1 | | | | |