

### 3.1.7.12.2 Hand – held portable apparatus type S-9A

These apparatus are used for extinguishing of fires of liquid substances (petrol, oil, benzene, alcohol, ether, paints, varnishes, greases, etc.), gaseous substances (methane, propane, acetylene, etc.), and for fires of solid substances, as well as for fires on electrical equipment and installations.

A range of the jet must be minimum 2 metres. The valve of the apparatus must enable interruption of the jet and apparatuses must be provided with a discharge nozzle, and the apparatus of 5 kg must also be provided with a hose 0.8 metres long. Such apparatuses operate at temperatures from – 20 to + 35°C, winter filling, and from – 20 to + 40°C, summer filling.

Technical data for hand-held portable fire extinguishing apparatuses using powder:

<b>Apparatus</b>	<b>Powder content [kg]</b>	<b>Gas content [g]</b>	<b>Gross weight [kg]</b>	<b>Action time [s]</b>	<b>Jet range [m]</b>	<b>Operating pressure [bar]</b>	<b>Test pressure [bar]</b>	<b>Safety valve [bar]</b>
S-9	9	160-200	15.7	20-22	4-6	12-14	22-25	16-19

The item shall be paid per piece.

# VOLUME 3 – SECTION 2 – CIVIL ENGINEERING TECHNICAL SPECIFICATIONS

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### 3.2.0 PREFACE

This Technical Specification for works execution will be an integral part of the Tender Documentation, which being an Annex to the Contract on Works Execution, therefore will be considered as the integral part of the said Contract on Works Execution.

The Contractor is fully familiar with all details of the submitted Design, as well as with all local regulations, local standards (SRPS), common practice of trade and circumstances for their execution, nevertheless, it is understood that, whenever local regulations, local standards (SRPS), or any common practice of trade, are subject to any interpretation, clarification, ambiguity, or dispute, a ruling by the Supervisor will prevail, always provided that such ruling will be fully in compliance with and will be based on the subject local regulations, local standards (SRPS), including, but not limited to:

ICS Number	Standard Number	Year	TITLE
91.200	SRPS ISO 3443-1	2003	Tolerances for building - Part 1: Recommendations for basic principles for evaluation and specification
	SRPS ISO 3443-8	2005	Tolerances for building - Part 8: Dimensional inspection and control of construction work
	SRPS ISO 7077	1994	Measuring methods for building - General principles and procedures for the verification of dimensional compliance
	SRPS ISO 12491	2002	Statistical methods for quality control of building materials and components

As well as in accordance with common practice of trade, and any such ruling by the Supervisors and subsequent instruction in that respect, will not constitute any ground for variation order and/or any additional payment.

All works must be carried out precisely and professionally. Prior to application, the Supervisor must examine all material and all his comments referring to material and quality of work will be obligatory for the Contractor. The agreed prices include all fully completed works, the final product, and ready for use.

ICS Number	Standard Number	Year	TITLE
03.120.10	SRPS ISO 9001	2008	Quality management systems-Requirements
	SRPS ISO 10001	2008	Quality agreement-Customer Satisfaction-Guidelines for codes of conduct for organization

The Contractor will be responsible for all damages caused by the Contractor during any works, to any third party, structure, main building or adjacent buildings, and all repair works and compensations of any kind will be at the Contractor's expense.

The Contracting Authority will provide to the Contractor the access to building site. All other matters in this regard will be the competence of the Contractor.

Supply of water, electricity and all other raw materials to the building site, all the time during the execution of the works, will be the sole liability of the Contractor, including all costs and necessary administrative procedures.

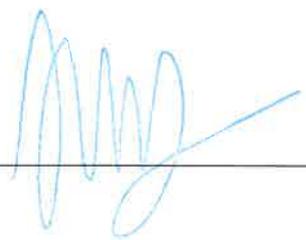
Prior to the commencement of the works, and also in the course of the execution of every work item, the Contractor will ask for any explanations and clarifications required, therefore, the Contractor will solely bear full material responsibility for all works not completed in accordance with the concept and details of this Design.

The Contractor will be responsible to keep records on the progress of works in the measurement log and measurement book and have them controlled and verified.

It is also considered that the Contractor's will be responsible for safeguarding of the building site and maintenance of existing structure and/or building all the time during the progress of the works until completion and acceptance of the building by the Contracting Authority.

Upon the completion of the works, the Contractor will remove from the building site and other used areas all his tools, machinery, surplus material, etc. so as to have the site neatly arranged as defined in the investment-technical documentation, and all other areas restored in same condition as before the construction.

Coding of each specific technical specification for any type of works given in this Technical Specification, and subsequently in the BoQ, is based on the International Classification for Standards – ICS, providing comprehensive correlation between the international and local standards. "The Institute for Standardization of the Republic Serbia" ("Institut za Standardizaciju Srbije, Stevana Brakusa 2, 11030 Beograd") <http://www.iss.rs/kataloge.htm> within its Catalogue provides numerous updated tables enabling connection between international and local standards, as well as, updated review of old SRPS standards which have been either withdrawn or replaced or simply renamed.



## **3.2.1 PRELIMINARY WORKS**

### **3.2.1.1 Supply and Installation of Tubular Scaffolding**

Supply and installation of certified tubular scaffolding for the entire facade, facing both the street and the building's yard, including protection for the pedestrians i.e. a shed lined with battens forming an extra 50 cm bracket with respect to the external plane, for which there shall be no separate payment. The rate per m<sup>2</sup> shall also include development of the scaffolding design which must be signed and stamped by Contractor's licensed engineer and approved by the competent city institution, prior to the installation. A full set according to above description shall be paid per m<sup>2</sup> of executed scaffolding, including the shed.

### **3.2.1.2 Taking Samples from Facade Surfaces**

Taking of samples from facade surfaces, specifically from stone cladding in the basement, from fine bush-hammered belt in strips up to underneath the window on the first floor and from smooth-finished surfaces up to the top of the building. The sampling and analysis of the composition and ratios inside the mix shall be entrusted to a certified laboratory authorized for testing of materials and issuance of valid test certificates. The item shall be paid as a lump sum.

### **3.2.1.3 Fabrication and Installation of Notice Boards**

Fabrication and installation of the notice boards warning of the construction works in progress, including other basic data on the building, the Contractor, the Supervisor and the Designer, respectively. The size of the notice board shall be 200x100 cm. The item shall be paid per piece.

### **3.2.1.4 Procurement, Transport and Installation of Jute Fabric**

Procurement, transport and installation of high-density jute fabric, in order to prevent dusting of adjacent buildings and public spaces. The fabric shall be fixed to the bottom edge of the scaffolding, covering the entire surface area of the scaffolding and running over it, and it shall be fixed to the roof plane to prevent dust dissipation and its undisturbed propagation over the protected scaffolding. The item shall be calculated per m<sup>2</sup>.

### **3.2.1.5 Technical Inspection of the Building's Facade**

Technical inspection of the building facade, including elaboration of a detailed work plan for facade remediation, in accordance with the technical regulations and measures of technical protection issued by the Institute for the Protection of Cultural Heritage (Law on Cultural Property, Chapter II. V: Types of cultural property and property enjoying preliminary protection, 1. a), Article 19). Such detailed inspection of the building's facade shall be performed using a statically stable, anchored and appropriately grounded scaffolding, constructed according to scaffolding design. The Supervisor shall receive the remediation plan and his/her approval for the implementation shall be recorded in the logbook. Upon receiving a positive evaluation of the plan, the Contractor shall prepare a detailed BoQ for the remediation works which are stipulated in the design documentation, percentage-wise. The item shall be paid as a lump sum.

### **3.2.1.6 Restoration of Ironwork Ornamental Decorations**

Restoration of ironwork ornamental decorations at the main entrance hall (coach gate). The missing parts or worn out parts shall be fabricated and reinstalled in line with the existing parts, and according to the details and instructions given by the Supervisor. Connections and welds shall be finished to perfection, cleaned and grinded. Prior to applying the paint, remove old paint using chemical and physical means, grind it and clean it. Restored ornamentation shall be coated with impregnation and primer coatings, followed by two coatings of paint used for metal. The item shall be calculated per piece of cast iron ornament.

### **3.2.1.7 Fabrication of Moulds for Ornamental Plastering**

Produce a gypsum moulding based on the existing model. The piece-moulding technique shall be used for fabrication of the moulds. All edges and surfaces shall be provided with fine, high-quality finishing and coated with shellac, precisely according to the model and the design. The moulding shall be accompanied with a letter/receipt to be signed and approved by the Supervisor. The item shall be calculated and paid per piece of approximate size: 30x30 cm.

### **3.2.1.8 Retouching of Gypsum Squeeze**

Retouching of gypsum squeezes of running moulds in the main entrance hall (coach gate), orthogonal section projections of up to 25 cm. Prior to fabrication of the patterns in the workshop, performs retouching and corrections of gypsum squeeze sections. The retouching must be performed by professionals, and the order for making of patterns based on retouched gypsum squeezes shall be issued by the Supervisor in the site diary. The item shall be calculated per m<sup>2</sup>.

### **3.2.1.9 Mounting of Platform Lift Q-600kg**

Fabrication of a dedicated platform lift for the needs and functioning of the construction site, due to lack of suitable space, the building being located in the city centre, no possibility to erect a crane, a 30-square meter yard, handling of dismantled elements, equipment, materials, debris, with the designed Q-600kg bearing capacity of the platform, velocity V-03 (0.15m/s), etc., lifting of newly planned materials in quantities required for the building with gross floor area of approximately 3700 m<sup>2</sup>, in order not to slow down the work dynamics per groups. Fabrication of a dedicated platform lift, including two professional lift engines, two platforms of 1.5x2 m floor area, and a protective fence with the height of 2.2 m for rendering safety and security to workers, steel self-supporting brackets, both vertical and horizontal and fabrication of a pedestal made of steel and boards (on each floor), and including a connection to the façade wall of the building for the transport of materials and goods, two professional-type control panels. Digging in of a lift shaft with a depth 60 cm, width 3.4x2.4 m to enable the platform to settle at ground zero (zero level of the yard), including lifting height of materials and goods up to 27 m. Newly fabricated platforms shall be appropriately certified, prior to their use, and shall be dismantled and removed from the Site after completion of the works. The item shall be paid as a lump sum.

### **3.2.1.10 Fabrication of the Model and Retouching of Ornamental Arch Strip**

Fabrication of the model and retouching of the ornamental arch strip in the main entrance hall (coach gate); section width: 50 cm. Prior to fabrication of the pattern, in the workshop, perform retouching and corrections on gypsum squeeze sections. The retouching must be performed by professionals, and the order for making of patterns based on retouched gypsum squeezes shall be issued by the Supervisor in the site diary. The item shall be calculated per m<sup>2</sup>.



## **3.2.2 DISMANTLING, DEMOLITION AND REMOVAL WORKS**

### **Dismantling of furniture**

#### **3.2.2.1 Dismantling of Built-in Wardrobe up to 5.00 m<sup>2</sup>**

Careful dismantling of the built-in wardrobe of up to 5.0 m<sup>2</sup>. Dismantled wardrobes shall be loaded and hauled to a place designated by the Supervisor at AHD not exceeding 30 km. The item shall be calculated per piece of dismantled wardrobe.

#### **3.2.2.2 Dismantling of Built-in Wardrobe of 5-10 m<sup>2</sup>**

Careful dismantling of the built-in wardrobe of 5-10 m<sup>2</sup>. Dismantled wardrobes shall be loaded and hauled to a place designated by the Supervisor at AHD not exceeding 30 km. The item shall be calculated per piece of dismantled wardrobe.

#### **3.2.2.3 Dismantling of Cabinets up to 3.00 m<sup>2</sup>**

Careful dismantling of a built-in wardrobe of up to 3.00 m<sup>2</sup>. Dismantled wardrobes shall be loaded and hauled to a place designated by the Supervisor at AHD not exceeding 30 km. The item shall be calculated per piece of dismantled cabinet.

#### **3.2.2.4 Dismantling of Display Cases up to 3.00 m<sup>2</sup>**

Careful dismantling of a display case of up to 3.00 m<sup>2</sup>. Dismantled display cases shall be loaded and hauled to a place designated by the Supervisor at AHD not exceeding 30 km. The item shall be calculated per piece of dismantled display case.

#### **3.2.2.5 Dismantling of Sinks**

Careful dismantling of sinks. Dismantled sinks shall be loaded and hauled to a place designated by the Supervisor at AHD not exceeding 30 km. The item shall be calculated per piece of dismantled sink.

#### **3.2.2.6 Taking the Existing Furniture Outside**

Taking the existing furniture out of the area which is being reconstructed. Old, waste and discarded furniture, mainly stored in the basement and in other auxiliary rooms on floors, on 4th floor and in the attic, shall be transported through the building, loaded and hauled to the city landfill at AHD not exceeding 30 km, including payment of the fee for disposal of waste materials. The item shall be calculated per m<sup>2</sup> of the floor area of the room.

#### **3.2.2.7 Cutting of Grips in Brick Walls**

Careful cutting of grips in the brick walls for dismantling of water supply, sewerage and hydrant pipes which must not remain in the walls and ceilings, size 20x20 cm. Due care shall be paid not to shutter the existing wall, and therefore contractors are well advised to use cutting machines for this purpose. Collect the debris, take it outside the building, load on a truck and haul to the city landfill at AHD not exceeding 30 km; include payment of the fee for disposal of waste materials. The item shall be calculated per m' of cut grip.

#### **3.2.2.8 Cutting of Grips in Brick Walls for Passage of New Conduits**

Careful cutting of grips in brick walls for passage of new conduits for water supply, sewerage, thermo mechanical installations, hydrant pipes and part of power cables which shall not be mounted in corresponding brackets outside the walls. Grip size shall vary from 20x10 cm up to 20x50 cm. Carefully execute grips through the walls for lying of pipes and cables at corresponding distance between them. Collect the debris, take it

outside the building, load on a truck and haul to the city landfill at AHD not exceeding 30 km, including payment of the fee for disposal of waste materials. The item shall be calculated per m' of cut grip.

### **3.2.2.9 Penetrating, Core Drilling of Plate Floors, Walls of the Building**

Careful penetrating, core drilling of the plate floors, walls of the building, thickness from d=30 cm up to d=75 cm, in order to prevent shattering of the existing, partition and structural walls, ceilings. The core-drilled runs shall serve to provide the passage of water supply, sewerage and hydrant pipes, electrical cables and thermo mechanical installations. Collect the debris, take it outside the building, load on a truck and haul to the city landfill at AHD not exceeding 30 km, including payment of the fee for disposal of waste materials. The item shall be calculated per piece.

### **3.2.2.10 Demolition of Masonry Walls, Roof Wall, Non-Bearing Walls, Chimneys**

Demolition of brick gable walls, roof wall, none bearing wall, chimneys, thickness d=20-35 cm, executed in cement-lime mortar. Perform the demolition of the walls, including the ring beams and all wall linings. Bricks that can be reused shall be cleaned of mortar and stacked on the spoil area. Collect the debris, take it outside the building, load on a truck and haul it to the city landfill located at AHD not exceeding 30 km, including payment of the fee for disposal of waste materials. The item shall be calculated per m<sup>3</sup>.

### **3.2.2.11 Punching of Brick Wall d=30, 50 and 70 cm**

Punching of the wall, collect the debris, take it outside the building, load on a truck and haul to the city landfill at AHD not exceeding 30 km, including payment of the fee for disposal of waste materials. The item shall be calculated per m<sup>3</sup>.

### **3.2.2.12 Demolition of Reinforced Concrete Beams**

Demolition shall be executed carefully, using machines for the cutting of concrete and reinforcement bars in order to avoid shattering of the reinforcement. Collect the debris, take it outside the building, load on a truck and haul it to the city landfill located at AHD not exceeding 30 km, including payment of the fee for disposal of waste materials. The item shall be calculated per m<sup>3</sup>.

### **3.2.2.13 Demolition of Ground Floor Slab Made of Reinforced Concrete**

Demolition of the reinforced concrete ground floor slab for the staircase leading to the basement. Demolition of the concrete slab shall be performed carefully, using machines for the cutting of concrete and reinforcement bars in order to avoid shattering of the building. The rate shall include the aggravated work conditions and vertical transport. The rate shall also include cutting of the reinforcement. Collect the debris, take it outside the building, load on a truck and haul it to the city landfill located at AHD not exceeding 30 km, including payment of the fee for disposal of waste materials. The item shall be calculated per m<sup>3</sup>.

### **3.2.2.14 Demolition of Reinforced Concrete Staircase from Basement to Ground Floor**

Demolition of the reinforced concrete staircase leading from the basement to the ground floor. Demolition of the staircase shall be performed carefully. The rate shall also include cutting of the reinforcement. The rate shall include the aggravated work conditions: vertical transport due to aggravated lifting of the materials from the basement manually, since it is not possible to install a crane, and required lifting of the materials over several gangways and restacking it several times in order to lift the demolished material and take it outside the building. Collect the debris, take it outside the building, load on a truck and haul it to the city landfill located at AHD not exceeding 30 km, including payment of the fee for disposal of waste materials. The item shall be calculated per m<sup>3</sup>.

### **3.2.2.15 Punching of Reinforced Concrete Slab for New Staircase**

Punching of the reinforced concrete slab on the ground floor to create staircase connection to the basement. The punching shall be performed carefully. The rate shall include cutting of the reinforcement. Collect the debris,

take it outside the building, load on a truck and haul it to the city landfill located at AHD not exceeding 30 km, including payment of the fee for disposal of waste materials. The item shall be calculated per m<sup>3</sup>.

### **3.2.2.16 Demolition of Reinforced Concrete Staircases from Ground Floor to 1<sup>st</sup> Floor and from 1<sup>st</sup> to 2<sup>nd</sup> Floor**

Demolition of the reinforced concrete staircase slab on the ground floor and on the first floor, of the dim. of 475x135 cm. Carefully demolish the concrete slab. The rate shall also include cutting of the reinforcement, bracing and reinforcing of the RC slab in order not to damage the RC slab, which shall remain there until the RC beams, girders are fabricated. Collect the debris, take it outside the building, load on a truck and haul it to the city landfill located at AHD of up to 30 km, including payment of the fee for disposal of waste materials. The item shall be calculated per m<sup>3</sup>.

### **3.2.2.17 Demolition of Reinforced Concrete Slabs d=10 cm**

Breaking of RC slabs in the basement and basement No. 2 of the building, including collection of debris and its manual reloading over four transportation gangways in order to lift the material from the basement area including all the necessary horizontal transport, taking it outside the building, loading on a truck and transport to the city landfill located at AHD of up to 30 km, including payment of the fee for disposal of waste materials. The item shall be calculated per m<sup>3</sup>.

### **3.2.2.18 Dismantling of Windows up to 2.00 m<sup>2</sup>**

Careful dismantling of the windows with window space of up to 2.00 m<sup>2</sup>, with pertaining wood rolling shutters and interior wood sill. Take good care not to damage the facade reveal executed in stone to allow for a new window to be installed with minimum intervention on the facade. Prior to dismantling, it is necessary to remove the glass from dismantled casements and stack it on glass transport rack. Close dismantled windows and casements, dismantle window finish hardware, pack and transfer it manually from the building, load on a truck and haul it to a place designated by the Supervisor at AHD not exceeding 30 km. The item shall be calculated per piece.

### **3.2.2.19 Dismantling of Windows up to 5.00 m<sup>2</sup>**

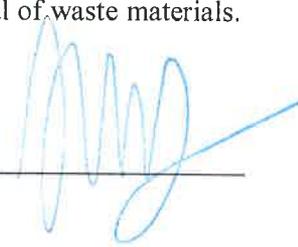
Careful dismantling of the windows with window space of up to 5.00 m<sup>2</sup>, with pertaining wood rolling shutters and interior wood sill. Take good care not to damage facade reveal executed in stone to allow for a new window to be installed with minimum intervention on the facade. Prior to dismantling, it is necessary to remove the glass from dismantled casements and stack it on glass transport rack. Close dismantled windows and casements, dismantle window finish hardware, pack and transfer it manually outside the building, load on a truck and haul it to an auction place designated by the Supervisor at AHD not exceeding 30 km. If taken to the landfill, payment of the fee for the disposal of waste material is included. The item shall be calculated per piece.

### **3.2.2.20 Dismantling of Doors up to 2.00 m<sup>2</sup>**

Careful dismantling of doors together with the frame, with up to 2.00 m<sup>2</sup> surface; remove door handles and pack separately, transfer inside the building, load on a truck and haul to a place designated by the Supervisor and located at AHD not exceeding 30 km, and hand it over to him for his perusal. The item shall be calculated per piece.

### **3.2.2.21 Dismantling of Doors up to 5.00 m<sup>2</sup>**

Careful dismantling of doors together with the frame, with up to 5.00 m<sup>2</sup> surface area. Fold dismantled doors, load on a truck and transfer to a place designated by the Supervisor and located at AHD not exceeding 30 km and hand it over for his perusal. Collect the debris, take it outside the building, load on a truck and haul it to the city landfill located at AHD not exceeding 30 km, including payment of the fee for disposal of waste materials. The item shall be calculated per piece.



### **3.2.2.22 Dismantling of Double Casing Double Doors**

Careful dismantling of the double casing double doors, including door frame with depth of 70 cm, with extended surface area of over 10.00 m<sup>2</sup>. Fold the dismantled doors, load on a truck and haul to a place designated by the Supervisor and located at AHD not exceeding 30 km and hand it over for his perusal. Collect the debris, take it outside the building, load on a truck and haul it to the city landfill located at AHD not exceeding 30 km, including payment of the fee for disposal of waste materials. The item shall be calculated per piece.

### **3.2.2.23 Removal of Existing Mortar from Walls and Ceilings**

Stripping off of the existing wet or blistered mortar from the walls and ceilings in the basements No. 1 and No.2, including collection and evacuation of debris from the building and its manual loading on a truck and transport to the city landfill located at AHD of up to 30 km, including payment of the fee for the disposal of waste materials. The item shall be calculated per m<sup>2</sup>.

### **3.2.2.24 Removal of Plaster from Interior Walls**

Stripping off of plaster from the walls on the ground floor and on other floors of the building, including collection of debris, vertical and horizontal transport within the building, carting of the same out, loading on a truck and transport to the city landfill located at AHD of up to 30 km, including payment of the fee for disposal of waste materials. Estimate is that 20% of the overall walls have to be treated. The item shall be calculated per m<sup>2</sup>.

### **3.2.2.25 Removal of Plaster from Ceilings and Ceiling Structure of Wooden Batons**

Stripping off of the mortar from the ceilings including collection and evacuation of debris from the building and its manual loading on a truck and transport to the city landfill located at AHD of up to 30 km, including payment of the fee for the disposal of waste materials. Careful dismantling of the substructure made of wood posts which accepted the load from the ceilings coated with stucco plaster and gypsum and matchboardings from the ceilings and the walls. The posts are placed in a structural pattern (grid) at spacing of 40 cm. Sort out and clean the wood posts, take the nails out and stack them into pallets according to size, fix with 16x0.5 mm steel strapping, including corner protection pieces placed to avoid any damage, load on a truck and haul to a place designated by the Supervisor and located up to 30 km away. Collect the debris and plaster, take it outside the building, load on a truck and haul to the city landfill located at AHD not exceeding 30 km, including payment of the fee for disposal of waste materials. The item shall be calculated per m<sup>2</sup>.

### **3.2.2.26 Removal of Damaged Parts of Facade Plaster**

Stripping of damaged part of the facade plaster on the sections where separation from the base has been established, specifically up to the base wall. On the sections of brick base, cleaning of joints shall be done up to min. two centimetres of depth, possible concrete sections shall be re-picked. The item shall be calculated per m<sup>2</sup>.

### **3.2.2.27 Dismantling of Parquet, „Blind Floor“, Wood Laths and Sand Layer with Rims**

Careful dismantling of the existing oak parquet in all offices and other premises, which had been placed by hammering nails in the sheathing (dry procedure). Dismantled parquet shall be cleaned from nails, stacked into bundles, palletized, fixed with 16x0.5 mm steel strapping, including rim protection pieces placed to avoid any damage, unloaded outside the building and then loaded on a truck and hauled to a place designated by the Supervisor and located at AHD of up to 30 km away where it shall be handed over for his perusal. Collect the debris and other waste material and haul it to the city landfill located at AHD not exceeding 30 km, including payment of the corresponding fee. Careful dismantling of the blind floor made of dressed white wood boards with hammered nails for posts, size 8x10 cm, removing nails from the white wood boards of the blind floor, cleaning, stacking into bundles, palletizing, fixating with steel strapping tape, size 16x0.5 mm, including rim protection pieces placed to avoid any damage, horizontal and vertical transport of the same, its loading on a truck and hauling to a place designated by the Supervisor located at AHD of up to 30 km away, where it shall

be handed over for his perusal. Careful dismantling of wood laths, size 8x10 cm, installed at a centre-to-centre spacing of 40 cm, including cleaning, stacking into bundles, palletizing, fixing with 16x0.5 mm steel strapping with rim protection pieces placed to avoid any damage, horizontal and vertical transport inside the building, taking it outside the building and loading on a truck, hauling to a place designated by the Supervisor located at AHD of up to 30 km away where it shall be handed over to the Employer. Collect the debris, take it down, load on a truck and haul it to the city landfill located at AHD not exceeding 30 km, including payment of the fee for disposal of waste materials. Manual excavation of the filling material composed of ash, sand and soil which used to serve as a levelling layer and insulating layer of the attic plate floor, blind floor to which the parquet was fixed, thickness of the layer: d=22 cm. Collected materials shall be transported horizontally and vertically inside the building, unloaded outside the building, loaded on a truck and hauled to the city landfill located at AHD not exceeding 30 km away, including payment of the fee for disposal of waste materials. The item shall be calculated per m<sup>2</sup>.

#### **3.2.2.28 Demolition of Ceramic Tiles with Support Layer**

Demolition of the staircase landing facing made of ceramic tiles with a base layer, on the roof terrace. Collect the debris, take it outside the building, load on a truck and haul it to the city landfill located at AHD of up to 30 km, including payment of the fee for disposal of waste materials. The item shall be calculated per m<sup>2</sup>.

#### **3.2.2.29 Demolition of Cast Terrazzo Flooring**

Demolition of the cast terrazzo flooring, skirting made of cast terrazzo, including its collection, vertical and horizontal transport, loading on a truck and its hauling to the city landfill located at AHD of up to 30 km, including payment of the fee for disposal of waste materials. The item shall be calculated per m<sup>2</sup>.

#### **3.2.2.30 Demolition of Stone Flooring in the Entry Area**

Demolition of the stone flooring in the porte-cochere area, including its collection, vertical and horizontal transport, loading on a truck. If the Beneficiary is interested to retain ownership and reuse, then transport to designated area. Otherwise, it shall be transported to the city landfill located at AHD of up to 30 km, including payment of the fee for disposal of waste materials. The item shall be calculated per m<sup>2</sup>.

#### **3.2.2.31 Demolition of Finish Layers of the Serviceable Flat Roof**

Demolition of finish layers of the serviceable flat roof, including its collection, vertical and horizontal transport, loading on a truck and its hauling to the city landfill located at AHD of up to 30 km, including payment of the fee for disposal of waste materials. The item shall be calculated per m<sup>2</sup>.

#### **3.2.2.32 Demolition of Wall and Floor Ceramic Tiles with Support Layer**

Demolition of wall and floor ceramic tiles in all the sanitary blocks, basements, and on the roof terraces, including collecting of debris, indoor vertical and horizontal transport, and taking the debris outside the building, loading on a truck and transport to the city landfill located at AHD of up to 30 km, including payment of the fee for disposal of waste materials. The item shall be calculated per m<sup>2</sup>.

#### **3.2.2.33 Demolition of Screed Beds**

Demolition of screed beds, of d=6 cm, in all the sanitary blocks, basements, and on the roof terraces, including collecting of debris, indoor vertical and horizontal transport, and taking the debris outside the building, loading on a truck and transport to the city landfill located at AHD of up to 30 km, including payment of the fee for disposal of waste materials. The item shall be calculated per m<sup>2</sup>.

#### **3.2.2.34 Dismantling of Matchboard with Sub Structure in the Attic**

Careful dismantling of the matchboarding from attic walls with substructure. All material shall be folded, stacked into pallets, fixed with 16x0.5 mm steel strapping, including placed corner protection pieces to avoid any damage, and loaded on a truck and hauled to a place designated by the Employer (for auction purposes) located up to 30 km away. Collect the debris, take it outside the building, load on a truck and haul to the city

landfill at AHD not exceeding 30 km, including payment of the fee for disposal of waste materials. The item shall be calculated per m<sup>2</sup>.

#### **3.2.2.35 Dismantling of Matchboard from the Ceiling Substructure**

Careful dismantling of the matchboard and substructure from the ceiling substructure. All usable material shall be folded, stacked into pallets, fixed with 16x0.5 mm steel strapping, including corner protection pieces placed to avoid any damage, loaded on a truck and hauled to a place designated by the Supervisor and located up to 30 km away. Collect the debris, take it outside the building, load on a truck and haul to the city landfill at AHD not exceeding 30 km, including payment of the fee for disposal of waste materials. The item shall be calculated per m<sup>2</sup>.

#### **3.2.2.36 Dismantling of Suspended Ceiling Made of Gypsum Cardboards With Sub Structure**

Careful dismantling of the suspended ceiling made of gypsum cardboards with substructure. Sort out usable material and stack it up, transport it to a place designated by the Supervisor not more than 30 km away. Collect the debris, take it outside the building, load on a truck and haul to the city landfill at AHD not exceeding 30 km, including payment of the fee for disposal of waste materials. The item shall be calculated per m<sup>2</sup>.

#### **3.2.2.37 Dismantling of Roof Cover Made of Interlocking Tiles, Hogs and Ridges**

Careful dismantling of the roofing made of interlocking tiles, hogs and ridges. Remove material in a safe manner, clean and stack them in pallets. Haul to a place designated by the Supervisor and located at AHD up to 30 km away and hand it over for his perusal. Collect the debris, take it outside the building, load on a truck and haul to the city landfill located at AHD not exceeding 30 km, including payment of the fee for disposal of waste materials. The item shall be calculated per m<sup>2</sup> of horizontal projection.

#### **3.2.2.38 Dismantling of Roof Wooden Structure with Dismantling of Wooden Battens**

Careful dismantling of the roof wood structure and wooden battens. Dismantled timber shall be stacked in pallets according to similar dimensions, bundled with galvanized strapping for pallets, loaded on a truck and hauled to a place designated by the Supervisor and located at AHD not exceeding 30 km. Collect the debris, take it outside the building, load on a truck and haul to the city landfill located at AHD not exceeding 30 km, including payment of the fee for disposal of waste materials. The item shall be calculated per m<sup>2</sup> of horizontal projection.

#### **3.2.2.39 Dismantling of Sheeting with Hydro Insulation**

Careful dismantling of the sheathing from the roof structure, taking due care not to break it. Remove the sheathing carefully, clean, remove any nails, stack in pallets, fix with 16x0.5 mm steel strapping, including corner protection pieces placed to avoid any damage, load it on a truck and haul to a place designated by the Supervisor and located at AHD of up to 30 km away and hand it over for his perusal. Collect the debris, take it outside the building, load it on a truck and haul to the city landfill located at AHD not exceeding 30 km, including payment of the fee for disposal of waste materials. The item shall be calculated per m<sup>2</sup> of horizontal projection.

#### **3.2.2.40 Dismantling of Sheet Metal Roofing**

Careful dismantling of the sheet metal roofing. Dismantle the sheet metal carefully, bring it down, clean and stack it at a designated Site spoil area for reuse, or load on a truck and haul it to a place designated by the Supervisor and located at AHD up to 30 km away and hand it over for his perusal. Collect the debris, take it outside the building, load it on a truck and haul to the city landfill located at AHD not exceeding 30 km, including payment of the fee for disposal of waste materials. The item shall be calculated per m<sup>2</sup>.

#### **3.2.2.41 Dismantling of Glazed Metal Canopy**

Careful dismantling of the glazed metal canopy. Firstly, dismantle the glazing and then the metal parts of the canopy, clean it all, stack in a palette, load on a truck and haul it to a place designated by the Supervisor and

located at AHD up to 30 km away and hand it over for his perusal. Collect the debris, take it outside the building, load it on a truck and haul to the city landfill located at AHD not exceeding 30 km, including payment of the fee for disposal of waste materials. The item shall be calculated per m<sup>2</sup>.

#### **3.2.2.42 Dismantling of Sheet Metal Elements**

Careful dismantling of the gutters, rainwater pipes, flashings from windows, chimneys and other elements. Dismantle the metalwork, pack, load it on a truck and haul to a place designated by the Supervisor and located at AHD of up to 30 km away, and hand it over for his perusal. The item shall be calculated per m<sup>2</sup>.

#### **3.2.2.43 Dismantling of Sheet Metal Dome**

Remove the sheet metal dome from the roof in a safe manner, stack it into a pallet and haul to a place designated by the Supervisor and located at AHD of up to 30 km away and hand it over for his perusal. Collect the debris, take it outside the building, load it on a truck and haul to the city landfill located at AHD not exceeding 30 km, including payment of the fee for disposal of waste materials. The item shall be calculated per m<sup>2</sup>.

#### **3.2.2.44 Dismantling of Roof Windows**

Careful dismantling of the roof windows. Dismantle the roof windows, pack, load on a truck and haul to a place designated by the Supervisor and located at AHD of up to 30 km away and hand it over for his perusal. The item shall be calculated per piece.

#### **3.2.2.45 Dismantling of Metal Staircase Structure**

Dismantling of cca 3 m long and 1 m wide metal staircase structure in the basement. Carefully dismantle the metal structure, load on a truck and haul it to a place designated by the Supervisor and located at AHD of up to 30 km away. Collect the debris, take it outside the building, load on a truck and haul it to the city landfill located at AHD not exceeding 30 km, including payment of the fee for disposal of waste materials. The item shall be calculated per piece.

#### **3.2.2.46 Dismounting of Staircase Metal Structure in the Attic**

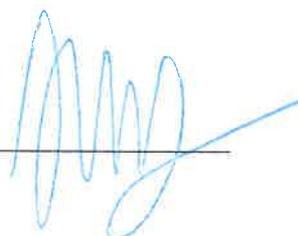
Dismounting of the staircase metal structure in the attic and of other steel elements, 9m long, and 1m wide (the elevator structure, fence, sheeting rail, etc.). The metal structure shall be carefully dismantled, loaded on a truck and transported to the place designated by the Supervisor located at AHD of up to 30 km. Debris shall be collected, taken out, loaded on a truck and transported to the city landfill located at AHD of up to 30 km, including payment of the fee for disposal of waste materials. The item shall be calculated per piece.

#### **3.2.2.47 Dismantling of sheet Metal Flashing of Cornices**

Careful dismantling of the existing sheet metal flashing of cornices, window wall sills and drips, full set with bearing steel supports and wood pallet strips, medium expanded area of the flashing: 50 cm. The item shall be calculated per m<sup>2</sup>.

#### **3.2.2.48 Dismantling of Air Conditioning Units**

Careful dismantling of the air conditioning units forms the facade and inside the building, including packing, horizontal and vertical transport inside and outside the building, and loading and transport to the place designated by the Supervisor, located at AHD not exceeding 30 km. The item shall be calculated per piece.



### 3.2.3 EARTH WORKS

#### General

Before excavation works, the Contractor will undertake all necessary preparations and preliminary works, as described under sections 3.2.1 and 3.2.2.

Prior to the commencement of the works, the Contractor will prepare site organization plan that must be approved by the Authorities, prior to start of works. The Contractor is solely responsible for all works including also the responsibility for industrial and safety measures all the time during the progress of the works. The Contractor will propose the method of strutting but, regardless of the approval, the Contractor will be responsible to ensure safety of work and proper technical solution.

The excavation will include both digging by mechanical equipment and by hand, shoring, or other safety measures applied to excavation areas, sorting (if possible) and adequate disposal of the excavated material, at least 1 meter aside of the excavation.

If the excavation is performed in the area of existing infrastructure (electric, communication, hydro technical, gas pipeline, etc.), and their routes are not for any reasons marked on the site, then it will be necessary to determine the position of these installations before the commencement of any works. The location of such installations, if there is no any other way, will be found by excavation of the pipeline (by cut grips). After determining the exact position of these installations, the Contractor will make geodetic survey of installations and send the report to the competent organization in charge for maintenance of these installations. The Contractor must not start the excavation unless the Contractor is sure that the subject installation is "clean" as regards the existing installations. The Contractor will be liable to compensate any damage incurred to these installations during excavation works.

The excavation must be made fully in accordance with dimensions from the design.

The excavation works will include securing and bracing of lateral excavation sides, as well as securing of the adjacent structures, which will be made according to the land nature, that is, position of the adjacent structures, and all labour related to these activities will be on Contractor's expense. The Contractor will be liable to proceed entirely according to the Geo-Engineering Study.

During execution of works, it is necessary to be careful to avoid undercuts or damage of excavation slopes. In any such case, the Contractor will be responsible to make additional repair. However, the Contractor is not entitled to any damage or payment for larger or unforeseen work. Such work involves cleaning of all inappropriate places in earth material, which require special protecting solutions, such as protection of incoherent areas, pockets, water sources, etc.

Land surveying control and measurements necessary for excavation works must be made accurately and fully in compliance with the design. The costs for performance of all necessary surveying works will not be separately calculated and paid. The Contractor will include all these costs in the unit price. If there are any survey beacons on the route for excavation, the Contractor will return them at his own expense into their original state. During excavation, if necessary, the inclination and slope can be changed depending on the properties of material, geologic conditions and other events that Contractor must take into consideration during work.

#### Types of Excavations in Respect of Underground Water

"Dry" excavation will mean all excavations made above the groundwater table at the time of the excavation. In case of an eventual inflow equal, or less, than 3 l/sec per 50 m<sup>2</sup> of an excavated surface, the Contractor will drain excavation pit by use of sufficient capacity pumps, without any extra payment.

"Excavation beyond groundwater table" will mean all excavations made beyond and/or at the groundwater table at the time of the excavation, or excavation in case on inflow higher than 3 l/sec per 50 m<sup>2</sup> of the excavated surface. Occurrence of an "excavation beyond groundwater table" has to be identified and recorded, and only

then and during the period of time of such circumstances these types of works will be accepted under the item "Water Pumping from excavation Pit".

### **Types of Excavated Material**

Following the Civil Engineering Norms (GN.200), applicable in the Republic of Serbia, the excavated material is grouped in seven categories:

- "Earth material" is a collective name for all types of excavations made by equipment or by hand, however, without blasting (except for excavations with the pick-hammer). Removal of any stone pieces smaller than 1 m<sup>3</sup>, which may be found in this material, will not be paid separately. This material falls in the group of 2nd and/or 3rd category
- "Rocks" is a collective name for all types of excavations made by Pneumatic equipment
- If excavation is made by equipment or by hand with systematic use of Pneumatic tools, but without blasting, this material falls in the group of 4th and/or 5th category
- If excavation is made by equipment or by hand with systematic use of Pneumatic tools, but with occasional blasting, this material falls in the group of 6th category
- If excavation is made with systematic blasting, this material falls in the group of 7th category.

### **Use of Excavated Material**

The excavated material (if it meets technical requirements) will be used for the construction of fill, musters, embankment and backfilling of the trench. Therefore, during digging operation, it is necessary to sort and separate (if possible) fine granulated and earth material to one side of the excavation and larger stones to the other side.

The price of storage will also include arrangement of embankment of the temporary stockpiling location after the completion of the works.

All surplus material will be deposited at the Permanent Site Stockpiling Locations. The Contractor will remove material from site free from any additional charges.

### **Measurement and Payment of Excavation**

The calculation of the performed works will be made per cubic metre of the excavated material in the natural state. In case of over excavation, which will be noted, instruction in that respect will not constitute any ground for variation order and/or any additional payment, including C 8/10 fill up to designed level, in case of foundation pits, or similar structures.

Payment will be made per unit prices for particular items of excavation.

The price includes excavation, levelling and cleaning of the bottom and sides of the excavation, and in case of trenches with discarding of material (small particles and earth to one side and larger stones to another side of the trench), all required strutting and other means of supporting and protection of excavation, all required material for digging including insurance of traffic, crossings, etc.

The price of excavation, in case of "dry" excavation (as referred above), will include pumping of trench water and/or ground water, rainwater and/or water of any other origin.

#### **3.2.3.1 Manual Excavation of Soil, Class III**

Manual excavation of soil, class III, at a depth of up to 1m for the purpose of soil replacement, inspection, injection, desiccation of the building foundations, including carrying of the excavated materials outside the building, in order to form the basement area. Perform the assumed and required rehabilitation of the existing foundations of the building by cleaning the visible reinforcement, fabrication of new walls and beams in the basement. Excavate manually up to the depth of the levels required according to the final design. Cut lateral ends properly, level the bottom in the basement No. 2. Vertical transport shall be performed four times by manual reloading over four construction gangways (staircase landings) since there is no possibility to install a crane (since there is no possibility to use machines to perform vertical transport). The excavated soil shall be

carried out of the building manually and to the street over timber gangways, loaded on a truck and transported to the city landfill located at AHD of up to 30 km, including payment of the fee for the disposal of waste materials. Calculated per m<sup>3</sup> of natural soil.

### **3.2.3.2 Manual Excavation of Class III Soil for Foundation of Staircase, Elevator and Walls**

Manual excavation of class III soil for the foundation of the staircase, the elevator and walls planned in the basement. The excavation shall be performed in accordance with the design and specified levels. Cut and brace lateral ends in an appropriate manner and level the bottom. Transport the excavated material in a wheelbarrow out of the basement from level -7.90, two levels under the ground floor level, load on a truck and transport it to the city landfill located at AHD of up to 30 km, including payment of the fee for the disposal of waste materials. Calculated per m<sup>3</sup> of natural soil.

### **3.2.3.3 Fabrication of Working Platforms (construction gangways)**

Fabrication of working platforms (construction gangways) at the height of 1.5m from the excavated flooring in the basement No. 2 area, including throwing out of excavated soil by manual reloading described in Item 2. - Earth works. Fabricate the platforms using battens and tubes for wooden scaffolding or made of timber. Calculated per m<sup>2</sup>.

### **3.2.3.4 Procurement, Spreading and Compaction of Gravel**

Procurement, spreading and compaction of gravel in a 10-cm thick layer underneath the horizontal RC slab to be fabricated in the basement No.2. The gravel pad shall be finely levelled with a tolerance of  $\pm 1$  cm height-wise. Gravel must be transported manually from the street and manually transported downstairs over the construction gangways for the expulsion of excavated wet soil from the basement. Calculated per m<sup>3</sup>.



### 3.2.4 MASONRY WORK

#### General

All masonry work will be carried out fully in accordance with the Final Design, Structural Analysis and applicable regulations and standards.

ICS Number	Standard Number	Year	TITLE
91.080.30	SRPS ISO 9652-2	2005	Masonry - Part 2: Unreinforced masonry design by simple rules
	SRPS ISO 9652-5	2003	Masonry - Part 5: Vocabulary

All materials used for masonry works will have specified quality and valid test certificates.

MATERIAL	ICS Number	Standard Number	Year	TITLE	
Clay Bricks and other products	brick	91.100.25	SRPS B.D1.011	1987	Massive clay bricks – Technical requirements
			SRPS B.D1.012	1988	Radial clay bricks – Technical requirements
			SRPS B.D1.014	1987	Facing massive clay bricks - Technical requirements
			SRPS B.D1.014/1	1995	Hollow clay facing bricks and blocks - Technical requirements - Amendments
			SRPS B.D1.015	1987	Hollow clay bricks and blocks Technical requirements
			SRPS B.D1.015/1	2003	Hollow clay bricks and blocks - Technical requirements Amendment 1
			SRPS B.D1.016	1987	Solid light-clay bricks – Technical requirements
			SRPS B.D1.017	1987	Perforated light-clay bricks and clay blocks - Technical requirements
Lime	91.100.10	SRPS B.C1.020	1981	Building lime	
Cement	91.100.10	SRPS B.C1.010	1997	Hydraulic masonry binder - Technical requirements	
		SRPS B.C1.011	2001	Cement - Portland cement, Portland composite cement, plastfurnace cement, pozzolanic cement, composite cement - Definition, classification and technical conditions	
		SRPS B.C1.012	1996	Cement - Delivery, packing and storage density	
		SRPS ENV 197-1	1997	Cement - Composition, specifications and conformity criteria - Part 1: Common cements	
	91.100.15	SRPS B.B8.040	1982	Crushed aggregate for concrete and mortar - Examination of aggregate with organic impurities	
		SRPS B.B8.042	1984	Natural and crushed aggregate - Chemical analysis of aggregates for concretes and mortars	

		SRPS EN 13139	2007	Aggregates for mortar
Gypsum	91.100.10	SRPS B.C1.030	1966	Building gypsum
Water	91.100.30	SRPS U.M'.058	1985	Concrete - Water for making concrete - Technical requirements and testing methods

All used to bind materials and protecting agents must be of specified quality and possess test certificates.

ICS Number	Standard Number	Year	TITLE
91.100.10	SRPS U.M8.002	1997	Mortars for masonry and plastering - Test methods

All masonry work must be carried out by qualified manpower, using the latest tools and machines for this kind of works.

Brick laying will be made by skilled and with qualified workman power, and according completely to current regulations following technical descriptions and will be made precisely according to the Design, with regular joints in horizontal rows, without pieces, smaller than 1/4 of brick, 1/2 of hollow clay block, as the case may be.

Vertical and horizontal joints will be completely filled by mortar, without hollows. Thickness of mortar in joints will not be over 10-12 mm. Joints at outer surface will be left empty for about 15- 20 mm, to provide better adhesion of mortar during plastering. Any mortar leaking will be removed immediately. Trimming of bricks and/or hollow clay blocks will be made by machinery equipment.

The Contractor, on his own expense, will provide for all required and necessary material related to manufacturing shattering, formworks, scaffolding, as well as for timbering & bracing of trenches & foundation pits. The Contractor will remain owner of all said material and equipment and will be under the obligation to remove the same from the Site when required. Any instruction intended to improve safety and/or quality of shattering, formworks, scaffolding and timbering & bracing of trenches & foundation pits will not be considered as an additional work under any circumstances.

ICS Number	Standard Number	Year	TITLE
79.040	SRPS D.B1.025	1982	Technical log - Wood scaffolding
91.080.20	SRPS U.C9.400	1984	Timber scaffolding and formwork - Technical requirements
	SRPS U.C9.500	1984	Timber protection in constructions - Technical requirements
91.200	SRPS EN 39	1995	Steel tubes for working scaffolding - Requirements and tests
	SRPS EN 74	1995	Coopers, loose spigots and base plates for use in working scaffolding and false work made of steel tubes - Requirements and test procedures

### Measurement and Payment

The calculation of the works is made per measurement unit, indicated for each item. The unit price will include execution of the complete item (supply of material, external, all horizontal and vertical site transport, safety measures, scaffolding, required formwork) and other activities necessary for proper execution of the works.

#### 3.2.4.1 Brickwork on Load-Bearing Walls d=38cm

Procurement, transport of solid bricks to the building, including manual vertical and horizontal transport of bricks to the basements No. 2 and No. 1, over the mounted construction gangways for reloading of materials. Construction of walls on load-bearing walls, of d=38cm, using solid bricks in the basements No. 2 and No.1, laid in cement-lime mortar. Calculated per m<sup>3</sup>.

#### **3.2.4.2 Brickwork on Load-Bearing Walls d=25 cm**

Procurement, transport of solid bricks to the building, including manual vertical and horizontal transport of bricks to the basements No. 2 and No. 1, over the mounted construction gangways for reloading of materials. Brickwork on load-bearing walls, of d=25 cm, using solid bricks in the basements No. 2 and No. 1, laid in cement-lime mortar. Calculated per m<sup>3</sup>.

#### **3.2.4.3 Brickwork on New Light Expanded Concrete Walls**

Procurement, transport to the building, including manual vertical and horizontal transport of bricks, construction of walls of various thicknesses and on various positions in accordance with design. Walls shall be executed using regular bond. Clean the joints up to the depth of 2cm. Openings shall be excluded from the calculation. Horizontal beams (so called serklaz) are to be executed during construction of the wall. Calculated per m<sup>3</sup>.

#### **3.2.4.4 Manual Cleaning of Visible Reinforcement on Ceilings of Basement and Basement 2**

Manual cleaning of visible reinforcement on ceilings, in the basements No. 1 and No. 2, ring beams and columns in the basements using wire brush and applying anti-corrosion paint for steel, prior to re-plastering of these surface areas in the basements with special cement mortar for reparation works. Calculated per m<sup>2</sup>.

#### **3.2.4.5 Spraying of Concrete Surface Areas with Cement Slurry after Cleaning Reinforcement**

Spraying of Concrete Surface Areas with Cement Slurry in Basement and Basement 2 After Cleaning Reinforcement. Procurement, transport of materials required for applying of spatter-dash to concrete surface areas, using a mixture of cement slurry and coarse-sieved river sand in the ratio 1:1. Wet the concrete surface area before applying the spatter-dash. Calculated per m<sup>2</sup> of spread surface.

#### **3.2.4.6 Plastering of Walls of Basement, Basement 2 and Striped Walls on Floors**

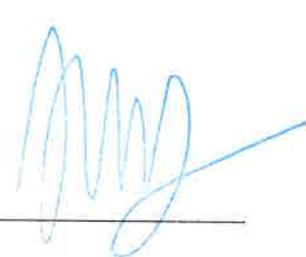
Procurement, transport of materials required for coarse and fine plastering (two coats) of all surface areas in the basements No. 1 and No. 2, using cement-lime mortar in the ratio 1:3:9. The first layer (grout) shall have the thickness of d=2cm, consisting of sieved gravel "size 1" and cement. Keep stirring the mortar to avoid formation of cement slurry. Cut mortar to achieve better bonding of the finish mortar (floating coat). The second layer shall be made of fine-grade sieved sand and cement with addition of water. Use the floating coat on pre-wet the surface. Plastered surface areas must be straight, without ruptures or waves and edges must be sharp and straight with mounted AL angle laths. Take due care to prevent quick drying and overheating of mortar, in addition to horizontal and vertical transport inside the building over the mentioned construction gangways. Calculated per m<sup>2</sup> of plastered surface.

#### **3.2.4.7 Plastering of Grips in Existing Mortar**

Plastering of the grips after installations of pipes and cables. Plastering is done in cement lime plaster 1:3:6. Grip width is average 10 cm. Plaster is to be executed in line with existing walls. Calculated per m<sup>2</sup>.

#### **3.2.4.8 Fabrication of Cement Screed d=6 cm Reinforced with Mesh Q188**

Procurement of materials, fabrication of the cement screed, of d= 6cm, as a base for finished floors. The material for the screed shall be made of sieved gravel, "size 1", in the ratio 1:3. The screed shall be reinforced using light Q mesh, 188. The rate for the floor shall include the reinforcement. Calculated per m<sup>2</sup> of the floor.



### 3.2.5 CONCRETE WORKS

#### General

All concrete work will be carried out fully in accordance with the Final Design, Structural Analysis, approved Design for execution (PZI) and applicable regulations and standards.

The Design will define concrete quality, separately for each Structural Analysis item, including crushing strength after 28 days (C) and class of concrete, frost resistance, as well as number of test samples for each Structural Analysis item, provided that the Contractor will be obliged to observe the above stated fully.

Natural aggregate mixture will be used for concrete C12/15 at the maximum; all other concrete quality will be made from separated aggregate, which will be comprised under the unit price.

The concrete will be mixed mechanically from aggregate, cement and water, following the prevailing regulations:

MATERIAL	ICS Number	Standard Number	Year	TITLE
Cement	91.100.10	SRPS B.C1.011	2001	Cement - Portland cement, Portland composite cement, plastfurnace cement, pozzolanic cement, composite cement - Definition, classification and technical conditions
		SRPS B.C1.012	1996	Cement - Delivery, packing and storage density
		SRPS ENV 196-4	1995	Methods of testing cement - Quantitative determination of constituents
		SRPS ENV 197-1	1997	Cement - Composition, specifications and conformity criteria - Part 1: Common cements
Natural and crushed aggregate	91.100.15	SRPS B.B2.009	1986	Raw materials for production of aggregates for concrete – Technical requirements
		SRPS B.B2.010	1986	Aggregate for concrete – Technical requirements
		SRPS B.B3.100	1983	Crushed aggregates for concrete and asphalt
		SRPS B.B8.040	1982	Crushed aggregate for concrete and mortar - Examination of aggregate with organic impurities
		SRPS B.B8.042	1984	Natural and crushed aggregate - Chemical analysis of aggregates for concretes and mortars
	91.100.30	SRPS U.M1.057	1984	Concrete - Grading of aggregate for concrete
Water	91.100.30	SRPS U.M1.058	1985	Concrete - Water for making concrete - Technical requirements and testing methods
Admixtures for concrete	91.100.30	SRPS U.M1.034	1996	Concrete - Admixtures for concrete - Definitions and classification
		SRPS U.M1.035	1996	Concrete - Admixtures for concrete - Quality requirements and testing
		SRPS U.M1.037	1981	Concrete - Admixtures for concrete - Previous testing

The aggregate has to be clean, without organic impurities, or earth (acceptable up to 2% by weigh), otherwise the aggregate has to be washed.

The Contractor will be under obligation to present evidence on quality of material used for concrete manufacturing (cement, aggregate, water).

The concrete quality and executed works have to be in accordance with prevailing regulations:

ICS Number	Standard Number	Year	TITLE
91.100.30	SRPS ISO 2736-1	1997	Concrete tests - Test specimens - Part 1: Sampling of fresh concrete
	SRPS ISO 2736-2	1997	Concrete tests - Test specimens - Part 2: Making and curing of test specimens for strength tests
	SRPS ISO 4012	2000	Concrete - Determination of compressive strength of test specimens
	SRPS ISO 4013	2000	Concrete - Determination of flexural strength of test specimens
	SRPS ISO 4109	1997	Fresh concrete - Determination of the consistency - Slump test
	SRPS ISO 4848	1999	Concrete – Determination of air content of freshly mixed concrete – Pressure method
	SRPS U.M1.051	1987	Concrete - Production control in the concrete plants
	SRPS U.M1.021	1997	Concrete - Classification by compressive strength
	SRPS U.M1.055	1984	Concrete - Method of test for resistance of concrete against freezing
	SRPS U.M1.015	1998	Concrete – Concrete, hardened – Determination of the depth of penetration of water under pressure
	SRPS U.M1.016	1992	Concrete - Method of test for resistance of concrete against freezing and thawing
	SRPS U.M1.045	1987	Transport and delivery of ready-mixed concrete
SRPS U.E3.050	1981	Prefabricated concrete units - Technical requirements for manufacture and installation	

Prior to start concrete works, the Contractor will be under the obligation to prepare design documentation for concrete fully in accordance with the article 232 of the Rules on concrete and reinforced concrete (BAB 87).

The concrete works will be executed by qualified work force only, respecting technical specifications and prevailing regulations, national and international standards for such type of works.

Prescribed number of samples will be tested by an accredited testing laboratory on the Contractors expense.

Additional sample testing may be required, up to the maximal number of samples foreseen under the regulation. Fee of any additional expense, if additional sample testing is required, exceeding the maximal number of samples foreseen under the regulation, in case of unsatisfactory test results expenses will be on the Contractor, otherwise, in case of positive test results, the Contractor will bear expenses of such additional testing.

Concreting will not commence prior to the inspection and acceptance of the reinforcement.

Only plain concrete casting will be done manually in 5-15 cm layers, the reinforced concrete casting will be done mechanically with vibration, provided that vibration equipment will be in accordance with the type of structure and described in approved MS for these types of works.

### Measurement and Payment

Measurement is per m<sup>3</sup>, or m<sup>2</sup>, as the case may be, and the price includes: concrete form, moving of mobile scaffolding, installation and dismantling of the stationary scaffolding, form positioning and removal, concrete protection and wetting, water pumping (at inflow of 30 litres per minute), supply of required cranes and installations, tools, hauling means, material labour force, costs of hauling, maintenance, use of tools and all mechanical devices during operation, as well as costs for their removal upon completion of the works.

Recesses cutting of holes and grips for lighting installations, waterworks, sewerage, vapour heating and similar are included within the price. Casing, which is, scrambling of grips for installations, is Contractor's responsibility and it is not paid separately.

Namely, prices per item in the pricelist from this chapter cover fully completed work per unit measure, except the price for fabrication of the reinforced and prestressed concrete, where reinforcement and cables will not be included in the concrete price.

Contractor procures the form material, and it remains in his possession upon use. During reuse, material must be cleaned from concrete, dirt, etc. Prior to concreting, plate must be wetted well.

Form, supports and scaffolding are not paid separately, but are included in concreting unit price.

### CONCRETE CLASSIFICATION FOLLOWING NEW SRPS U.M1.021

ICS Number	Standard Number	Year	TITLE
91.100.30	SRPS U.M1.021	1997	Concrete - Classification by compressive strength (new ISO 3893:1977)

The common regulation for concrete in the Republic of Serbia is "the Regulation for Concrete and Reinforced Concrete" (always referred to as: "BAB87"), meanwhile, applying newly introduced 1997 standard SRPS U.M'.021 (Concrete - Classification by compressive strength - new ISO 3893:1977) and "BAB87", certain discrepancies appear. The newly introduced standard SRPS U.M'.021 refers to EUROCODE 2 and EN 206 and subsequently defines 28 days compressive strength [ N/mm<sup>2</sup> ] using, either a cylinder Ø15 cm/30 cm test sample, or a 15-cm cube test sample, compared to the 20-cm cube test sample usual and prescribed for "BAB87".

Please find below a table presenting and emphasising such discrepancies:

"MB" following "BAB 87"	Concrete Classes following EUROCODE 2 & EN 206	28 days Compressive Strength [ N/mm <sup>2</sup> ]	
Cube 20 cm	C [Cylinder Ø15cm/30 cm] / [Cube 15 cm]	Cylinder Ø15 cm/30 cm	Cube 15 cm
MB 10	C 8/10	8	10
MB 15	C 12/15	12	15
MB 20	C 16/20	16	20
MB 25	C 20/25	20	25
MB 30	C 25/30	25	30
MB 35	C 30/37	30	37
MB 40	C 30/37	30	37
MB 45	C 35/45	35	45

MB 50	C 40/50	40	50
MB 55	C 45/55	45	55
MB 60	C 50/60	50	60

ICS Number	Standard Number	Year	TITLE
91.080.40	SRPS EN ISO 15630-1	2008	Steel for the reinforcement and prestressing of concrete - Test methods - Part 1: Reinforcing bars, wire rod and wire
	SRPS EN ISO 15630-2	2008	Steel for the reinforcement and prestressing of concrete - Test methods - Part 2: Welded fabric

### 3.2.5.1 Dismantling and Vertical and Horizontal Transport of Timber Window Lintels and Door Lintels and Fabrication of Prefabricated Reinforced-Concrete Door Lintels and Window Lintels

Dismantling and vertical and horizontal transport of timber window lintels and door lintels, which have served as beams for the walls to prevent caving-in. These must be dismantled due to being worn out and they shall be replaced by prefabricated elements. Procurement, transport of materials, fabrication of prefabricated reinforced-concrete door lintels and window lintels of the cross section of 12x20 cm, using MB 30 class of concrete, 2.40 m long. Door lintels shall be reinforced with 4 R,  $F_i=10$  mm and stirrups of  $F_i=6$ mm at every 15cm, subjected to good vibration and lifted as finished elements, mounted in window lintels and door lintels and, depending on wall thickness, 2-4 pieces with overhang (anchoring) of 20 cm each in structural walls. Door lintels shall serve as beams for the brick walls to prevent caving-in of walls. The reinforcement shall be quoted separately. Calculated per  $m^3$ .

### 3.2.5.2 Fabrication of Reinforced Concrete Slabs $d=16$ cm

Procurement of materials, fabrication of reinforced concrete slabs, of  $d=16$ cm, using MB 30 class of concrete. Fabricate forms with strong back and reinforce the slabs with reinforced steel fabric (mesh) according to the design, details and the structural analysis. Cast and cure concrete according to the regulations. The rate shall include the formwork, while the reinforcement shall be quoted separately. Calculated per  $m^2$  of the cast slab.

### 3.2.5.3 Fabrication of Reinforced-Concrete Sloping Slabs and Staircase Landings

Procurement of materials, fabrication of reinforced-concrete sloping slabs and staircase landings using MB 30 class of concrete. Fabricate forms for the sloping slabs and staircase landings and reinforce according to the design, details and the structural analysis. Cast and cure concrete according to the regulations. The rate shall include the formwork, while the reinforcement shall be quoted separately. Calculated per  $m^3$  of concrete.

### 3.2.5.4 Fabrication of Concrete Semi-Circular Staircase in the Basement and the Ground Floor

Procurement of materials, fabrication of the concrete semi-circular staircase in the basement and on the ground floor of  $d=20$  cm, with foundation support, of MB 30 concrete class, in the corresponding formwork, including reinforcement with R rebar of  $F_i=16$ mm. Calculated per  $m^3$ .

### 3.2.5.5 Fabrication of RC Staircase for Connection of the Lobby and the Sanitary Block

Procurement of materials, fabrication of the RC staircase for connection of the lobby and the sanitary block from level -3.60 to -2.15 using MB 30 class of concrete, in the corresponding formwork, and reinforced with  $R_{\phi}=10$  and  $R_{\phi}=12$ mm. The reinforcement shall be quoted separately. Calculated per  $m^3$ .

### **3.2.5.6 Fabrication of the Concrete Staircase in the Courtyard from Level -2.20 to Level +1.40**

Procurement of materials, fabrication of the concrete staircase in the courtyard from level -2.20 to level +1.40. The staircase shall be two flight stairs, the concrete used shall be of MB 30 class, in the corresponding formwork, and reinforced with R rebar of  $f_i=14\text{mm}$  and  $f_i =12\text{mm}$ . The reinforcement shall be quoted separately. Calculated per  $\text{m}^3$ .

### **3.2.5.7 Fabrication of the Concrete Sub-Base for the Foundation Slab of the Elevator Shaft**

Procurement of materials, fabrication of the concrete sub-base for the foundation slab of the elevator shaft and the staircase foundation including the vestibule, the concrete sub-base of  $d=10\text{ cm}$ . Calculated per  $\text{m}^2$ .

### **3.2.5.8 Fabrication of the Concrete Cover, of $d=8\text{cm}$**

Procurement of materials, fabrication of the concrete cover, of  $d=8\text{cm}$ , MB 20 concrete class, to protect the waterproofing. Calculated per  $\text{m}^2$ .

### **3.2.5.9 Fabrication of the RC Concrete Slab, of $d=12\text{cm}$ , in the Basement and Basement 2**

Procurement of materials, fabrication of the RC concrete slab, of  $d=12\text{cm}$ , in the basement premises of I and II storey of the basement, MB 20 class concrete shall be used with added additive against penetration of moisture. Calculated per  $\text{m}^2$ .

### **3.2.5.10 Fabrication of the Concrete Floor, of $d=15\text{cm}$**

Procurement of materials, fabrication of the concrete floor, of  $d=15\text{cm}$ , connected to the newly built staircase and the existing structure, using MB 20 class of concrete, reinforced and skimmed. The floor shall be reinforced using mesh Q reinforcement, according to the design and the structural analysis and it shall be concreted. The rate for the floor shall include the reinforcement. Skim the upper surface area to achieve trowel finish and cure the concrete. Calculated per  $\text{m}^2$  of the floor.

### **3.2.5.11 Fabrication of RC Walls in the Elevator Shaft, of $d=15\text{cm}$**

Procurement of materials and fabrication of RC walls in the elevator shaft, of  $d=15\text{cm}$ , on all the storeys, in the corresponding formwork. Calculated per  $\text{m}^2$ .

### **3.2.5.12 Fabrication of RC Tie Beams on All Floors in Accordance with Calculation**

Procurement of materials, fabrication of RC tie beams on all the floors between the existing structure and the new wall, reinforced B500B, various dimensions of MB 30 concrete class, in the corresponding formwork. The reinforcement shall be quoted separately. Calculated per  $\text{m}^3$ .

### **3.2.5.13 Fabrication of RC Beams on Positions of Cutting through Ground Floor Slab**

Procurement of materials, fabrication of RC beams on ground floor on position of cutting through slab, reinforced B500B, various dimensions of MB 30 concrete class, in the corresponding formwork. The reinforcement shall be quoted separately. Calculated per  $\text{m}^3$ .

### **3.2.5.14 Fabrication of Concrete Slabs for Closing Skylight $d=15\text{cm}$**

Procurement of materials and fabrication of concrete slabs for closing of a part of the light well, including anchoring and chiselling-in of perimeter beams, which support the slabs along each floor. The slab shall be of the thickness:  $d=15\text{cm}$ , reinforced with R rebar, in the corresponding formwork, including concrete curing. The reinforcement shall be quoted separately. Calculated per  $\text{m}^2$ .

### **3.2.5.15 Fabrication of RC Beams on the Existing Masonry Wall $\text{bx}d=50\text{x}40$ and $\text{bx}d=70\text{x}40$**

Procurement of materials, fabrication of RC beams of dimensions  $\text{bx}d= 50\text{x}40\text{ cm}$  and  $\text{bx}d=70\text{x}40\text{ cm}$  on the existing wall, using MB 30 concrete class, in the corresponding formwork, reinforced with B500B. The rate

shall include fabrication of the formwork, strutting, and labour. The reinforcement shall be quoted separately. Calculated per m<sup>3</sup>.

#### **3.2.5.16 Fabrication of the RC Attic Slab, of d=20 cm**

Procurement of materials, fabrication of the RC attic slab, of d=20 cm, in adequate formwork, reinforced with reinforced steel fabric (mesh), concreted using MB 30 class of concrete. Concrete shall be cured to avoid overheating and cracking. The reinforcement shall be quoted separately. Calculated per m<sup>2</sup>.

#### **3.2.5.17 Fabrication of the RC Beams in Attic for Slab Support and RC Girders in the Attic**

Procurement of materials, fabrication of the RC beams and RC girders, in mid wall and end walls in the attic to receive the load from the attic slab, in the corresponding formwork. The beam dimensions: 30x35cm. Calculated per m<sup>3</sup>.

#### **3.2.5.18 Fabrication of 20x40 cm RC Columns in the Attic**

Procurement of materials, fabrication of 20x40 cm RC columns in the attic, in corresponding formwork, using MB 30 class of concrete. Calculated per m<sup>3</sup>.

#### **3.2.5.19 Fabrication of Horizontal RC Beams (Serklaz)**

Procurement of materials, transport and fabrication of concrete horizontal beams (serklaz) with RC MB 30 class in plain formwork. The reinforcement shall be quoted separately. Calculated per m<sup>3</sup> of the floor.

#### **3.2.5.20 Concreting of the Courtyard Using MB20 Concrete d=15cm**

Concreting of the courtyard using MB 20 concrete, of d=15cm, including all the preliminary work, with all the required slopes directed to gully gratings (storm drainage system). Calculated per m<sup>2</sup>.

#### **3.2.5.21 Fabrication of Concrete Foundation Supporting the Hydrocell**

Procurement of materials, fabrication of concrete foundation supporting the hydrocell, of d=20 cm in the basement, MB 30 class concrete. The foundation slab must be separated by the expansion joint from the remaining concrete.

The reinforcement shall be quoted separately, according to the structural analysis and technical solution.

Calculated per m<sup>2</sup> of the floor.

#### **3.2.5.22 Fabrication of the RC Baluster, of d=15cm**

Procurement of materials, fabrication of the RC baluster, of d=15cm, which rests on the floor slab and follows the staircase parapet along the perimeter of the staircase.

Concrete shall be of MB 30 class, in the corresponding formwork, reinforced with Q reinforced steel fabric (two-sided), the height of the baluster is 110 cm.

Calculated per m<sup>2</sup>.

#### **3.2.5.23 Reinforcement of Floor Ribs with Carbon Tapes**

Reparation of the floors made of ribbed slabs in accordance with structural calculation from PZI design using carbon tapes 50x1.4mm with modulus of elasticity 1650 N/mm<sup>2</sup> with base preparation with structural repair plaster. Calculation per m<sup>2</sup>.

#### **3.2.5.24 Application of Carbon Tapes in Areas of Beam and Rib Supports**

Application of carbon sheets width 300 mm in area of beam and rib support in accordance with structural calculation from PZI design. Calculation per m<sup>2</sup>.

### **3.2.5.25 Application of Fire Protection Coating**

Coating of fire protection material on the carbon tapes in accordance with manufacturer instructions. Calculation per m<sup>2</sup>.

### **3.2.5.26 Cutting of Seismic RC Walls in the Existing Masonry Walls**

Cutting of new seismic reinforced concrete walls in existing masonry walls in accordance with structural calculation. Necessity and exact positions of the walls shall be determined during preparation of the Design for execution. Depth of cutting is 15-20 cm. Calculation per m<sup>3</sup> together with removal of debris on landfill with AHD up to 30 km, including payment of the fee for disposal of waste materials.

### **3.2.5.27 Cutting Through Ceilings and Horizontal Beams**

Cutting through ceilings and horizontal beams (Serklaz) without damaging the existing reinforcement for connection of seismic walls and existing structure has to be done with proper equipment and according to calculations. Calculation per m'.

### **3.2.5.28 Fabrication of New Seismic Walls in Single Side Formwork**

Procurement of materials, fabrication of the RC new seismic walls, of d=15cm, in single side smooth formwork. Concrete shall be of MB 30 class, reinforced with B500B in accordance with structural calculation. Reinforcement is paid separately. Calculated per m<sup>3</sup>.

### **3.2.5.29 Procurement, Cutting, Bending and Placing of Reinforcement in the New Seismic Walls**

Procurement of materials and placing of B500B ribbed reinforcement in the new seismic walls in accordance with structural calculation. Clean the reinforcement, cut it to measure, and place it according to the design and structural details.

Calculated per kg of the reinforcement.

### **3.2.5.30 Placing of Ribbed Reinforcement B500B and Mesh**

Procurement of materials and placing of B500B ribbed reinforcement, of the cross section of Ø6-16mm. Clean the reinforcement, cut it to measure, bend it, and place it according to the design and structural details. Procurement of materials and placing of Q 196 and Q 503 reinforced steel fabric (mesh).

Clean the reinforcement, cut it to measure, and place it according to the design and structural details.

Calculated per kg of the reinforcement.



### 3.2.6 ROOF STRUCTURE

#### General

Timber properties and quality must follow regulations under the Code for designing and building of wooden constructions and prevailing standards:

ICS Number	Standard Number	Year	TITLE
79.040	SRPS D.B1.025	1982	Technical log - Wood scaffolding
	SRPS EN 1611-1	2007	Sawn timber - Appearance grading of softwoods - Part 1: European spruces, firs, pines, Douglas fir and larches
91.080.20	SRPS U.C9.200	1984	Structural timber design – Solid timber construction a fibre building boards construction
	SRPS U.C9.200/1	1987	Structural timber design: solid timber construction and fibre building boards constructions - Amendments
	SRPS U.C9.300	1984	Structural timber design – Glued laminated members – Technical requirements
	SRPS U.C9.400	1984	Timber scaffolding and formwork - Technical requirements
	SRPS U.C9.500	1984	Timber protection in constructions - Technical requirements
	SRPS U.D0.001	1983	Materials for timber structures - Technical requirements for materials
	SRPS U.D0.001/1	1987	Materials for timber structures - Technical requirements for materials - Amendments
91.080.20	SRPS U.C9.200	1984	Structural timber design – Solid timber construction and fibre building boards construction
	SRPS U.C9.200/1	1987	Structural timber design: solid timber construction and fibre building boards constructions - Amendments
	SRPS U.C9.300	1984	Structural timber design – Glued laminated members – Technical requirements
	SRPS U.C9.400	1984	Timber scaffolding and formwork - Technical requirements
	SRPS U.C9.500	1984	Timber protection in constructions - Technical requirements
	SRPS U.D0.001	1983	Materials for timber structures - Technical requirements for materials
	SRPS U.D0.001/1	1987	Materials for timber structures - Technical requirements for materials - Amendments

Contractor will be under the obligation strictly to apply all necessary general procedures from the Safety Code, firefighting procedures and all other safety related standards. The entire scope of such procedures will be delivered to the, before commencing any work.

For manufacturing any constructive element, the Contractor will follow details from technical specifications for works execution and from structural analysis for dimensions prepared in PZI (design for construction).

All carpentry works must be done according to the Design details. Timber must be health, dry, suite to current technical descriptions, with dimensions defined in the design and bonding defined in bonding analysis.

All laboratory tests must be done prior to any providing of material. Preliminary testing will prove the timber quality. Testing costs will be borne by the Contractor. Responsibility for stability of scaffolding, supports, shuttering, formwork, bracing and timbering will be Contractor's obligation, fully and solely as defined under current laws and regulations.

Roof construction and face elements, must be done from conifer wood, I class, nominal humidity up to 12%. Protective paints, colour and shade according to accepted samples, will coat visible wooden parts. Roof elements, construction timber and elements for hanging of suspended ceilings, must be protected against rotten, insects, fungicide and fire, by adequate coatings.

Holdings, anchors, anchor plates and all other jointing and fixing elements, must be protected against corrosion and decaying.

The Contractor will be under the obligation regularly to clean and remove waste material, also to remove any residual waste after finishing of works.

### **Measurement and Payment**

Certificate for payment calculate on the base of really finished quantities. Unit price include all necessary material, including all rests caused by cutting, producing, transport, building, workman power, auxiliary material, usage of mechanization, expenses of electric energy, etc.

#### **3.2.6.1 Fabrication and Installation of Classical Wood Roof Structure**

Procurement, transport (both to the construction site and internal), fabrication of the classical wooden roof structure in accordance with structural calculation.

Calculation per m<sup>2</sup> of the horizontal roof projection.

#### **3.2.6.2 Installation of Two Layers of OSB Panels**

Procurement, transport (both to the construction site and internal) to the place of installation of 2 layers of OSB panels, including placing on the load-bearing laminated structure. The panels shall be 2.2cm thick, connected by wood screws to the load-bearing structure. The OSB panels shall be placed as the base (the lower panel) for thermal insulation (rock wool of d=22cm) and as the protective (upper) panel. (Two panels make up a sandwich where thermal insulation is in between). Above the thermal insulation, a vapour barrier shall be placed. Calculated per m<sup>2</sup>.

#### **3.2.6.3 Installation of Wooden Batons 5x3cm Over Wood Beams and OSB Panels**

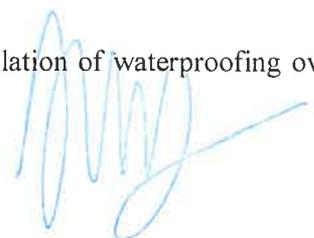
Procurement, transport (both to the construction site and internal) to the place of installation and mounting of posts of the dim. of 5x3cm, on thus placed roof structure to create an air layer in the roof. The height of the air layer for ventilation shall be 5cm. The posts shall be fastened by screws. Calculated per m<sup>2</sup>.

#### **3.2.6.4 Installation of Rock Wool**

Procurement, transport (both to the construction site and internal) to the place of installation of rock wool (KRS  $\varsigma=32$  kg/m<sup>3</sup>), d=22cm thick, placing between two OSB panels interconnected by distancers. The calculation shall also include a vapour barrier placed on the upper surface of rock wool. Calculated per m<sup>2</sup>.

#### **3.2.6.5 Fabrication and Installation of Roof Cover**

Fabrication and installation of the roof cover made of copper sheeting with installation of waterproofing over OSB panels. Calculation per m<sup>2</sup>.



## 3.2.7 INSULATION WORK

### General

ICS Number	Standard Number	Year	TITLE
91.120.30	SRPS U.M3.220	1987	Non-strew, bitumen impregnated roofing felt - Quality requirements
	SRPS U.M3.231	1988	Bituminous strip with porous glass mat - Quality requirements
	SRPS U.M3.232	1987	Bituminous roofing felt - Quality Requirements
	SRPS U.M3.234	1988	Bituminous strip with glass fibre fabrics - Quality requirements
	SRPS U.M3.244	1990	Materials for damp-proof courses, for hot process
	SRPS U.M3.300	1989	Bitumen strip for welding - Quality requirements
	SRPS U.M8.080	1990	Bitumen strip for waterproofing - Method of testing

#### 3.2.7.1 Painting of the Walls in the Basement

Prepared walls in the basement shall be cleaned, washed, and all the joints filled with waterproof mixture or waterproof plaster flush with the brick (flat pointing). Calculated per m<sup>2</sup>.

#### 3.2.7.2 Waterproofing of Walls

Walls shall be coated twice using waterproofing single-component universal penetrating coating for waterproofing of concrete and walls. The coating shall protect the basement sections from humidity and shall allow for plastering of surfaces over it. Calculated per m<sup>2</sup>.

#### 3.2.7.3 Applying of the Waterproofing Single-Component Universal Penetrating Coating

On the prepared basement sub-floor, the waterproofing coating shall be applied twice, based on single-component universal penetrating coating for waterproofing of the basement floors in two coats, fully in accordance with the good engineering and operating practices. Calculated per m<sup>2</sup>.

#### 3.2.7.4 Applying of the Protective Coating for Sealing of Concrete Floors

On the executed sub-floor, a protective coating for sealing of concrete floors shall be applied for the purpose of improvement of their resistance to abrasion, prevention of cracks and the like. Coating shall be cementitious and/or synthetic improved materials -single-component acrylic emulsion for sealing of concrete revetments. Calculated per m<sup>2</sup>.

#### 3.2.7.5 Treatment of All the Runs in the Basement Walls

Special treatment of all the runs in the basement walls where entry and exit of infrastructure installations is planned. Treatment shall be performed using sealants for that purpose polyurethane or similar, extrudable swelling water stop. Calculated per piece.

#### 3.2.7.6 Execution of the Levelling Course

Procurement of materials, execution of the levelling course for placing of the waterproofing of flooring plaster of d=6cm. Calculated per m<sup>2</sup>.

### **3.2.7.7 Placing of the Waterproofing of PVC-Based Synthetic Membrane**

Procurement of materials, transport to the construction site and internal transport to the place of installation for execution and placing of the waterproofing of PVC-based synthetic membrane, UV unstable, d=6cm thick, type WP1100-20HL; the membrane shall be freely laid and welded in layers, of weld width of 3cm, lap of 8cm. The waterproofing shall be freely placed horizontally laid, while vertical ends (plinths) shall be ended by means of discs or sheet metal elements and fixed to the wall at a height of minimum 15cm. The rate shall include all the ancillary elements, putties as well as protection of the geotextile, its upper and lower layers. Calculated per m<sup>2</sup>.

### **3.2.7.8 Execution of the Protective Waterproofing of Cement Screed**

Procurement of materials, execution of the protective waterproofing of cement screed of d=5cm, reinforced with polypropylene fibres. Calculated per m<sup>2</sup>.

### **3.2.7.9 Execution of the Waterproofing in Sanitary Blocks and Kitchenettes**

Procurement of materials, execution of the waterproofing of sanitary blocks (bathrooms) and kitchenettes of using hydro stop elastic material. The waterproofing shall be done over completely dry and clean base. The base must be clean, strong, load-bearing, stable, sufficiently levelled, without greasy stains and without loose particles that could reduce the degree of binding of the material. The two-component highly elastic cement-bound watertight material shall be applied using a wide brick layer's brushing minimum two coats. This item shall include all the required materials, preparation of the base, and tools required for the work. Calculated per m<sup>2</sup>.

### **3.2.7.10 Waterproofing Underneath Floors of Sanitary Blocks**

Waterproofing underneath the floors of sanitary blocks, including its raising onto the wall at the height of 10 cm. Previous coating with bitulite and gluing of bituminous strip of 4 cm to the sub-floor and mutually with laps of 10 cm. Calculated per m<sup>2</sup> of finished waterproofing.

### **3.2.7.11 Waterproofing of Passable Flat Roofs**

Waterproofing of the passable flat roofs above the heated space, consisting of a vapour barrier, a layer for wash made of light weight concrete of minimum thickness of d= 8 cm of the waterproofing membrane. The instructions of the manufacturer of materials shall be fully adhered to. Calculated per m<sup>2</sup> of finished waterproofing, including all the required flashings, finish and fixing materials and connecting of the waterproofing with gutters. Calculated per m<sup>2</sup>.

### **3.2.7.12 Thermal Insulation of Walls on the Courtyard Side of the Building**

Thermal insulation of external walls on the courtyard side of the building, externally using rock wool FKD-S ( $\zeta=115 \text{ kg/m}^3$ ) of d=6 cm, placing of a plastic mesh in adhesive, including anchoring of the same with raw plugs. Calculated per m<sup>2</sup>.

### **3.2.7.13 Thin-Coat Plastering of the Courtyard-Facing Facade**

Thin-coat plastering of the courtyard-facing facade after installing the thermal insulation, including precise treatment of the finish layer. Calculated per m<sup>2</sup>.

### **3.2.7.14 Skimming of the Courtyard-Facing Facade**

Skimming of the courtyard-facing facade twice using skimming plaster for external weather conditions, building in of angle staffs around all the openings, including grinding twice. Calculated per m<sup>2</sup>.

### **3.2.7.15 Painting of the Facade**

Execution of the finish layer (painting of the facade in the shade determined by the Institute for the Protection of Cultural Heritage). Painting shall be done using water-based facade paint in two coats. Calculated per m<sup>2</sup>.

### **3.2.7.16 Thermal Insulation of Interior Walls**

Thermal insulation of interior walls towards the unheated space – the porte-cochere on the internal side using rock wool of  $d=6$  cm ( $\zeta=30$  kg/m<sup>3</sup>). Calculated per m<sup>2</sup>.

### **3.2.7.17 Thermal Insulation of the Floor Structure above Unheated Basement**

Thermal insulation of the floor structure above the unheated basement by mounting panels of rock wool of  $d=7$  cm ( $\zeta=80$  kg/m<sup>3</sup>) on the lower side of the floor structure by their gluing and then anchoring using adequate awl plugs, all according to the instructions of the manufacturer of materials. Calculated per m<sup>2</sup>.

### **3.2.7.18 Thermal Insulation of the Floor Structure above the Heated Space**

Thermal insulation of the floor structure above the heated space by mounting panels of rock wool of  $d=16$  cm ( $\zeta=80$  kg/m<sup>3</sup>) on the lower side of the floor structure by their gluing and then anchoring using adequate raw plugs, all according to the instructions of the manufacturer of materials. Calculated per m<sup>2</sup>.

### **3.2.7.19 Thermal Insulation of the Sloped Roof**

Thermal insulation of the sloped roof above the heated space by mounting panels of rock wool of  $d=18$ cm KRS ( $\zeta=32$  kg/m<sup>3</sup>). Calculated per m<sup>2</sup>.

### **3.2.7.20 Acoustic Insulation of the Walls of the Passenger Lift**

Acoustic insulation of the walls of the passenger lift from the level of the ground floor to the attic with a layer of hard rock wool (120 kg/m<sup>3</sup>) of  $d=5$  cm, including mounting of gypsum boards of  $d=1.25$  cm. The rate shall also include the substructure for gypsum boards, as well as all the required bandaging and sanding.

Calculated per m<sup>2</sup> of completely mounted and treated area.

### **3.2.7.21 Installation of Hard Rock Wool of $d=7$ cm**

Procurement, transport and installation of hard rock wool of  $d=7$ cm (120kg/m<sup>2</sup>), including placing of PVC foil with a lap underneath the screed (flooring plaster), which shall serve as thermal and sound insulation on all the floor structures of the building. Calculated per m<sup>2</sup>.

## 3.2.8 JOINERY WORK

### General

If not stated otherwise, installation method will be dry, anchoring by screws through pre-drilled holes in frames. Connection between wall and frames filled with polyurethane foam.

ICS Number	Standard Number	Year	TITLE
91.060.50	SRPS EN 1026	2008	Windows and doors - Air permeability - Test method
	SRPS EN 1027	2008	Windows and doors - Water tightness - Test method
	SRPS EN 1121	2008	Doors - Behaviour between two different climates - Test method
	SRPS EN 12365-1 (en)	209	Building hardware - Gasket and weather-stripping for doors, windows, shutters and curtain walling - Part 1: Performance
	SRPS ENV 1627 (en)	2008	Windows, doors, shutters - Burglar resistance - Requirements and classification
	SRPS EN ISO 10077-1 (en)	2008	Thermal performance of windows, doors and shutters - Calculation of thermal transmittance - Part 1: General
91.180	SRPS U.F4.020	1990	Finishing works in building - Building-in of building joinery - Technical requirements
	SRPS U.F2.025	1992	Finishing work in building - Glazier works - Technical requirements

All measures given under any item of Technical Specification are related to wall opening dimension (i.e. masonry dimensions). All provided dimension will be subject of on-site verification by the Contractor before commencing production or other works.

### 3.2.8.1 Fitting of Interior Entrance Doors

Procurement of materials, fabrication, and transport (to the construction site), internal transport within the building to the place of fitting of interior entrance doors to premises, of medium-density fibre board (MDM). The door leaf shall be of honey comb type placed in a wooden fir frame, lined with MDM of d=6mm, on both sides, veneered with oak veneer. The door jamb width shall be 20 cm, the width of telescopic battens, 10 cm. The door jamb and trims shall be of MDM veneered as the door leaf (telescopic door jamb). All the surfaces shall be treated with a transparent coating, including the required preparation and preliminary work; the finish coat shall be transparent varnish, semi-matte, applied in two coats (polyurethane varnish). Doors shall be equipped with finish hardware, fitting hinges, chromium-plated handles. All the doors shall be equipped with cylinders locks ("elzet") with three keys each. Door leaves shall be solid, door jambs provided with weather strips through which a thread has been mechanically inserted in order to avoid subsequent dragging at joints. Calculated per piece.

- 3.2.8.1.1 Door of the dim. of 101/230 cm
- 3.2.8.1.2 Door of the dim. of 120/250 cm
- 3.2.8.1.3 Door of the dim. of 140/250 cm (double)
- 3.2.8.1.4 Door of the dim. of 160/250 cm, double, double-leaf, the door jamb depth of 70 cm between the door leaves
- 3.2.8.1.5 Door of the dim. of 91/230 cm
- 3.2.8.1.6 Door of the dim. of 81/210

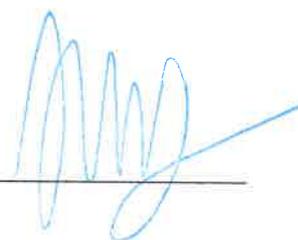
### **3.2.8.2 Installation and Fitting of Double-Casement Double-Glazed Windows and Double Doors**

Procurement of materials, workshop manufacture, transport to the building, internal transport within the building, of the subject windows, which shall be double-glazed double-casement ones and double-leaf doors (double), installation, fitting, and fine adjustment of the same. for fabrication of windows, the first-class fir or spruce (timber of class ČPČ) shall be used. The windows shall possess wooden shutter blinds and on all the windows and balcony doors the height of the shutter blind box shall be 30 cm. Windows shall be provided with an aluminium drip underneath the external casements, wooden window boards underneath interior ones. Width of the frame between external and interior casements shall be 25cm. Windows shall be glazed with glass of d=6mm. They shall be provided with finish hardware of high-quality aluminium, of tilt turn type for one casement and adequate finish hardware for the fanlight. After the final treatment, wooden surfaces shall be treated with transparent coating up to the equalization of the shade and shall be varnished with polyurethane varnish. The first dimension designates the width of a window, the second dimension, the height of a casement, the third one, the height of the fanlight, and the fourth dimension, the height of the shutter blind box. Calculated per piece.

- 3.2.8.2.1 Windows of the dim. of 110/195+30 cm
- 3.2.8.2.2 Windows of the dim. of 170/145+70+30 cm
- 3.2.8.2.3 Windows of the dim. of 170/150+70+30 cm
- 3.2.8.2.4 Windows of the dim. of 170/150+80+30 cm
- 3.2.8.2.5 Balcony doors of 170/230+70+30 cm

### **3.2.8.3 Fabrication and Fitting of Single-Glazed, Single-Casement and Double-Casement Windows**

Procurement of materials, fabrication, and fitting of single-glazed, single-casement and double-casement windows with aluminium shutter blinds. The six-chamber windows shall be made of PVC profiles in the colour of golden oak, according to the joinery scheme and details. The finish hardware shall be at the option of the Supervisor. Between a cement and the frame, a weather strip of synthetic rubber shall be placed. on the lower side of the frame, an aluminium drip for water runoff shall be placed. Window casements shall be glazed with heat-insulating Float glass of d=4+12+4mm, placed over a pad of stainless material and faced-up using adequate putty. Calculated per piece.



- 3.2.8.3.1 Window of the dim. of 45/120 cm
- 3.2.8.3.2 Window of the dim. of 60/180 cm
- 3.2.8.3.3 Window of the dim. of 65/120 cm
- 3.2.8.3.4 Window of the dim. of 65/130 cm
- 3.2.8.3.5 Window of the dim. of 65/140 cm
- 3.2.8.3.6 Window of the dim. of 80/70 cm
- 3.2.8.3.7 Window of the dim. of 90/90 cm
- 3.2.8.3.8 Window of the dim. of 100/75 cm
- 3.2.8.3.9 Window of the dim. of 100/90 cm
- 3.2.8.3.10 Window of the dim. of 100/140 cm
- 3.2.8.3.11 Window of the dim. of 120/90 cm (double-casement)
- 3.2.8.3.12 Window of the dim. of 170/145+70+30 cm
- 3.2.8.3.13 Window of the dim. of 200/90 cm (double-casement)
- 3.2.8.3.14 Window of the dim. of 130/150 cm (double-casement)
- 3.2.8.3.15 Window of the dim. of 110/150+60 cm (double-casement)
- 3.2.8.3.16 Window of the dim. of 80/135+70 cm
- 3.2.8.3.17 Window of the dim. of 90/165+75 cm
- 3.2.8.3.18 Window of the dim. of 115/190+20 cm (double-casement)
- 3.2.8.3.19 Window of the dim. of 75/115+65 cm
- 3.2.8.3.20 Window of the dim. of 120/125+80 cm (double-casement)
- 3.2.8.3.21 Window of the dim. of 110/135+85 cm (double-casement)
- 3.2.8.3.22 Window of the dim. of 80/110+85 cm
- 3.2.8.3.23 Window of the dim. of 95/135+70 cm
- 3.2.8.3.24 Window of the dim. of 155/135+70 cm (double-casement)

#### **3.2.8.4 Fitting of the Single-Glazed Portals**

Procurement of materials, fabrication, transport to the building, internal transport within the building, and fitting of the single-glazed portals. The portals shall be of the first-class and dry fir or spruce, of the dim. of 320x250+70 cm. The portals shall be glazed with heat-insulating float glass of d=4+12+4mm, placed over pad of stainless material and faced-up using adequate putty. The portals, prior to the fitting, shall be protected by a transparent impregnating coating. Calculated per piece.

### 3.2.8.5 Fitting of the Semi-Automatic Sliding Partition Wall

Procurement, fabrication, transport to the building, internal transport within the building to the place of fitting of the semi-automatic sliding partition wall of the dim. of 5010x3300 mm with sound insulation, consisting of mutually independent operating panels based on closed sandwich technology with a stable embracing structure and the acoustic core. In order to guarantee efficient sound insulation and stable tightness of panels towards the floor and the ceiling rail, all the panels shall possess extracting, and/or retracting sealing strips in the above-mentioned zones. In order to reduce the load-bearing structural parts down to the economic dimension as required, the weight of the panels shall not exceed 50 kg/m<sup>2</sup> for the sound insulation coefficient of Rw 48B. The thickness of panels shall be 90 mm. The colour of sealing strips in the upper and the lower zones of a panel shall be in a nuance of black colour. Sound insulation shall correspond to the requirements and standards for designing of this type of the buildings. Sealing strips in the lower and the upper zones of each panel, apart from having the role of ensuring a better sound insulation, shall also compensate the unevenness in the floor, by a stable and designed pressure. Sealing strips shall be made of polyurethane parts. The material of vertical male-female contacts shall be high-strength aluminium, intended for the highest requirements with respect to acoustics and stability. In order to achieve tolerance in the floor and in the area of the ceiling, the travel of sealing strips in the upper zone shall be maximum 20 mm and, in the lower zone, maximum 30 mm. Sliding rubber sealants shall not be allowed. Exceptionally secure fixing of panels shall be accomplished by a combination of male-female type of aluminium profiles. The structure of convex-concave profiles shall achieve free resistance of the panel fixing. No additional mechanical elements when fixing panels shall be allowed. The finish panel partition wall must be designed as telescopically equalizing panel. Each panel shall be suspended on a connecting point (carriage) sliding inside the aluminium ceiling rail. Multiple carriages shall be fixed to the panels with horizontal ball bearings with shock absorbing bolts. The slide aluminium rail shall enable easy procedure of management of panels with insignificant noise presence. No additional rail linings shall be allowed. In order to enable unobstructed functioning of the partition wall, the following criteria shall be taken into consideration: the slide rail shall be fixed to the structural, load-bearing element (e.g. steel structure, concrete slab, etc.) by means of a steel suspension structure. Fabrication of the steel substructure shall be the obligation of the Contractor. Applied materials shall be protected by an anticorrosion compound. Above the slide rail and substructure (in the suspended ceiling) there shall be a sound barrier, which shall be in compliance with the sound insulation coefficient of the actual wall. The sound barrier should be clean and sealed by joints and adapted to the guides as well as to the structural sections (untreated ceiling, wall). Making of the sound barrier shall be the obligation of the Contractor. The interspace between sound partitions should be packed with mineral wool. The joints towards the ceiling must be permanently elastically sealed. Calculated per piece.

### 3.2.8.6 Fitting of Windows into the Structure

Procurement of materials, fabrication, transport to the building, internal transport within the building, and fitting of windows into the structure (ALT 11 with the thermal break and the ALS 57 without the thermal break).

The casement-portal shall be of aluminium extruded profiles painted by applying the method of anodic treatment in the colour E-0.

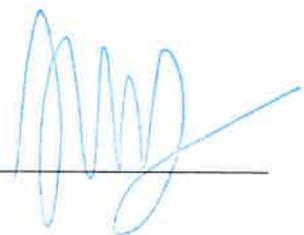
Casements-Portals shall be glazed with FLOAT heat-insulating glass of 4mm+12mm+4mm, of low emission, the heat transfer coefficient of  $k=1.1 \text{ W/m}^2\text{K}$ .

The windows shall be provided with finish hardware which shall enable fine adjustment of window casements in all the three directions as well as the tilt turn function of the primary casement.

Sealing of windows as well as panes shall be provided by EPDM profiled permanently elastic weather strips resistant to UV radiation.

All according to the proposed descriptions. Calculated per piece.

(SS items shall be with the thermal break and SU items shall be without the thermal break)



- 3.2.8.6.1 Basement II, SS 22, fixed portal with a double door, of the dim. of 4500x2500 mm
- 3.2.8.6.2 Ground floor, SU 22, portal, of the dim. of 1700x3200 mm
- 3.2.8.6.3 Ground floor, SU 23, fixed portal, of the dim. of 600x3200 mm
- 3.2.8.6.4 Ground floor, SS 32, fixed portal, of the dim. of 6500x4450 mm
- 3.2.8.6.5 Ground floor, SS 32, fixed portal, of the dim. of 4400x2850 mm
- 3.2.8.6.6 Floor I, SS, fixed portal with a double door (sandblasted glass), of the dim. of 10800x3350 mm
- 3.2.8.6.7 Floor II, SS 33, fixed portal, of the dim. of 6400x2750 mm
- 3.2.8.6.8 Floor II, SU 18, fixed portal with a double door (sandblasted glass), of the dim. of 10800x3350 mm
- 3.2.8.6.9 Floor III, SS 33, fixed portal, of the dim. of 6400x2750 mm
- 3.2.8.6.10 Floor III, SU 18, fixed portal with a double door (sandblasted glass), of the dim. of 10800x3350 mm
- 3.2.8.6.11 Floor IV, SS 33, fixed portal, of the dim. of 6400x2750 mm
- 3.2.8.6.12 Attic, SS 34, fixed portal, of the dim. of 2400x2550 mm
- 3.2.8.6.13 Attic, SS 35, fixed portal, of the dim. of 2500x2550 mm
- 3.2.8.6.14 Attic, SS 36, fixed portal with a single-leaf door, of the dim. of 2500x2550 mm

### **3.2.8.7 Transport and Fitting of Double Doors of AL Profiles with the Fanlight**

Procurement of materials, fabrication, transport, and fitting of double doors of AL profiles with the fanlight and two fixed leaves on the sides of the overall dim. of 5.2x4.8m, fixed leaves shall be 1m wide each, of the leaf width of 1.60 m in reinforced structure with adequate finish hardware, leaf height up to the fanlight shall be 3.00 m and the complete surface of leaves and fixed parts of doors shall be filled with AL panel up to the height of 3 m, and the rest shall be insulating glass of 4+16+4 mm, and the fanlight of 3.00 m of a height up to 4.80 m along the entire width shall be filled with insulating glass of 4+16+4 mm. Within the fanlight there shall be two openings provided with fanlight opening mechanisms 1m wide above the fixed leaves of adequate height, adjusted to the height of the fanlight. Calculated per piece.

### **3.2.8.8 Transport and Fitting of Double Doors with the Fanlight**

Procurement of materials, fabrication, transport, and fitting of double doors with the fanlight and two fixed leaves on the sides of the dim. of 4.8x3.8 m, 1m wide each, leaf width of 1.40 m in reinforced structure with adequate finish hardware, leaf height up to the fanlight is to be 2.80 m and the complete surface of leaves and fixed parts of the doors shall be filled with AL panel up to the height of 1m, and the rest shall be insulating glass of 4+16+4, and the fanlight of 2.80 m of a height up to 3.80 m along the entire width shall be filled with insulating glass of 4+16+4 mm. Within the fanlight, there shall be two openings provided with fanlight horizontal opening mechanisms (ventus) 1m wide above the fixed leaves of adequate height, adjusted to the height of the fanlight. Door dim.: 4.8 x3.8 m. Calculated per piece.

### **3.2.8.9 Fitting of Metal Fire Doors**

Procurement of materials, fabrication, certification of doors according to the standards SRPS ISO 834 and SRPS U.J1.160, transport, internal transport (both horizontal and vertical) within the building and fitting of

metal fire doors. A door leaf shall be made of steel profiles of 50x50 mm, leaf thickness shall be 65 mm with the certified fire protection infill, the leaf shall be lined on both sides with galvanized steel sheet metal of d=1.5 mm, having standard width of 100 mm, with the step 30 mm high, of steel sheet metal of d=3mm. Doors shall be equipped with all the required standard finish hardware: standard three-step fire resistant lock, Inox handles on both sides, a cylinder with three keys, two-piece Inox guards, three visible metal welded finely adjustable hinges per leaf of Fi=22, visible hydraulic door check. In the direction of evacuation, panic bar shall be mounted on a leaf, on double doors, the panic bar and hydraulic door checks shall be mounted on both leaves as well as the leaf closing sequence control device. Doors shall be provided with the intumescent fire sealing strip along the leaf as well as the smoke-proof rubber sealing the door frame. Finishing of doors shall be plasticisation according to RAL in the shade selected by the Supervisor. Door leaves shall be lined with veneered MDM painted in the colour same as other door leaves in the building. After the fitting, the wall shall be lined with finely adjustable trims. Calculated per piece.

Door dimensions shall be:

- I FIRE DOORS

- 3.2.8.9.1 Metal, solid, double F60, of the dim. of 140x260 cm

- 3.2.8.9.2 Metal, solid, single-leaf F 60, of the dim. of 101x250 cm

- 3.2.8.9.3 Metal, solid, double F 60, of the dim. of 160x250 cm

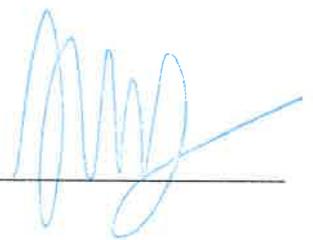
- 3.2.8.9.4 Metal, solid, double F 90, of the dim. of 160x250 cm

- 3.2.8.9.5 Metal, solid, single-leaf F 90, of the dim. of 101x250 cm

- II SMOKE-PROOF DOORS

- 3.2.8.9.6 Metal, solid, single-leaf F 30, of the dim. of 101x250 cm

- 3.2.8.9.7 Metal, solid, single-leaf F 30, of the dim. of 160x250 cm



## **3.2.9 STEEL AND METAL WORKS**

### **3.2.9.1 Dismantling of the Existing Ribbed Manhole Covers**

Dismantling of the existing ribbed manhole covers, on pavements of L profiles. Calculated per piece.

### **3.2.9.2 Replacement of the Existing Ribbed Manhole Covers**

Replacement of the existing ribbed manhole covers, on pavements with a reinforcement of L profiles. Calculated per piece.

### **3.2.9.3 Fabrication of L Profiles**

Fabrication of new L profile supports in the pavement of the dimensions of 1.20x1.20 m, including building in the concrete beam in contact with the pavement. Calculated per piece.

### **3.2.9.4 Fabrication and Mounting of the Wrought Iron Fence**

Fabrication and mounting of the wrought iron fence, on the portal next to the main entrance in the building. The fence shall be of the dim. The fence shall be of a semi-circular shape at the base, of  $h=110$  cm,  $l=190$  cm. The fence shall be decoratively ornamented. Possible welds shall be polished to perfection. Prior to the mounting, the fence shall be cleaned to remove corrosion and dust, impregnation shall be applied, and it shall be painted with the primer. After mounting of the fence, the primer shall be repaired and painted twice with the paint for metal, RAL 9004, signal black. Calculated per kg.

### **3.2.9.5 Dismantling of the Existing Wrought Iron Doors**

Dismantling of the existing wrought iron doors. Calculated per kg.

### **3.2.9.6 Dismantling of the Existing Entrance Door**

Careful dismantling of the existing entrance door, including the erection of the required reception scaffolding, because of the size and weight of the same, including previous dismantling of the existing glass, packing and disposal of the glass in a protected place within the building in order to avoid damage (greasing), and in order to be able to fit the same glass after the restauration of wrought iron doors and cast elements. Loading, transport of the dismantled entrance door to the workshop where all the elements shall be sandblasted. Replacement of wrought iron parts of the door leaves and all the parts damaged due to the impacts of weather and aging. All the added elements shall be ground and cleaned so that joints are invisible, complete surfaces shall be degreased, corrosion protection shall be applied, the same shall be ground again, and another layer of corrosion protection applied. Grinding shall be done using fine sandpaper, a coat of the primer shall be applied, varnished in two coats according to the sample taken with the required preliminary work. The door shall be transported and fitted at the entrance of the building, the existing glass shall be fitted according to the regulations for glazing work. Calculated per  $m^2$  of the developed area. DW shall be  $10.30 m^2$ . Calculated per piece.

### **3.2.9.7 Detailed Restauration of the Main Entrance Door**

Detailed restauration of the main entrance door in the windscreen section (according to the description as in the previous item). Calculated per piece.

### **3.2.9.8 Dismantling of the Steel Doors of 5.32x4.80 m**

Careful dismantling of the steel doors of box profiles type "Kumanovo", and pickled black sheet metal with two fixed leaves each 1m wide on the sides and two leaves each 1.60 m wide, the door height with the fanlight of 4.80 m. The total area of dismantled doors shall be 5.32x4.80 m. Doors shall be taken out, loaded on a truck and transported to a location of AHD of up to 30 km and handed over to the Employer. Calculated per piece.

### **3.2.9.9 Dismantling of the Steel Doors of 5.40x3.60 m**

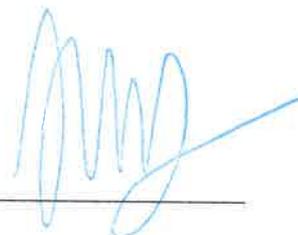
Careful dismantling of the steel doors of box profiles type "Kumanovo", and pickled black sheet metal with two fixed leaves each 1m wide on the sides and two leaves each 1.60 m wide, door height with the fanlight shall be 3.80 m. The total area of the dismantled doors shall be 5.40x3.60 m. The doors shall be taken out, loaded on a truck and transported to a location of AHD of up to 30 km and handed over to the Employer. Calculated per piece.

### **3.2.9.10 Steel Beams for Reinforcement of the Server Room Floor**

Procurement of material, transport, fabrication, installation and protection of steel beams made of steel profiles IPB1 (HEA) between ribs of ribbed slabs and beneath of terrace slab. Profiles will be placed on the previously prepared supports in the walls in accordance with approved structural calculation prepared by the Contractor. Steel to be protected with protective coating. Calculation per kg.

### **3.2.9.11 Grouting of Steel-Concrete Connection with Appropriate Material**

Grouting of the steel connection with concrete with appropriate structural plaster according to the design and accepted MS. Calculation per kg.



## 3.2.10 SHEET METAL WORKS

### 3.2.10.1 Dismantling of the Sheet Metal Dome Cladding

Careful dismantling of the sheet metal dome cladding, including taking of all the dismantled parts to the workshop. The wooden substructure to which sheet metal was fastened shall also be dismantled and a new one shall be made according to the existing dismantled sample, of dry matured fir timber fully executed in accordance with the existing one. In the workshop, based on the dismantled sheet metal parts, models of beech shall be made for nailing of the profiled upper cornice and preparations shall be made for attest section consisting of the complete arch segment around 100 cm wide. Upon the control and written approval by the Supervisor, the workshop fabrication of the cladding of copper sheet of  $d=0.8$  mm shall be completed and it shall be mounted on the prepared wooden base using copper fastening elements. Calculated separately per described item.

#### 3.2.10.1.1 Dismantling of the existing damaged sheet metal

Dismantling of the existing damaged sheet metal, including disposal to a depot designated by the Supervisor. Calculated per  $m^2$ .

#### 3.2.10.1.2 Dismantling of the dome substructure

Dismantling of the dome substructure, that was clad with copper sheet, taking it to the workshop, workshop fabrication of the new substructure, fully as the existing one. Calculated per  $m^2$ .

#### 3.2.10.1.3 Fabrication of a new wooden substructure of the dome

Fabrication of a new wooden substructure of the dome of dry beech timber, all according to the existing dismantled sample, and transport and mounting of the new dome. Calculated per  $m^2$ .

#### 3.2.10.1.4 Fabrication of the upper part of the dome

Fabrication of the upper part of the dome cornice, consisting of two semi-round (arched) and one-stepped section by mutual flaring connected strips of copper sheet 0.8 mm thick by pressing and nailing on the previously made beech model, which shall be included in the calculation per  $m'$  of cornice of the developed width (DW - developed width) of up to approximately 50 cm complete with the required binders of copper strips of adequate cross section.

#### 3.2.10.1.5 Fabrication of the dome cornice of copper sheet of $d=0.8$ mm

Fabrication of the dome cornice of copper sheet of  $d=0.8$  mm with added double row of arched imitations of twisted in strips, details executed as copperplate engravings, suspended on stylized keys fully identically according to the existing samples. Fitted over the beech model by pressing and nailing. The cornice of accentuated details shall be connected by way of flaring to the upper semi-arched cornice and the lower part of the cladding of the dome made of sheet metal strips and, to the wooden substructure by connecting copper strips 2/10 mm. The developed width of the cornice shall be 55 cm. All completely according to the description, including the binding accessory shall be paid for per binding piece.

#### 3.2.10.1.6 Fabrication of the flashing of the "dome" of copper sheet of $d=0.8$ mm

Fabrication of the flashing of the "dome" of copper sheet of  $d=0.8$  mm, 35 cm wide, copper flashing of the dome by double flaring of strips fixed to the above arched flashing in the upper zone connected with the copper flashing of the roof in the lower zone with accessory elements receiving copper strips of 1/8mm. Calculated per  $m^2$ .

#### 3.2.10.1.7 Re-mounting of the sandblasted

Re-mounting of the sandblasted and for painting prepared balustrade on the terrace of the “dome” and finish painting with black car varnish. Calculated per painted mounted m’ of the balustrade.

#### **3.2.10.2 Fabrication and Placing of Windowsills Underneath the Windows and Drip Copper Flashings on Cornices**

Fabrication and placing of window sills underneath the windows and drip copper flashings on cornices fastened to the base via built-in supports of copper strips of 2/10-15 mm. A drip of a windowsill or flashing of cornice or lintel beam must be protruding from the facade plane by min. 3 cm. Calculated per m’ depending on the developed width of the element. In the case of the cornice above the third floor, the horizontally lying gutter of 20/20 cm shall be separately calculated per m’ and separately the flashing sheet metal of the cornice per m’ too.

##### 3.2.10.2.1 Flashing of the cornice above the ground floor of an average developed width of 40 cm

Calculated per m’.

##### 3.2.10.2.2 Fabrication and placing of window sills under windows on the second and third floor of the developed width of approximately 30 cm

Calculated per m’.

##### 3.2.10.2.3 Flashing of the cornice underneath the windows on the fourth floor of a developed width of approximately 60 cm

Calculated per m’.

##### 3.2.10.2.4 Fabrication and mounting of the horizontally lying gutter with needed inclination on the cornice underneath the windows on the fourth floor

The gutter of dimensions of 20x20 cm with supports of copper flat bar of 3x25 mm. Calculated per m’.

#### **3.2.10.3 Sandblasting, Corrosion Protection, and Painting of the Existing Balustrades**

Sandblasting, corrosion protection, and painting with car varnish in coats up to the equalization with the shade of the existing balustrades of wrought iron-forged steel solid square bars on the so-called French door balconies. Calculated per piece.

#### **3.2.10.4 Fabrication and Installation of the Metal Doormat**

Fabrication and installation of the metal doormat, of the dim. of 0.50x0.80 m. Calculated per piece.

#### **3.2.10.5 Fabrication and Mounting of the Flagpole Bracket**

Fabrication and mounting of the flagpole bracket of steel sections of Ø35 mm, including its anchoring in the wall. Calculated per piece.

#### **3.2.10.6 Restauration of Wrought Iron Guard Rails**

Restauration of wrought iron guard rails for basement windows. Calculated per piece.

#### **3.2.10.7 Restauration of Wrought Iron Rails on Balcony Windows**

Restauration of wrought iron rails on the balcony windows on the first and the second floor. Calculated per piece.

#### **3.2.10.8 Dismantling of the Existing Facade Openings**

Dismantling of the existing facade openings, of the dim. of 0.70x0.70 m in the basement section towards the pavement in Krunska Street. Calculated per piece.

### **3.2.10.9 Fabrication and Mounting of New Façade Openings**

Fabrication and mounting of new facade openings of the dim. of 0.70x0.70 m in the basement section towards the pavement in Krunska Street. Calculated per piece.

### **3.2.10.10 Flashing of Arched Roof Plane Using Copper Sheet of d=0.8 mm**

Flashing of arched roof plane as well as of the levelled section of the roof with a wash of up to 15% using copper sheet of d=0.8 mm. The joint of sheet metal shall be a double fold in the longitudinal direction of the arched wash towards the street and the wash towards the courtyard. The sheet metal shall be flared and riveted at every 30 cm using copper rivets at all the joints with the cornice of the facade wall flashings and all the joints with X-shaped ornaments, leading in sheet metal and valleys. Underneath the same, a vapour barrier shall be placed against condensation and it shall eliminate the possibility of contact between the sheet metal and the finish OSB panels. Calculated per m<sup>2</sup>.

### **3.2.10.11 Flashing of Arched Roof Plane Using Copper Sheet of d=0.55 mm**

Flashing of arched roof plane using copper sheet of d=0.55 mm. The joint of sheet metal shall be a double fold in the longitudinal direction of the arched wash towards the street and the wash towards the courtyard.

the sheet metal shall be flared and riveted at every 30 cm using copper rivets at all the joints with the cornice of the facade wall flashings and all the joints with X-shaped ornaments, leading in sheet metal and valleys. Underneath the same, a vapour barrier shall be placed against condensation and it shall eliminate the possibility of contact between the sheet metal and the finish OSB panels.

Calculated per m<sup>2</sup>.

### **3.2.10.12 Dismantling of the Horizontal and Vertical Gutters**

Dismantling of the horizontal and vertical gutters of galvanized sheet metal, including careful taking down, of the attic sheet metal facade, sheet metal on cornices, roof, all the stories, windowsills, balcony window cornices, to the construction site spoil area, loading on a truck and transport to the city landfill of AHD up to 30 km, including payment of the fee for disposal of waste materials.

Calculated per m<sup>2</sup>.

### **3.2.10.13 Procurement and Cladding of AL Plastic Coated Trapezoidal Sheet Metal TR 40/240**

Procurement and cladding of AL plasticized trapezoidal sheet metal TR 40/240, of d=0.7 mm in the part of the roof having 5% of wash, of brown colour, with all the required ancillary materials for cladding. Calculated per m<sup>2</sup>.

### **3.2.10.14 Procurement and Placing of Anti-Condensation Felt**

Procurement and placing of fire resistant anti-condensation felt having antibacterial properties, underneath the TR sheet metal, with the lap according to the instructions of the manufacturer. Calculated per m<sup>2</sup>.

### **3.2.10.15 Fabrication and Mounting of the Bottom Flashing of the Central Dome**

Fabrication and mounting of the bottom flashing of the central dome using copper sheet of d=0.8mm and flashing that shall fasten the valley rafter to the existing stone facade of DW of 1.20 m. Calculated per m<sup>2</sup>.

### **3.2.10.16 Fabrication and Mounting of Copper Gutters of DW of 55 cm**

Underneath the lower flashing, a copper gutter of DW of 55 cm shall be fabricated and mounted with the sidewise fall and outlet to the existing gutters. The gutter shall be placed along the existing cornice on the level of the attic. Calculated per m<sup>2</sup>.

### **3.2.10.17 Fabrication and Mounting of Flashing of the Facade Cornice**

Fabrication and mounting of flashing of facade cornice using copper sheet of  $d=0.8$  mm. Calculated per m'.

3.2.10.17.1 DW of 40

3.2.10.17.2 DW of 55

3.2.10.17.3 DW of 66

### **3.2.10.18 Flashing of Windowsills Using Copper Sheet**

Flashing of windowsills using copper sheet, of  $d=0.8$  mm. Windowsill sides towards the wall and window frame shall be raised upwards up to 25 mm, fixed in the window frame by hammering in a spacing of 50-80 mm. The front side of a window sill shall be fixed to the wooden supports or the bases shall be drilled, plastic rawl plugs shall be put and fixed with brass wood screws on the wood screw head, a "bow" shall be placed and soldered. Underneath the sheet metal, a layer of sheathing paper shall be placed, which shall be included in the rate of windowsill. Calculated per m' of windowsill.

3.2.10.18.1 DW of 40

3.2.10.18.2 DW of 60

### **3.2.10.19 Flashing of Balcony Balustrades Using Copper Sheet**

Flashing of balcony balustrades using copper sheet, of DW of 48 cm, 0.8 mm thick. The drip shall protrude by three cm. Flashing shall be executed according to the details and instructions of the Supervisor. Underneath the sheet metal, a layer of isolation strips shall be placed, which shall be included in the rate of flashing.

Calculated per m'.

### **3.2.10.20 Fabrication and Mounting of Horizontal Semi-Circular Gutters of Copper Sheet**

Fabrication and mounting of horizontal semi-circular gutters of copper sheet, of DW 40 cm and of  $d=0.8$ mm. The gutters shall be connected using copper rivets, in one row so that the spacing does not exceed 3cm and shall be soldered with 60% of tin.

Clips of hanging gutters shall be made of copper flat bar of 25x4mm and riveted on the front side of gutters using copper rivets of  $\varnothing$  4mm, at a spacing of up to 80 cm.

Calculated per m' of gutter.

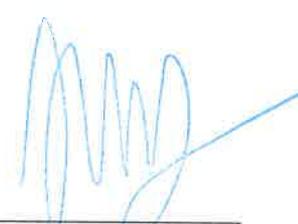
### **3.2.10.21 Fabrication and Mounting of Vertical Gutters of Copper Sheet**

Fabrication and mounting of vertical gutters of copper sheet, DW of 40 cm, and of  $d=0.8$  mm. The gutters shall be connected using copper rivets, in one rows that the spacing does not exceed 3cm and shall be soldered with 60% of tin. Clips of hanging gutters shall be made of copper flat bar of 25x4 mm, and riveted on the front side of gutters using copper rivets of  $\varnothing$  4mm, placed at a spacing of up to 70 cm.

Calculated per m' of gutter.

### **3.2.10.22 Fabrication and Mounting of Stylized Rain Water Hoppers**

Fabrication and mounting of a stylized rain water heads-hoppers (water collectors) of copper sheet of  $d=0.8$  mm according to the details and instructions of the Supervisor. Calculated per piece.



## 3.2.11 FLOOR-AND-WALL TILING

### General

ICS Number	Standard Number	Year	TITLE
91.100.25	SRPS EN 98	1992	Ceramic tiles - Determination of dimensions and surface quality
	SRPS EN 163	1994	Ceramic tiles - Sampling and basis for acceptance
91.180	SRPS U.F2.011	2000	Final work in building - Ceramic works - Technical requirements

The work shall be carried out by the labour qualified for this type of works. The selection of colours and design shall be made with the consent of the Supervisor, unless otherwise indicated in a separate description. Damaged tiles and tiles of poor quality must not be set. Only cement plaster of R=1:3 shall be used, made of clean screened sand and cement. The highest, finish row shall be set using ceramic tiles rounded on the upper side. Upon completion of tile setting, the entire surface shall be coated with white cement slurry. Tile setting of walls, columns, etc. shall be done according to the straight bond pattern or the joint pattern, which is specified in the item of works.

#### 3.2.11.1 Tile Setting of Wall Ceramic Tiles

Walls of bathrooms and kitchenettes: Procurement, transport to the building, horizontal and vertical transport within the building to the place of tile setting of wall ceramic tiles, of the dim. of 33 cm x 100 cm x 9.2 mm, of I class ceramics. They shall be set using tile setting adhesive in the bond pattern indicated by the Supervisor. The base shall be prepared and setting shall be executed evenly. Angle Al fillets shall be fixed on all the concave and convex angles, fillets shall have an adequate radius. The settles shall be pointed using pointing compound and the floor shall be cleaned. Calculated per m<sup>2</sup>.

#### 3.2.11.2 Tile Setting of Floor Granite Ceramics

Floors of bathrooms and kitchenettes: Procurement, transport to the building, horizontal and vertical transport within the building to the place of tile setting of floor granite ceramics, of the dimensions of 44.3 cm x 44.3 cm x 9.4mm. Granite ceramics shall be of the 1st class. They shall be set using tile setting adhesive in the bond pattern indicated by the Supervisor. The base shall be prepared and setting shall be executed evenly. The set tiles shall be pointed using pointing compound and the floor shall be cleaned. Angle Al fillets shall be fitted to all the corners (concave and convex), fillets shall have an adequate radius. Calculated per m<sup>2</sup>.

#### 3.2.11.3 Tile Setting of Anti-Slip Floor Ceramic Tiles

Terraces: Procurement, transport to the building, horizontal and vertical transport within the building to the place of tile setting of anti-slip floor ceramic tiles, of the dim. of 30x30 cm x 10 mm, the anti-slip class R11. Granite ceramics shall be of the 1st class. They shall be set using tile setting adhesive in the bond pattern indicated by the Supervisor. The base shall be prepared and setting shall be executed evenly. Set tiles shall be pointed using pointing compound and the floor shall be cleaned. Calculated per m<sup>2</sup>.

#### 3.2.11.4 Setting of Floor Ceramic Tiles

Floors of halls: Procurement, transport to the building, transport within the building to the place of setting and tile setting of floor ceramic tiles, of the dimensions of 59.6x59.6 cm x 10.5 mm, which shall be set using tile setting adhesive in the bond pattern indicated by the Supervisor. They shall be prepared according to the bond pattern and setting shall be executed evenly. The set tiles shall be pointed using pointing compound and the floor shall be cleaned. Calculated per m<sup>2</sup>.

## **3.2.12 STONEMWORK**

### **3.2.12.1 Fabrication and Installation of Stair Treads of Natural Stone**

Fabrication and installation of stair treads of natural stone (marble) d=5cm thick and 33cm wide having a rounded end - the same shall be treated as in the executed section of the ground floor, which shall be retained. The treads shall be placed on the prepared concrete treads in cement plaster. The length of a tread: 1.30 m. Calculated per piece.

### **3.2.12.2 Fabrication and Installation of Stair Risers of Natural Stone**

Fabrication and installation of stair risers of natural stone (marble) d=5 cm thick, including treatment as the existing section. Calculated per m'.

### **3.2.12.3 Fabrication and Installation of the Stair Treads of the Staircase**

Fabrication and installation of the stair treads of the staircase for compensation of the height difference in the basement I (the lobby and the sanitary block). The tread of d=5 cm, tread width of 28, with variable length of half-flights (1.5 – 3.0 m). Calculated per m'.

### **3.2.12.4 Fabrication and Installation of the Stair Risers of Natural Stone**

Fabrication and installation of stair risers of natural stone (marble) d=5cm thick with the riser height of 14cm. Variable length of half-flights (1.5 – 3.0), including treatment as the existing section. Calculated per m'.

### **3.2.12.5 Repair of the Existing Marble Stairs**

Repair of the existing marble stairs in the space of the basement up to the ground floor. The repair shall be done by specialized and trained masters for this part of the work. Damages of tread exist on rims and edges. Calculated per piece.

### **3.2.12.6 Replacement of Floor Marble Slabs in the Lobby with the Lift**

Replacement of floor marble slabs in the lobby with the lift. Dismantling of the existing and placing of new slabs. Calculated per m<sup>2</sup>.

### **3.2.12.7 Fabrication and Setting of Tiles of Natural Stone**

Fabrication and setting of tiles of natural stone (marble) of d=2cm, of the dim. of 40x40 and setting on concrete base in cement in the space of the porte-cochere, garage, and the courtyard. Calculated per m<sup>2</sup>.

### **3.2.12.8 Fabrication and Installation of Plinths**

Fabrication and installation of plinths in all the premises in cement plaster, height h=10 cm. Calculated per m'.

### **3.2.12.9 Fabrication and Setting of Tiles of Natural Stone**

Fabrication and setting of tiles of natural stone (marble) of d=2 cm, of the dim. of 40 cm x40 cm and setting on concrete base in cement screed. In all the premises and in front of the staircase on the floors (fire protection space). Calculated per m<sup>2</sup>.

### **3.2.12.10 Fabrication and Installation of Plinths**

Fabrication and installation of plinths h=10 cm high in the lobby separated by fire doors on all the floors. Calculated per m'.

### 3.2.13 PARQUET-FLOOR LAYING

#### 3.2.13.1 Applying of the Impregnation Layer

Cleaning of the screed bed to remove debris and dust, and procurement of materials, internal horizontal and vertical transport and applying of the impregnation layer (bonding cement screed and the levelling compound) on all the surfaces where parquet is to be installed. Calculated per m<sup>2</sup>.

#### 3.2.13.2 Laying of the Ready-Made Three-Ply Parquet of 11.5x158x2000 mm

Procurement, transport to the building, horizontal and vertical transport within the building, and laying of the ready-made three-ply parquet, laminate oak, hardwood, rustic, black faced-up, oiled, brushed, micro, of the min. dim. of 11.5x158x2000 mm. The base on which the floor shall be laid must be homogeneous and strong, humidity must not exceed 2.5%, according to the CM method, the floor temperature must not be below 10°C, and air humidity must not exceed 70%. Calculated per m<sup>2</sup>.

#### 3.2.13.3 Laying of the Ready-Made Three-Ply Parquet of 14x130x1092 mm

Procurement, transport to the building, horizontal and vertical transport within the building, and laying of the ready-made three-ply parquet, laminate oak, oiled, brushed, microV, 5Gc, of the min. dim. of 14x130x1092 mm. The base on which the floor shall be laid must be homogeneous and strong, humidity must not exceed 2.5%, according to the CM method, the floor temperature must not be below 10°C, and air humidity must not exceed 70%. Calculated per m<sup>2</sup>.

#### 3.2.13.4 Procurement and Installation of Oak Parquet Skirting Boards

Procurement and installation of oak parquet skirting board of h=6 cm, d=1 cm. The upper edge shall be rounded with front framing strip according to the detail from the design. The front framing strip shall be fixed with nails for parquet skirting boards, and the parquet skirting board, at every 80 cm, shall be anchored into the wall using rawl plugs, installation shall be executed with the necessary angled cutting of the edges. Calculated per m' of skirting board.



## **3.2.14 PLASTERING WORK**

### **3.2.14.1 Fabrication of the Non-Load-Bearing Partition Firewall**

Procurement and transport of materials to the building, internal transport through the building, fabrication of the non-load-bearing partition wall 150 mm thick; the double metal substructure shall be lined on both sides with double gypsum boards GKP (fire resistant boards). The partition wall shall be made of double galvanized sections of CW50+50; rock wool 100 mm thick shall be placed and lined with double fire-resistant gypsum boards, according to the design and instructions of the manufacturer. Joints shall be treated using skimming plaster and bandage tape according to the instructions of the Supervisor. Fire resistance class F90 min. Calculated per m<sup>2</sup> of completely executed partitions with thermal insulation and substructure for the doors.

### **3.2.14.2 Lining of Ducts with Three-Ply Fire-Resistant Gypsum Boards**

Procurement and transport of materials to the building, internal transport through the building and lining of ducts of the dim. of 60x80 cm with three-ply fire-resistant gypsum boards GKP (fire resistant board), fire resistance class F120, on the corresponding metal substructure, including bandaging and skimming of joints according to the instructions of the manufacturer. Calculated per m<sup>2</sup>.

### **3.2.14.3 Lining of Walls Using Gypsum Boards**

Lining of walls using gypsum boards GKP of d=12.5 mm, including execution of metal substructure fixed to the wall. The total thickness of the lining shall be d=62 mm. The metal substructure shall be executed of galvanized sections of CD 60x27mm, according to the design and instructions for gypsum boards. Joints shall be treated using skimming plaster and bandage tape, according to the instructions of the Supervisor. Calculated per m<sup>2</sup>.

### **3.2.14.4 Fabrication of the Suspended Monolithic Ceiling (corridors, waiting rooms, offices)**

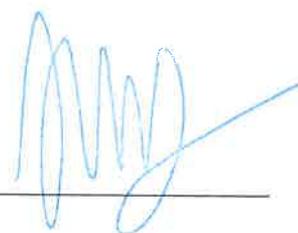
Fabrication of the suspended monolithic ceiling with metal substructure and lining using gypsum boards GKP-I of d=15 mm, (corridors, waiting rooms, offices). The double substructure shall be executed of load-bearing and prefabricated galvanized sections of CD 60x27 mm fixed with hangers to the load-bearing ceiling and lined with gypsum boards, according to the design and instructions of the Supervisor and the standard of the manufacturer. Joints shall be treated using skimming plaster and bandage tape according to the instructions of the manufacturer. Calculated per m<sup>2</sup>.

### **3.2.14.5 Fabrication of the Suspended Monolithic Ceiling (sanitary blocks, kitchenettes, part of the basement)**

Fabrication of the suspended monolithic ceiling with metal substructure and lining of the same with damp-proof gypsum boards GKP-I of d=15.5 mm, (sanitary blocks, kitchenettes, a part of the basement). The double substructure shall be executed of load-bearing and prefabricated galvanized sections of CD 60x27 mm fixed with hangers to the load-bearing ceiling and lined with gypsum boards, according to the design and instructions of the manufacturer and the standard of the manufacturer in sanitary blocks. Calculated per m<sup>2</sup>.

### **3.2.14.6 Fabrication of Casings Around the Built-in Flushing Cisterns**

Fabrication of casings around the built-in flushing cisterns of gypsum boards, two-ply ones, GKP-I of d=12.5 mm, including building in of the metal substructure fixed to the wall. The metal substructure shall be made of galvanized sections of CD 60 \* 27mm, according to the design and instructions of the manufacturer. Joints shall be treated using skimming plaster and bandage tape. Calculated per m<sup>2</sup>.



### 3.2.15 EXTERNAL PLASTERING

#### General

Calculation of quantities shall be made in compliance with the provisions provided in "average norms in civil engineering". The unit rate shall include all the costs of labour and materials, protective gear of workers, as well as external and internal transport. In the process of carrying out the work, only attested materials and products shall be used. Because of the location of the subject building (the very centre of the city, the street traffic frequency, aggravated transport of materials to the site, access because of the lack of space on the street-facing facades, access, storage of materials, small quantities transported to the site, inability to access inside the courtyard by trucks (small yard), and inability to mount a crane, the necessary simultaneous transport of unloaded debris, equipment, dismantled elements, models from the site, it shall be necessary to make serious preparations, to include increased costs caused by all of the above mentioned, which will certainly be reflected on the unit rate of the quoted works as well as on the overall sum of costs.

ICS Number	Standard Number	Year	TITLE
91.060.15	SRPS ISO 7361	2002	Performance standards in building - Presentation of performance levels of facades made of same-source components
91.180	SRPS U.F2.012	1978	Final work in building - Specifications for front side works

#### 3.2.15.1 Sandblasting of the Facade Plane with A Jet of Quartz Sand

Sandblasting of the facade plane with a jet of quartz sand of minimum 5 bar. All the surfaces shall be sandblasted so that the pressure, apart from washing and cleaning of the facade, can reveal damage on the same. Calculated per m<sup>2</sup> of the developed façade, plane without deductions of openings, which has to be protected by adequate protection.

#### 3.2.15.2 Mechanical Washing of the Facade Plane

Mechanical washing of the facade plane, jambs and cornices of the complete facade using a rotating brush for water jet and using detergents for degreasing, including careful rinsing with water. Calculated per m<sup>2</sup> of the developed facade plane with the deduction of openings in excess of 3 m<sup>2</sup>.

#### 3.2.15.3 Stripping of Damaged Parts of the Facade Plaster

Stripping of damaged part of the facade plaster on the sections where separation from the base has been established, specifically up to the base wall. on the sections of brick base, cleaning of joints shall be done up to min. two centimetres of depth, possible concrete sections shall be re-picked. Calculated per m<sup>2</sup>, according to the following rules:

- Stripped areas below 0.25 m<sup>2</sup> shall be calculated as 0.25 m<sup>2</sup>;
- Stripped areas from 0.25 to 0.6 m<sup>2</sup> shall be calculated as 0.6m<sup>2</sup>;
- Stripped areas above 0.6 m<sup>2</sup> shall be calculated as 1m<sup>2</sup>.

#### 3.2.15.4 Stripping of the Window Profiled Frames and Horizontal Facade Cornices

Careful stripping of the window profiled frames and horizontal facade cornices up to the base, including cleaning of joints in bricks of a depth of up to 3cm using cramp iron and treatment of surfaces in the above described manner. Calculated per m<sup>2</sup> of stripped cornice or window frame depending on the developed width. Upon stripping up to the base wall, cleaning of joints and blowing out by applying compressed air shall be carried out. Then sheet metal forms shall be made on wooden frame and the auxiliary substructure according to the section of the frame or cornice and, after getting the written approval from the Supervisor, a frame or

cornice shall be restored by plastering in two layers with the previous soaking with water of the old brick base and splashing of possible concrete areas using cement plaster. The first layer shall be executed to the thickness of 1.5cm flattened with the in advance prepared “shallower” form using cement plaster in the ratio 1:3. The freshly plastered surface shall be furrowed for the purpose of easier adhesion of the finish layer. Once the layer is partly dry, a mixture of artificial stone shall be applied according to the pattern obtained by the test for the given surface. The form shall be drawn over the temporarily fastened to the façade, by screw sinrawl plugs, levelled fir filets – guides. Execution of the form and fixing and removal of guides shall be included in the unit rate of the item and shall not be paid separately.

3.2.15.4.1 Window frames and cornices of up to 30 cm of the developed width

3.2.15.4.2 Cornices of 30-60 cm of the developed width

3.2.15.4.3 Cornices of over 60 cm of the developed width

3.2.15.4.4 The existing pilasters of the developed width of approximately 120 cm

### **3.2.15.5 Opening of Cracks and Damages on the Facade Planes**

Opening of cracks and damages on the facade planes in the following way, depending on the width of a crack and their repair and patching.

3.2.15.5.1 Cracks up to 2 mm wide

A crack shall be carefully cleaned to remove residual dirt after sandblasting and washing using an adequate steel needle, including blowing out of residues by applying compressed air. Upon completion of cleaning, the crack shall be filled with a mixture of white cement using adequate pigment filler for the purpose of getting equal shade with the surrounding surface. Prior to the commencement of the repair, test repair shall be done on a length of min. 50 cm in the presence of the Supervisor, who shall approve the validity of the selected procedure prior to further continuation of the work by the minutes of inspection. Upon completion of the treatment, surplus material shall be removed by careful grinding using fine sandpaper for the purpose of equalizing of edges and prior to the finish grinding or bush-hammering of the complete surface, which shall be paid for separately. The crack repaired in the described way shall be paid for per m’.

3.2.15.5.2 Cracks wider than 2 mm

Such cracks shall be opened by mechanical cutting off of the material up to the base to the width of minimum 1cm from the edge of the crack on both sides, including cleaning of joints in the wall base in the described manner and blowing out by applying compressed air. Prior to the re-application of new material in the crack, it shall be well soaked with water and then the base (bottom) shall be treated with a layer of cement plaster up to 1.5 cm thick. After drying of this layer, a mixture of cement and filler shall be applied of the type, in the ratio and of granulation according to the obtained results of the analysis of the existing materials. Prior to the commencement of the repair, a test shall be done on a min. 100 cm of the length. The success of the test procedure and approval of further work shall be provided in the minutes by the Supervisor. Upon the repair, surplus materials shall be removed by fine grinding prior to the finishing of the complete surface, which shall be paid for separately. Calculated and paid for the repaired crack per m’, according to the description above.

### **3.2.15.6 Treatment of Newly Stripped Surfaces of the Facade**

Repeated treatment of newly stripped surfaces of the facade in the following way:

On the well moistened wall surface, the first layer of cement plaster shall be applied in the ratio 1:3 to a thickness of approximately 2 cm with the previous splashing of the surfaces using cement slurry.

Humid plaster shall be furrowed for the purpose of easier adhesion of the finish layer. The finish mixture of cement and crushed stone made in compliance with the test results shall be applied into partly dried base in a layer from 1.5 to 3 cm depending on the requirements. After seven days, the finishing may be proceeded with.

The following will be calculated separately.

#### 3.2.15.6.1 The area of horizontal belts

The area of the horizontal belts of approximately 50 cm each in the section between the basement and the upper edges of the windows on the first floor. Calculated per m<sup>2</sup> in the same way as in case of stripping where by the area in the part by window frames shall be additionally increased by 25%.

#### 3.2.15.6.2 Flat sections between pilasters

Flat sections between pilasters on the second and third floor and between the windows on the fourth floor, where calculation per m<sup>2</sup> shall also be made according to the same method as in the case of demolition and stripping.

### **3.2.15.7 Repair of the Balusters and Half Balusters on the Balcony Balustrade and Eaves-Cornice**

Repair of the balusters and half balusters on the balcony balustrade and eaves-cornice shall be paid for per redone and repaired piece.

#### 3.2.15.7.1 Balusters approximately 60 cm high

#### 3.2.15.7.2 Half balusters approximately 50 cm high

#### 3.2.15.7.3 X-shaped ornaments on the balustrade above the main entrance

### **3.2.15.8 Finishing of the Facade Plane**

Finishing of the facade plane upon completion of repairs in the following way.

#### 3.2.15.8.1 Granite cladding of the basement walls

Granite cladding of the basement walls up to the cornice shall be finely bush-hammered as well as the cornice and calculation shall be made per m<sup>2</sup> whereby openings up to 3 m<sup>2</sup> shall not be deducted and jambs shall not be developed.

#### 3.2.15.8.2 The stone cornice

The stone cornice shall be ground using coarse and fine sand-paper, using a mechanical tool, and it shall be calculated per m<sup>2</sup>.

#### 3.2.15.8.3 The facade surface - Chiselled area

The facade surface of finely bush-hammered belts shall again be completely chiselled and ornamental wedge-shaped strips shall be either refreshed or made a new. The fine bush-hammering on the old and new plaster shall be paid for per m<sup>2</sup> and the making and refreshment of ornamental wedge-shaped strips using chisel per m<sup>2</sup>.

#### 3.2.15.8.4 Ornamental strips

The facade surface of finely bush-hammered belts shall again be completely chiselled and ornamental wedge-shaped strips shall be either refreshed or made a new. The fine bush-hammering on the old and new plaster shall be paid for per m<sup>2</sup> and the making and refreshment of ornamental wedge-shaped strips using chisel per m<sup>2</sup>.

#### 3.2.15.8.5 The facade surface smooth – Façade plain

The facade surface smooth (velvet) finished shall be completely ground manually using coarse and then fine sandpaper up to the equalization of the surface and joints between old and new plaster. Calculated per m<sup>2</sup> with the deduction of openings same as plastering, ornamental finely picked, using a thin chisel, moulded strips 3-4 cm wide shall be restored on the old and formed on the newly plastered sections and shall be paid per m<sup>2</sup>.

#### 3.2.15.8.6 Ornamental moulded strips

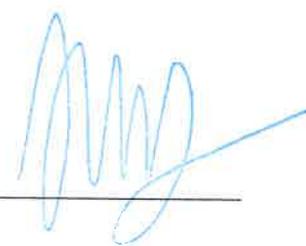
The facade surface smooth (velvet) finished shall be completely ground manually using coarse and then fine sandpaper up to the equalization of the surface and joints between old and new plaster. Calculated per m<sup>2</sup> with the deduction of openings same as plastering, ornamental finely picked, using a thin chisel, moulded strips 3-4 cm wide shall be restored on the old and formed on the newly plastered sections and shall be paid per m'

#### 3.2.15.9 Building in of Bituminous Fillets

Building in, prior to plastering, of bituminous fillets for fixing of copper steel strips to receive the flaring of sheet metal by the cornices. The fillets shall be fastened to the base with screws in rawl plugs. Calculated per built-in piece of a length from 20 to 25cm, placed at every 50 cm as a minimum.

#### 3.2.15.10 Treatment of Facade Surfaces on the Courtyard Side of the Building

Treatment of facade surfaces on the courtyard side of the building as well as of gable end visible parts using finish facade base coat and facade coat in the colour at the option of the Supervisor, using facade paint. Calculated per m<sup>2</sup>.



## **3.2.16 PAINTING WORK**

### **3.2.16.1 Applying of the Base Coat on All the Surfaces of Walls and Ceilings**

Applying of the base coat (impregnation) on all the surfaces of walls and ceilings prior to applying the skimming plaster. Calculated per m<sup>2</sup>.

### **3.2.16.2 Skimming of Walls and Ceilings**

Skimming of walls and ceilings, including all the required preliminary work and smoothing twice, with the previous application of the impregnation compound. Calculated per m<sup>2</sup>.

### **3.2.16.3 Painting of Walls and Ceilings with Semi-Dispersive Paints**

Painting of walls and ceilings with semi-dispersive coloured paints twice, with the previous applying of the impregnation compound, approved by the Supervisor. Calculated per m<sup>2</sup>.



## **3.2.17 PARTERRE DESIGN**

### **3.2.17.1 Cutting Grips in the RC Slab of the Courtyard**

Cutting grips in the concrete courtyard in the RC slab of the courtyard, including cutting of rebar, crushing of the cut-out section of the concrete RC slab, including manual loading on a truck and transport to the city landfill of AHD of up to 30 km, including payment of the fee for disposal of waste materials. Concrete shall be cut out in order to excavate a trench for laying of water supply and sewage pipes for evacuation of rainwater and collection of the same in gully (the courtyard interceptor) and the slab shall be cut at four points in order to enable placing of four groups of probes for the earthing and lightning protection installation of the building. Width of cutting of concrete belts shall be 80 cm. Calculated per m'.

### **3.2.17.2 Manual Excavation of Earth Material of III Category and of Compacted Gravel**

Manual excavation of earth material of III category and of compacted gravel underneath the slab 80 cm wide, 80 cm deep, 28.70 m' long, including manual loading on a truck, transport to the city landfill of AHD of up to 30 km away, including payment of the fee for disposal of waste materials. Calculated per m<sup>3</sup>.

### **3.2.17.3 Concreting of the Section of the Concrete Courtyard**

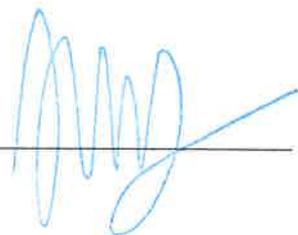
Concreting of the section of the concrete courtyard slab of MB 20 at the place where the same has been broken for the purpose of excavation of the trench, including compaction of gravel of d=10 cm underneath the new concrete; the RC slab shall be reinforced with Q-reinforcement bars. Length: 28.70 m'. Calculated per m<sup>2</sup>.

### **3.2.17.4 Execution of the Sand Screed d=10 cm**

Execution of the sand screed d=10 cm, including the transfer of levels down towards the interceptor grating in the courtyard of the building and laying of behaton paving stones of d=6 cm, including the required compaction of the screed and behaton paving stones using rubber hammer, filling of joints with sand and, upon completion of the job, cleaning of the newly executed surface, taking out of debris and surplus materials, loading on a truck, and transport to the city landfill of AHD up to 30 km, including tax for the use of the city landfill. Calculated per m<sup>2</sup> of the newly built area.

### **3.2.17.5 Laying of Picked Granite Slabs**

Procurement, transport to the building, internal transport, of picked granite slabs of the dim. of 0.50x1m, of d=3cm, including the set falls towards rainwater outlets. The slabs shall be laid on the prepared flooring plaster, without joints. Calculated per m<sup>2</sup>.



## **3.2.18 SERVER ROOM**

### **3.2.18.1 Raised Antistatic Floor**

Procurement, transport to the building, internal transport and installation of the raised antistatic floor for server room on the second floor of the building. Complete substructure and all auxiliary material included. Floor will be raised on the height of app 25cm. It is required to envisage grills for air flow. Calculation per m<sup>2</sup>.

### **3.2.18.2 Painting of the Server Room**

Procurement of the material and execution of the works in the server room with appropriate paint (to prevent dust) in accordance with instruction of the IT equipment manufacturer. Calculation per m<sup>2</sup>.



## **3.2.19 PRELIMINARY WORK - WATER SUPPLY SYSTEM**

### **3.2.19.1 Dismounting of the Existing Sanitary Equipment and Accessories**

Dismounting of the existing sanitary equipment and accessories. Dismounted materials shall be handed over to the Employer against the minutes and transported to the place designated by the Supervisor, and worn-out items shall be transported to the city landfill (fee for disposal of waste materials should be included). Calculated per piece.

3.2.19.1.1 Water closet - complete set

3.2.19.1.2 Wash basin

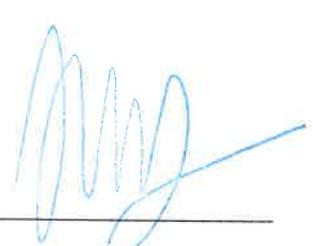
3.2.19.1.3 Wall-mounted water tap

### **3.2.19.2 Dismounting of Worn-Out Galvanized Water Pipes**

Dismounting of worn-out galvanized water pipes, complete with fittings and valves. Branches that shall remain out of operation shall be plugged using adequate plugs with square head. Dismounted materials shall be transported away with other construction debris. The item rate shall also include all the chase cuttings and demolitions and payment of the fee for disposal of waste materials. The item shall be paid as a lump sum.

### **3.2.19.3 Dismounting of the Water Tank**

Dismounting of the water tank. Dismounted materials shall be transported to the city landfill including payment of the. The items shall be paid per piece.



## **3.2.20 WATER SUPPLY SYSTEM INSTALLATIONS**

### **3.2.20.1 Delivery and Laying of Stainless Steel Pipes**

Delivery and laying of stainless steel pipes for the potable water installation tested as per DVGW work sheet W534, with DVGW test label, with appurtenant press union sockets for jointing applying pressing technology and safety contour, which at loading of the installation, detects not pressed press joints, Calculated per m' of finished pipeline.

3.2.20.1.1 Ø15x1.0 (Ø15)

3.2.20.1.2 Ø22x1.2 (Ø20)

3.2.20.1.3 Ø28x1.2 (Ø25)

3.2.20.1.4 Ø35x1.5 (Ø32)

3.2.20.1.5 Ø42x1.5 (Ø40)

### **3.2.20.2 Delivery and Fitting of Press Union Sockets for Stainless Steel Pipes**

Delivery and fitting of press union sockets for stainless steel pipes. Press union sockets shall be provided with safety contour SC Contour which within the pressure range from 1 bar to 6.5 bar safely detects not pressed socket unions by leakage of medium or pressure drop on the test pressure gauge and can be immediately additionally pressed. The item shall be paid as a lump sum.

### **3.2.20.3 Delivery and Laying of Pipes on Reels of PE-Xc/Al/PE-Xc**

Delivery and laying of pipes on reels of PE-Xc/Al/PE-Xc for the potable water and heating installations, tested as per DVGW work sheet W534, with DVGW test label, with appurtenant press union sockets for jointing by applying pressing technology and safety contour which, when loading the installation, detects not pressed press joints. Calculated per m' of finished pipeline.

3.2.20.3.1 Ø16x2

3.2.20.3.2 Ø20x2.3

3.2.20.3.3 Ø25x2.8

3.2.20.3.4 Ø32x3.2

### **3.2.20.4 Delivery and Fitting of Press Union Sockets for PE-Xc/Al/PE-Xc Pipes**

Delivery and fitting of press union sockets for PEXc/Al/PEXc pipes. Press union sockets shall be provided with safety contour SC Contour which within the pressure range from 1bar to 6.5bar safely detects not pressed union sockets by leakage of medium or pressure drop on the test pressure gauge and can be immediately additionally pressed. The item shall be paid as a lump sum.

### **3.2.20.5 Pipeline Pressure Test**

Pipeline pressure test. Defective pipes and joints shall be replaced. The items shall be paid as a lump sum.

### **3.2.20.6 Disinfection and Bacteriological Test of the Pipeline**

Disinfection and bacteriological test of the pipeline. The item shall be paid as a lump sum.

### **3.2.20.7 Procurement and Fitting of Heat Insulation for the Pipes**

Procurement and fitting of heat insulation for the pipes, of polyurethane or other adequate foam insulating material. Calculated per m'.

3.2.20.7.1 Ø 15-20 mm

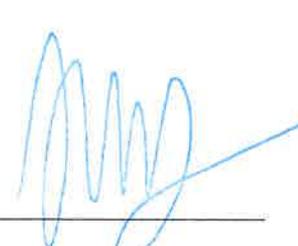
3.2.20.7.2 Ø 25-40 mm

### **3.2.20.8 Procurement and Installation of Booster Pump**

Procurement and installation of the booster pump unit, having the characteristics: Q=5 l/s H=20-45 m. Unit shall be provided with the control cabinet and all the required parts for its automatic operation. Calculated per piece of complete installed unit.

### **3.2.20.9 Procurement and Installation of the Combined Water Meter**

Procurement and installation of the combined water meter of Ø80 mm. Calculated per piece of complete installed unit.



## **3.2.21 SANITARY WARE**

### **3.2.21.1 Wash Basin**

Delivery and mounting of the wash basin AUM 01 of stainless steel, dimensions: 56x42 cm. The wash basin shall be provided with the sensor-operated water tap. The wash basin shall be provided with nickel-plated drain siphon trap of Ø32 mm with a shield, plug and chain. Fabrication and fitting of fixing blocks or plastic rawl plugs fitted in the wall for fixing of the wash basin shall be included in the labour rate. Calculated per piece for labour and materials.

### **3.2.21.2 Wash Basin of White Faience**

Procurement, transport and mounting of the complete I class wash basin of white faience. The wash basin size: 50/40 cm. The wash basin shall be provided with nickel-plated drain siphon trap of Ø32 mm with a shield, plug and chain. Fabrication and fitting of fixing blocks or plastic rawl plugs fitted in the wall for fixing of the wash basin shall be included in the labour rate. Calculated per piece for labour and materials.

### **3.2.21.3 Wash Basin of White Faience for Persons with Special Needs**

Procurement, transport and mounting of the complete I class wash basin of white faience for persons with special needs. The wash basin size: 64/55 cm. The wash basin shall be provided with the pillar-type single-lever cold water tap with a shorter spout, nickel-plated drain siphon trap of Ø32 mm with a shield, plug and chain. Fabrication and fitting of fixing blocks or plastic rawl plugs fitted in the wall for fixing of the wash basin shall be included in the labour rate. Calculated per piece for labour and materials.

### **3.2.21.4 Installation Elements for Floor Standing Water Closet**

Delivery and installation of the installation elements for floor standing water closet, installation height of 113cm, with low-mounted built-in flushing cistern of the volume: low level flush: 3-4l, high level flush: 6-9l, with the option to change to flush with stop, with two-quantity push button for flushing activation, , white, or equivalent, front side activation, corner valve, with previously fitted water service connection using ½"UN, connecting elbow for water closets DN90 with depth regulation, eccentric transition piece DN90/100, connection kit for water closets, fixing materials for the element (fixing to the floor) and the water closet, self-tapping screws for fixing in the prefabricated wall, openings of Ø11 mm for fixing into a timber wall, regulation of the height of the water closet (60 mm), range for water closet mounting of 180 mm and 230 mm and all the necessary accessories for installation according to the instructions of the manufacturer. Calculated per piece for labour and materials.

### **3.2.21.5 Complete Floor Standing Water Closet, I Class**

Procurement, transport and mounting of the complete floor standing water closet of faience, I class, at water inlet in the flushing cistern, EK valve of Ø15 mm with nickel-plated cap shall be fitted. A plastic seat shall be fitted on the water closet. The rate includes all the connecting and sealing materials. Calculated per piece of complete mounted and tested unit.

### **3.2.21.6 Floor Standing Water Closet for Persons with Special Needs**

Delivery and installation of the installation elements for the floor standing water closet for persons with special needs, of installation height of 113 cm, with low-mounted built-in flushing cistern of the volume: low level flush: 3-4 l, high level flush: 6-9 l, with the option to switch to flush with stop, with two-quantity push button for flushing activation, white, or equivalent, front side activation, corner valve, with previously fitted water service connection using ½" UN, connecting elbow for water closets DN90 with depth regulation, eccentric transition piece DN90/100, connection kit for water closets, fixing materials for the element (fixing to the floor) and the water closet, self-tapping screws for fixing to the prefabricated wall, openings of Ø11 mm for fixing into timber wall, regulation of the height of the water closet (60 mm), range for mounting of water closets of

180 mm and 230 mm and all the necessary accessories for installation according to the instructions of the manufacturer. Calculated per piece of complete mounted and tested element.

### **3.2.21.7 Complete Sanitary Water Closet Ware for Persons with Special Needs**

Procurement, transport and mounting of the complete sanitary water closet ware for persons with special needs, consisting of: floor standing ceramic water closet for disabled persons, I class, for 6 lit. flushing, of the shape and colour indicated by the Supervisor, elevated from the floor min. 6 cm, with the seat and cover. Calculated per piece for labour and materials.

### **3.2.21.8 Installation Wall-Mounted Module**

Delivery and installation of the installation wall-mounted module for a floor standing water closet, provided with anti-vandal stainless steel cover, with resistant stainless safety button. The cover shall be fixed with safety bolts, (cannot be dismantled without special tools). Anti-vandal Inox cover shall contain stainless control buttons resistant to damages. The module made of stainless steel AISI 304. Water supply via 1/2 " mm, discharge of 110 mm, power supply of 12 V, 50 Hz, weight: 15 kg. Calculated per piece for labour and materials.

### **3.2.21.9 Complete Bracket-Mounted Water Closet**

Procurement, transport and mounting of the complete bracket-mounted water closet type AUZ 01 of stainless steel for mounting on the wall. Inlets the same as for any standard ceramic water closet.

Within the set with automatic flushing system, using sensor photo cells with contactless control. After leaving the scanning zone, the system is activated for flushing. The system is to have the following characteristics: water supply:

- d= 34 mm
- Minimum water flow rate capacity: 70 l/min.
- Output: d = 90 mm
- Required spacing between bolts: 180 mm
- Weight: 11 kg

Calculated per piece for labour and materials.

### **3.2.21.10 Urinal Made of Faience**

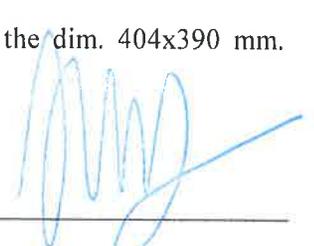
Delivery and mounting of the urinal made of faience, consisting of: urinal bowl with a hidden water seal, steel supporting element in front of the wall and sensor electronic fitting for flushing with corner valve, PE discharge elbow of Ø50 mm, connecting kit for flushing, straight valve DN15. Within the complement of the elements there shall also be the complete electrical set with the transformer. Calculated per piece for labour and materials.

### **3.2.21.11 Bracket-Mounted Urinal Made of Inox**

Procurement and mounting of the bracket-mounted urinal made of Inox, equipped for sensor activation, type AUP 03, with automatic flushing system located on the water seal. After 24 hours without activities, the urinal is to be automatically flushed. The flushing system protected from mechanical damages, even deliberate ones, since all the components shall be within the urinal. The urinal is to be supplied with the power supply of 12 V, 50 Hz. Calculated per piece for labour and materials.

### **3.2.21.12 Kitchen Sink Made of Inox**

Procurement and mounting of the kitchen sink made of Inox of rounded edges of the dim. 404x390 mm. Calculated per piece for complete mounted sink.



## **3.2.22 SANITARY FITTINGS**

### **3.2.22.1 Pillar-Type Single-Lever Mixing Hot and Cold-Water Tap**

Pillar-type single-lever mixing hot and cold-water tap provided with a sensor with flexible connections and drain for wash basins. The wash basin to be supplied with the power supply of 12 V, 50 Hz. Calculated per piece.

### **3.2.22.2 Pillar-Type Single-Lever Mixing Hot and Cold-Water Tap**

Pillar-type single-lever mixing hot and cold water tap with flexible connections and drain for kitchen sinks. Calculated per piece

### **3.2.22.3 Procurement and Fitting of Gate Valves with Inner Thread**

Procurement and fitting of gate valves with inner thread. Calculated per piece.

3.2.22.3.1 Gate valves with wheel handles and drain cock Ø65 mm

3.2.22.3.2 Gate valves with wheel handles Ø 20 mm

3.2.22.3.3 Gate valves with wheel handles Ø 25 mm

3.2.22.3.4 Gate valves with wheel handles Ø 32 mm

3.2.22.3.5 EK valve

### **3.2.22.4 Ancillary Accessories in Toilets**

Ancillary accessories in toilets, as indicated by the Supervisor, with all the required fixing materials. Calculated per piece.

3.2.22.4.1 Upper towel holder

3.2.22.4.2 Liquid soap dispenser

3.2.22.4.3 Liquid soap dispenser

3.2.22.4.4 WC brush, chrome-plated

3.2.22.4.5 Litter bin

3.2.22.4.6 Mirror, dimensions: 80x100 cm

3.2.22.4.7 Wall mounted mirror for disabled persons, dimensions: 60x40 cm

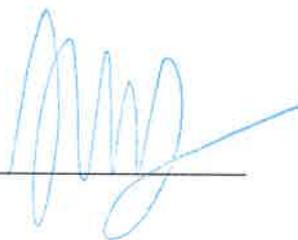
3.2.22.4.8 Wall mounted rand rail for the water closet for disabled persons

### **3.2.23 PRELIMINARY WORK - SEWERAGE**

#### **3.2.23.1 Dismounting of Worn-Out Sewerage Pipes**

Dismounting of worn-out sewerage pipes no longer functional. Point of cutting off of the installation shall be plugged. Dismounted materials to be transported to the city landfill.

The item shall be paid as a lump sum.



## **3.2.24 SEWERAGE INSTALLATIONS**

### **3.2.24.1 Procurement, Transport and Laying of Rigid Sewerage Polyethylene Low-Noise Discharge Pipes**

Procurement, transport and laying of rigid sewerage polyethylene low-noise discharge pipes for sound insulated vertical and horizontal distribution with permanently watertight jointing by butt welding, arc welded joints or by jointing using metal clamping clips, including couplings, barrel fittings and required accessories for fixing and suspension. The item also includes fixed pipe clips with sound insulating insert and additional pipe insulation at points of penetration through the structure and changes of direction of riser pipes using sound insulation of polyester foam. Calculated per m' of finished pipeline.

3.2.24.1.1 Ø 50 mm – PVC

3.2.24.1.2 Ø 75 mm – PVC

3.2.24.1.3 Ø 110 mm – PVC

3.2.24.1.4 Ø 125 mm - PVC

### **3.2.24.2 HDPE Sewerage Pipes**

Procurement and laying of HDPE sewerage pipes Ø 160 mm – PVC together with corresponding barrel fitting. Pipes shall be laid by hanging, chase cutting and punching of floor structure walls or burying in walls or floors in strictly designed drop of 2%. The item also implies sealing materials for pipe joints. Calculated per m' of finished pipeline.

### **3.2.24.3 PVC Vent-Pipe Outlet**

Procurement and fitting of PVC vent-pipe outlet Ø 110 mm. Calculated per piece for complete fitted vent-pipe outlet.

### **3.2.24.4 Floor Gulley with "Dry" Trap**

Procurement and fitting of floor gulley with "dry" trap Ø 50 mm, plastic housing and chrome-plated grating, horizontal with flange for sanitary blocks. Calculated per piece for complete fitted gulley.

### **3.2.24.5 Gulley for Flat Roofs and Terraces**

Procurement and fitting of the gulley for flat roofs and terraces Ø 100 mm with a flange for fixing of the waterproofing and horizontal drainage with cast iron ball grating. Calculated per piece for complete fitted gulley.

### **3.2.24.6 Atrium Gulley**

Procurement and fitting of the atrium gulley of polymer concrete for drainage with cast iron ridge, galvanized steel grating, trap and fire bucket, load class up to B125 kN. Calculated per piece for complete fitted gulley.

### **3.2.24.7 Cast Iron Rain Water Gulley Trap**

Procurement and fitting of cast iron rain water gulley trap Ø 100 mm. Calculated per piece for complete fitted gulley.

### **3.2.24.8 Pump for Re-Pumping**

Procurement and installation pump for re-pumping (from the substation) the unit is to be provided with all the necessary parts for its automatic operation. Calculated per piece of complete installed pump.

## **3.2.25 HYDRANT NETWORK**

### **3.2.25.1 Procurement and Laying of Galvanized Water Pipes**

Procurement and laying of galvanized water pipes with all the required barrel fittings on the piping network. The item includes hanging of pipes on the wall and the structure. This item also implies all the required materials for sealing of pipe joints and anti-corrosion protection of the pipeline. Calculated per m' of finished pipeline.

3.2.25.1.1 Ø 50 mm

3.2.25.1.2 Ø 65 mm

3.2.25.1.3 Ø 80 mm

### **3.2.25.2 Procurement and Installation of Heat Insulation for Pipes**

Procurement and installation of heat insulation for pipes of POLYURETHANE or other adequate foam insulating material. Calculated per m'.

3.2.25.2.1 Ø 50 mm

3.2.25.2.2 Ø 65 mm

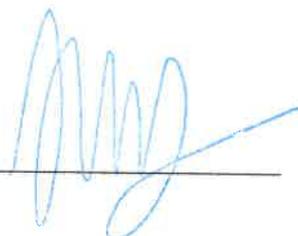
3.2.25.2.3 Ø 80 mm

### **3.2.25.3 Procurement, Transport and Mounting of the Complete Wall-Mounted Fire Hydrant**

Procurement, transport and mounting of the complete wall-mounted fire hydrant. The hydrant is to consist of Inox box, of standard dimensions of 50x50 cm, with a lock. The cabinet is to accommodate a reel with Trevira hose of Ø50 mm with adequate nozzle fitted to the hose end. The other hose end is to be fitted to the hydrant – the hose valve. The supply riser pipe to be accommodate next to the hydrant box. At the end of the pipe, a slanting hose valve with the wheel handle of Ø50 mm is to be fitted, included in the rate. The item includes procurement and fixing of rawl plus for screws and suspension of the hydrant. Calculated per piece of complete hydrant, mounted and tested.

### **3.2.25.4 Procurement and Installation of the Booster Pump Unit**

Procurement and installation of the booster pump unit, having characteristics: Q=7.5 l/s, H=70 m. The unit is to be provided with the control cabinet and all the required parts for its automatic operation. Calculated per piece of complete installed unit.



# VOLUME 3 – SECTION 3 – ELECTRICAL ENGINEERING TECHNICAL SPECIFICATIONS

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