VOLUME 3

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A. - ARCHITECTURAL WORKS

A.0 GENERAL PROVISION

All articles of General Provisions shall be deemed to be contained within each item description of this Bill. Proposed works shall be performed entirely in keeping with individual items of this Bill, the description for specific groups of works, technical description, etc.

Unit price for each item of cost shall include all elements required for forming such price, and such items shall be deemed final for the agreed estimate, as follows:

Materials

Price of materials shall mean the purchase price for all main and supporting materials, bonding agents and alike, inclusive of costs for supply, internal and external transport regardless of means of transport, inclusive of all auxiliary costs, loading, offloading, storing and stocking on site, prevention of deterioration and degradation, inclusive of all manipulation costs, provision of samples for testing, etc.

Labor

Labor shall include all main and supporting labor for all necessary activities for any item of this Bill, all labor for internal and external, horizontal and vertical transport and all labour required for protection of completed structures from negative impacts for the duration of works.

Supporting Structures

All types of scaffolding, regardless of height and shape shall be included in the unit price for the item of works which they are required for, in order to prevent obstructing the regular course of works, and the price shall also be inclusive of dismantling of scaffolding on site. Unit price shall be inclusive of all essential railings, protective canopies, access ramps, strutting for earthworks, platforms for deep bulk earthworks, etc. Item price shall include access ramps and platforms for concreting, stands for concrete mixers, depreciation for scaffolds and supporting structures for the proposed duration of works, etc.

All required formwork, regardless of type, shall be included in item unit price and shall not be priced separately. Formwork shall include any necessary bracing and strutting, dismantling, cleaning and stacking. Unit prices for concreting shall include spraying of formwork prior to concreting, curing of concrete by spraying and protection from weather conditions. Upon completion of concreting, and upon expiry of the required period of time, all formwork shall be removed, cleaned, sorted and prepared for future use, and removed from site after completion of works.

Other Costs and Fees

The Contractor shall incorporate his factor into the unit price of labor, based on valid regulations and instruments, and his specific business procedures (this pertains to various taxes, interest rates, fees, insurance, profit, funds, assets, wages, etc.). In addition to the

above, the Contractor's factor shall also include the following works which shall not be paid separately, neither as items of this Bill nor as extra works, as follows:

- All sanitary and technical protection measures for protection of workers and protection of structures and the environment (fencing, bridges, canopies, various auxiliary and sanitary structures, etc.),

- Protection of existing greenery on site, costs for operation of machinery or rental of machinery,

- Any setting out prior to commencement of earthworks and subsequently, during construction works,

- Cleaning and maintaining neatness on site during performance of works, including removal of garbage, debris and waste. Only final cleaning shall be priced as a separate item,

- All necessary material testing and obtaining relevant certificates, particularly for concrete, cement, lime, brick, sand, gravel, testing of chimneys, ventilation and their proper functioning,

- Restoration of construction site and area around the building which had been used as construction site, removal of waste materials, debris, any traces of digging and traces of supporting structures,

- Provision of storage facilities for materials and tools required by contractors, trade specialists and installation workers,

- Potential protection of buildings (conserving) in emergency conditions.

If the construction continues over summer or winter months, the Contractor shall protect the building from deterioration and freezing, and any segments damaged by frost or similar, shall be repaired and restored at the Contractor's cost.

Measurements and Calculations

Unless otherwise specified in descriptions for specific Items of this Bill, cost calculation of completed works shall be performed in accordance with valid building regulations or technical codes for performance of finishing works in construction.

Other

If any archaeological items are discovered during excavation, the Contractor shall comply with regulations specifying methods for storing such finds and notify both the Supervisor and relevant authorities immediately.

If any known or unknown utility lines are discovered by during excavation, they shall immediately be protected from damage and both the Supervisor and relevant authorities shall be notified immediately, in order to make a decision on their removal or relocation.

All materials used shall be of high quality and comply with conditions and provisions of JUS standards.

All works shall be performed in accordance with valid technical regulations, soundly, conscientiously and properly.

All other works and tasks not mentioned herein shall be regulated in the spirit of the Building Construction Act and other regulations pertaining to this matter, valid regulations and standard building norms.

A.1 DEMOLISHING AND DISMANTLING

A.1.0 GENERAL PROVISIONS

During demolition of building or part of building, the Contractor shall comply with measures and norms pertaining to workplace safety, and in particular provisions of Articles 135 through 141 of the Rulebook on Workplace Safety and Construction, Official Gazette of SFRJ Vol. 42/68.

Prior to commencement of demolition or dismantling works in any part of the building or the entire building, the Contractor shall disconnect all utility lines.

All demolition and dismantling shall be performed with utmost care to avoid damage to materials.

If requested by the Contracting Authority, during demolition or dismantling, materials shall be classified according to type and dimensions, cleaned and stacked at temporary stockpile on site, designated by the Supervisor. Materials shall be divided into usable and unusable; materials for reuse, shall be handed over to the Contracting Authority, including a written record thereof.

Unusable materials shall be loaded into a vehicle, removed from site and offloaded at landfill.

After demolition and removing unusable materials (debris and other), the site shall remain clean, neat and ready for further works.

Parts of the building to be demolished or dismantled shall be labeled in keeping with drawings, in order to avoid unnecessary demolition or dismantling. If the Contractor demolishes or causes damage to any parts of walls or structures not allocated for demolishing, the Contractor shall restore them to their original state at his expense.

When cutting openings for doors or windows or their extensions, the Contractor shall install temporary prefabricated lintels or lintels cast on site, to support the bulk remaining above the opening, and demolition shall be carried out once structure is ready to support loads.

The Contractor may, should he find it feasible, demolish the bulk of wall above the opening up to ceiling, and once lintels are constructed, rebuild the wall at his own expense.

Structural load calculation shall be prepared and details for supporting and construction of bearing members drawn prior to commencing works on larger openings in bearing walls.

Works shall be calculated per m2 for walls made of brick, concrete, hollow blocks and alike, up to 200mm thick, and per m3 for walls thicker than 200mm.

Unit price shall include chase cutting and supporting of walls for installation of lintels, cutting of openings, cutting of reinforcing, scaffolding, cleaning and stacking bricks, protection and removal of demolished debris to site stockyard.

Unit price for removing bubbled plaster on indoor or outdoor walls and ceilings shall be calculated per m2, based on actual quantities measured in rectangular patches around the removed surface, as calculated in the Measurement Book, signed by both sides.

Dismantling of fixed furniture shall be priced per each piece and handed over to the Contracting Authority, including a written record thereof, unless such furniture is reinstalled.

Unit price shall include cost of clearing of building or part of building after dismantling and removal to temporary stockyard on site, as well as sorting and classification of materials.

Removal of remaining debris to municipal landfill shall be charged inclusive of loading and unloading.

All costs and fees incurred as a result of these General Provisions shall be borne by the Contractor, unless otherwise specified by the item in this Bill, and the Contractor shall therefore include such costs and fees in unit prices for demolition and shall not request any additional payments.

Note:

1. All demolition works shall include cutting parts of structure to be demolished in order to avoid destruction (weakening) of other structural elements which are not being demolished.

2. Price of works shall include removal of debris and other waste materials to a landfill up to 15km away from site.

Very important :

Preliminary works

In order to perform adequate alteration of the existing premises to fit it for the new purpose as a new business premise, the following preliminary works shall be required:

Prior to the commencement of any new works and required interventions within the existing structure, the following safety measures must be taken:

in the basement section facing the Kralja Milana Street, under the existing concrete girder, where new elevator shaft with concrete canvas (POS Z1) is foreseen. A steel column, bearing capacity 160kN shall be temporarily placed under the existing concrete ceiling beam. It is an equivalent to the steel profile (hot-rolled) I200. The girder shall be supported by the existing reinforced concrete beam. The position of the temporary steel column shall be determined by the structural Supervisor together with the responsible Contractor.

prior to the execution of the new reinforced concrete column (P-S1), dimensions b/d=55/70, in the basement section, temporary steel columns of the required bearing capacity, i.e. HEM girders IPBv(HEM)400, shall be placed both left and right to the place where newly designed column is foreseen. Girder shall be placed between the existing foundation and concrete girder. Their position shall be determined by both the Supervisor and the Contractor. A girder of the same type (in the extension of the basement girder) and a temporary column of the same type (IPBv(HEM)400) shall be placed from the ground floor lever to the existing reinforced concrete girder above the ground floor.

in the basement section intended for the foreseen audience grandstand, a required steel girder P-N5-I340, foreseen by the new design solution, shall be placed under the remaining part of the ceiling (it shall not be removed; placement of the required scaffolding is foreseen).

A.1.1

Demolition of the existing brick walls, thickness d=25cm or more, together with all wall coverings and installations. All debris remaining after demolition shall be transported out of the facility, loaded into trucks and transported to the dumpsite located at the distance up to 15km, unloaded and spread over the dumpsite. Calculations shall be performed per m3 of completed item of works.
NOTE:
The demolition of walls requires securing the structure. All works on securing the structure should be executed in accordance with the static calculations.

A.1.2

Pearcing and widening the opening in the brick walls,Thickness d+25cm or more, together with all wall coverings and installations.All debris remaining after demolition shall be transported out of the facility, loaded

into trucks and transported to the dumpsite located at the distance up to 15km, unloaded and spread over the dumpsite.
Calculations shall be performed per m3 of completed item of works.

A.1.3

Demolition of the existing partition brick walls together with all wall coverings and installations. Useable bricks shall be cleaned of plaster and stored on a determined location on the construction site. All debris remaining after demolition shall be transported out of the facility, loaded into trucks and transported to the dumpsite located at the distance up to 15km, unloaded and spread over the dumpsite.
Calculations shall be performed per m2 of completed item of works.

Wall thickness d=17cm

A.1.4

Demolition of the existing partition brick walls together with all wall coverings and installations. Useable bricks shall be cleaned of plaster and stored on a determined location on the construction site. All debris remaining after demolition shall be transported out of the facility, loaded into trucks and transported to the dumpsite located at the distance up to 15km, unloaded and spread over the dumpsite.
Calculations shall be performed per m2 of completed item of works.
Wall thickness d=12cm

A.1.5

Chase cutting of internal brick walls for the purpose of reaching designed wall thickness, together with all wall coverings and installations. All debris remaining after demolition shall be transported out of the facility, loaded into trucks and transported to the dumpsite located at the distance up to 15km, unloaded and spreaded over the dumpsite.
Calculations shall be performed per m3 of completed item of works.

A.1.6

Plaster removal of the internal brick walls along with clearings joint of plaster up to the depth of 1-2cm using appropriate scaffolding. All debris remaining after demolition shall be transported out of the facility, loaded into trucks and transported to the dumpsite located at the distance up to 15km, unloaded and spreaded over the dumpsite.
Any relief existing on the walls shall be precisely surveyed and marked prior to the demolition of walls.
All works shall be executed in accordance with the design description and specifications and with the approval of the Supervisor.
Calculations shall be performed per m2 of completed item of works.

A.1.7

Plaster removal and finishing works on facade brick walls along with clearing joints of plaster up to the depth of 1-2cm using appropriate scaffolding. All debris remaining after demolition shall be transported out of the facility, loaded into trucks and transported to the dumpsite located at the distance up to 15km, unloaded and spreaded over the dumpsite.
Any relief existing on the walls shall be precisely surveyed and marked prior to the demolition of walls.
All works shall be executed in accordance with the design description and specifications and with the approval of the Supervisor.
Calculations shall be performed per m2 of completed item of works.

A.1.8

Plaster removal of the ceiling and ceiling substructure using appropriate scaffolding. All debris remaining after demolition shall be transported out of the facility, loaded into trucks and transported to the dumpsite located at the distance up to 15km, unloaded and spreaded over the dumpsite.
Calculations shall be performed per m2 of completed item of works.

NOTE:
The specified quantity was obtained electronically, based on the drawings provided in AutoCAD format.

A.1.9

Demolition of the existing mezzanine ceiling, Prussian vaults with required security of the existing structure. All debris remaining after demolition shall be transported out of the facility, loaded into trucks and transported to the dumpsite located at the distance up to 15km, unloaded and spread over the dumpsite.
Calculations shall be performed per m2 together with required scaffolding and securing the structure.

A.1.10

Demolition of the staircase slab together with the reinforced-concrete stairs. All debris remaining after demolition shall be transported out of the facility, loaded into trucks and transported to the dumpsite located at the distance up to 15km and unloaded. Prior to demolition the remaining part of the ceiling shall be supported appropriately.
Calculations shall be performed per m2 of the horizontal projection, all referring to the completed item of works.

A.1.11

Demolition of the reinforced concrete flat slabs together with the reinforced-concrete beams, required reinforcement cutting and securing the structure. All debris remaining after demolition shall be transported out of the facility, loaded into truck sand transported to the dumpsite located at the distance up to 15km and unloaded.
Calculations shall be performed per m3 together with the preparation of adequate scaffolding and securing the structure.

A.1.12

Demolition – removal of all layers of the existing waterproofing of the flat roof, up to the reinforced concrete structure. The existing roof finishing includes concrete slabs placed over a sand course, d=5cm, waterproofing, cement screed, mineral wool and inclination layer. Overall thickness of the top layer on the roof reaches up to d=30cm.All debris remaining after demolition shall be transported out of the facility, loaded into trucks and transported to the dumpsite located at the distance up to 15km and unloaded.
Calculations shall be performed per m2 of the completed item of works.

A.1.13

Dismantling – removal of the window sill casings made of galvanized sheet metal, unfolded width acc. 25cm. Dismantled sheet metal shall be transported out of the facility, loaded into trucks and transported to the dumpsite located at the distance up to 15km, unloaded and stored. All works shall be executed in accordance with the design description and with the approval of the Supervisor and under the supervision of the representative of the Institute for Protection of Cultural Monuments.
Calculations shall be performed per m' of completed item of works.

A.1.14

Demolition of the existing floor slab placed on the plain concrete layer, together with the gravel base.
All debris remaining after demolition shall be transported out of the facility, loaded into trucks and transported to the dumpsite located at the distance up to 15km and unloaded.
Calculations shall be performed per m2 of the completed item of works.
Overall floor thickness with the flooring d=25cm.

A.1.15

Demolition of the existing floors together with the flooring, thickness a cc d=5cm, irrespective of the type.
All debris remaining after demolition shall be transported out of the facility, loaded into trucks and transported to the dumpsite located at the distance up to 15km and unloaded.
Calculations shall be performed per m2 of the completed item of works.

A.1.16

Dismantling – removal of wooden windows and doors, together with their frames. Opening size up to 2.00m2. All these elements shall be dismantled carefully in order to avoid any damages to the joinery.
Dismantled joinery shall be classified according to its type and stored at the location at the distance up to 15km.
Calculations shall be performed per piece of completed item of works.

A.1.17

Dismantling – removal of metal windows and doors, together with their frames. Opening size up to 2.00m2. All these elements shall be dismantled carefully in order to avoid any damages to the joinery. Dismantled joinery shall be classified according to its type and stored at the location at the distance up to 15km.
Calculations shall be performed per piece of completed item of works.

A.1.18

Dismantling – removal of metal windows and doors, together with their frames. Opening size larger than 2.00m2. All these elements shall be dismantled carefully in order to avoid any damages to the joinery.
Dismantled joinery shall be classified according to its type and stored at the location at the distance up to 15km.
Calculations shall be performed per piece of completed item of works.

A.1.19

Demolition – dismantling the existing drywall partition walls, together with all wall coverings and installations. All debris remaining after demolition shall be transported out of the facility, loaded into trucks and transported to the dumpsite located at the distance up to 15 km and unloaded. All works shall be executed in accordance with the design description and specifications.
Calculations shall be performed per m2 of the completed item of works.

A.1.20

Demolition – dismantling the existing suspended ceiling made of drywall panels, together with the supporting substructure. Appropriate scaffolding shall be used for dismantling ceilings. All dismantled parts of the ceiling shall be transported out of the facility, loaded into trucks and transported to the dumpsite located at the distance up to 15km and unloaded.
Calculations shall be performed per m2 of the completed item of works.

A.1.21

Demolition – dismantling the existing metal staircase railing. Railing shall be carefully dismantled, classified according to the type and size, transported out of the facility, loaded into trucks and transported to the location not at a distance farther than 15km, unloaded and stored.
Calculations shall be performed per m2 of the completed item of works.

A.1.22

Scraping, cleaning and anti-corrosive protection and painting, using synthetic lacquer paint, of the existing railings of the flat roof.
Calculations shall be performed per m2 of the completed item of works.

A.1.23

Boring anchor holes in the existing reinforced concrete structure, all for the purpose providing connection to the newly designed reinforced concrete structure. Dimensions of the anchor holes are provided in the structure design.
Calculations shall be performed lumpsum.

A.1.24

Dismantling the existing air-conditioning placed on the façade, together with the internal unit and relevant installations and supporters.
All elements shall be carefully dismantled, classified according to the type and size, transported out of the facility, loaded into trucks and transported to the dumpsite located at the distance up to 15km and unloaded.
Calculations shall be performed per piece for the completed item of works, together with the required scaffolding.

A.1.25

Dismantling the existing water supply and sewerage pipeline, together with dismantling all sanitary elements.
All elements shall be classified according to the type, transported out of the facility, transported to the location not at a distance farther than 15km, unloaded and stored.
Calculations shall be performed lumpsum for the completed item of works.

A.1.26

Dismantling the existing electrical installations (cables, lights, sockets, etc.) as well as the existing distribution cabinet. All dismantled elements shall be classified according to the type, transported out of the facility, transported to the location not at a distance farther than 15km, unloaded and stored.
Calculations shall be performed lumpsum for the completed item of works.

A.1.27

Dismantling a part of the existing mechanical heating Installations (radiators, pipeline, etc.) together with dismantling all mechanical devices intended for heating and ventilation. All dismantled elements shall be classified according to the type, transported out of the facility, transported to the location not at a distance farther than 15km, unloaded and stored.
Calculations shall be performed lumpsum for the completed item of works.

A.1.28

Additional works during the demolition (various installations realignment, supporting and securing structures etc.).
Calculations shall be performed lumpsum.

A.1.29

Clearing the existing debris within the facility, with its transportation out of the facility, loading into trucks and transportation to the dumpsite located at the distance up to 15km.
Calculations shall be performed per m3 for the completed item of works.

A.1.30

Final clearing the remainder of debris in the facility, executed after the completion of demolition works.
All debris shall be transported out of the facility, loaded into trucks and transported to the dumpsite located at the distance up to 15km and unloaded.
Calculations shall be performed per m2 of the NETT surface.

A.2.EARTH WORKS

A.2.0 GENERAL PROVISIONS

All earth works shall be executed by labor force of the required qualification, using modern equipment and machines intended for these purposes.

All earth works shall be executed starting from the determined terrain level, unless specific laws and regulations determine otherwise. Earth works shall be executed only under the structure, up to 1.00m to the structure. All other earth works shall be specified within a separate design.

All works must be executed adequately, have required geometric forms, i.e. they must meet the requirements of the technical documentation, all in accordance with the material categorization. The items of works are classified in accordance with the material categories.

During backfilling works, using soil, gravel, etc. the backfilling material must be free of any impurity. In case of over excavation of the subsoil, the ground shall be stabilized and backfilled using grave or concrete MB10.

If the works are executed under adverse weather conditions, the contractor shall take all measures in order to secure all earth works. The protective measures shall be applied as long as it is required. Protective measures shall not affect the contractual price of works.

All calculations shall be performed according to the measurement units, given for each item of works. Unit price includes the completion of the whole item of works (procurement of material, external and internal transport, placement, protective measures, all horizontal and vertical transportation, required scaffolding, required bracing formworks, dumpsite maintenance during material unloading and other activities required for the execution of works in accordance with the requirements).

This description of works is an integral part of each individual item of works and it does not exclude the implementation of the relevant provisions of federal normative and relevant regulations in the field of construction

A.2.1

Manual excavation in the III category material in the basement of the structure. All excavated material shall be transported out of the facility, loaded into trucks and transported to the dumpsite located at the distance up to 15km, unloaded and spread over the dumpsite.
Calculations shall be performed per m^3 of completed item of works.

A.2.2

Procurement, backfilling, spreading and compaction of the material until the gravel base, under the structure floor slab, reaches the required bulk modulus. Backfilling and compaction shall be executed in all according to the soil-mechanic study and statistic calculation.
Calculations shall be performed per m^3 of completed item of works.

A.3 CONCRETE AND REINFORCED CONCRETE WORKS

A.3.0 GENERAL PROVISIONS

All concrete works shall be executed by labor force of the required qualification, using modern equipment and machines intended for these purposes.

Concrete quality shall meet the requirements of the technical documentation and regulations relevant for this type of works. Only concrete, which meets the above mentioned requirements shall be used for the execution of this type of works. Samples for proving the concrete quality shall be taken in-situ – simultaneously with concrete placement. The Contractor is obliged to provide adequate conditions so that the concrete could be appropriately

placed, i.e. concrete must not fall free from the heights greater than 2.00m. Concrete mixture shall be placed in layers not thicker than 50cm, using internal vibrator only.

After stripping the formworks, adequate concrete shall be cured appropriately, wetted depending on the atmospheric temperature, during the period of at least three days. In case of lower or higher temperatures than required, all protective measures shall be applied. The protective measures shall be applied as long as it is required. Protective measures refer to the following: concrete mixing, transportation, placement and curing. The applied protective measures shall not affect the contractual price of works.

When concrete protected by the formworks is concerned, it must be protected form any trembling during the setting time.

Concreted surfaces shall be even, without any “bubbling” and segregation, and of the required shape. If, after all, smaller damages are identified to the concrete surfaces they shall be protected by cement mortar, 1:3 ratio, made of sieved gravel.

When visible concrete surfaces or concrete surfaces which are painted (not rendered) are concerned, the surfaces shall be smooth, concrete mixtures shall be made using the same cement type. Suspension of concrete works is not allowed. The formworks used must be clean, completely stable, of the required size and geometric shape, horizontal, vertical, askew, round or any other required by the technical documentation. The formworks must be braced and supported in all according to its purpose and relevant regulations.

Formworks intended for opening shall be in accordance with the technical documentation and it must enable concrete placement.

Scaffolding and working platforms used for formworks placement and concreting must enable smooth execution of works to the workers, and it must be in accordance with the relevant regulations.

All calculations shall be performed according to the measurement units, given for each item of works. Unit price includes the completion of the whole item of works (procurement of material, external and internal transport, placement, protective measures, all horizontal and vertical transportation, required scaffolding, required formworks, and other activities required for the execution of works in accordance with the requirements).

NOTE:

Concrete mixtures shall be prepared using concrete waterproofing admixtures; whenever that is foreseen by design .

A.3.1

Concreting of the foreseen reinforced concrete column of the rectangular cross-section, using the required formworks and fine-grained concrete MB30. Required anchoring shall be executed into the existing support structure.
Newly designed concrete column POS-S1 is a reinforced concrete column, dimensions b/d=55/70 and it shall be placed vertically between the existing structure foundation and the existing concrete girder of the ground floor.
A new concrete-steel column POS-S2 shall be placed in the continuation of this concrete column POS – S1, up to the existing concrete girder above the ground floor. Columns POS-S1 and POS-S2 shall be executed using concrete class MB30, in all according to the design and the instructions of the structure Supervisor.

Calculations shall be performed per m3 of completed item of works, formworks included.

A.3.2

Concreting of the foreseen reinforced concrete wall, using the required double formworks and fine-grained concrete MB30, wall thickness d=20cm.

New concrete canvas (P-Z1), thickness d=20cm, MB30, shall be executed according to the design, from the basement foundation to the level between the existing ground floor ceiling and the ceiling above the ground floor.

Calculations shall be performed per m2 of completed item of works, formworks included.

A.3.3

Concreting of the foreseen reinforced concrete floor slab, using fine-grained concrete MB30, placed over gravel base (calculated separately).
Calculations shall be performed per m2 of completed item of works, formworks included.
Floor slab thickness d=12cm

A.3.4

Lightly reinforced concrete placement intended for the flat roof inclination. Concrete layer, maximum thickness d=9cm, with designed inclination of 1%. This concrete must be expanded in the spans, max. size 3x3m. Along with perimeter walls, the waterproofing base shall be placed, triangular cross-section, side 10cm.
Calculations shall be performed per m2 of completed item of works.

A.3.5

Execution of semi-prefabricated ceiling, with pouring concrete. Fine-grained reinforced concrete MB30 shall be poured over galvanized steel sheet metal of trapezoidal form. Sheet metal thickness 1.0mm.
Calculations shall be performed per m2 of completed item of works.
Slab thickness d=8cm

A.3.6

Procurement of the coating mass SN (old and new), whereby a joint between the existing and new reinforced concrete elements is provided by coating the reinforced concrete structure.
Calculations shall be performed per m2 of coating.

A.4 BAR-FIXING WORKS

A.4.0 GENERAL PROVISIONS

All bar-fixing works shall be executed by labor force of the required qualification, using modern tools and machines intended for these purposes.

All used materials, steel reinforcement bars, means of fixing reinforcement etc, must be of required quality, i.e. they shall have the certificates of compliance.

Steel reinforcement bars shall be mechanically made, treated and it must show no traces of corrosion or traces of any other material.

All executed works must be of the required quality, completely fixed, steel reinforcement bars must be placed according to the foreseen layout, placed at the foreseen distance from the formworks and base course, in order to provide the required protective layer. Therefore, required spacers-washers shall be used for these purposes.

The appearance and layout of the steel reinforcement bars must be in accordance with the technical documentation.

All calculations shall be performed according to the theoretic weight measurement units, given for each item of works. Unit price includes the completion of the whole item of works (procurement of basic material means of fixing reinforcement, washers, external and internal transport, placement-fixing, all horizontal and vertical transportation to the placement location, required scaffolding and other activities required for the execution of works in accordance with the requirements).

This description of works is an integral part of each individual item of works and it does not exclude the implementation of the relevant provisions of federal normative and relevant regulations in the field of construction.

A.4.1

Procurement, cleaning, cutting, bending, fixing, and placement of the smooth reinforcement (GA 240/360), ribbed reinforcement (RA 400/500) and reinforcement meshes (MAG 500/560). Reinforcement quantities are taken approximately.
Actual quantities shall be taken from the statistic details.
Calculations shall be performed per kg of placed reinforcement.

A.5 MASONRY WORKS

A.5.0 GENERAL PROVISIONS

All masonry works shall be carried out by suitably skilled workers, using modern machinery for this type of works at all times.

The quality of all used materials, elements and bonding agents shall be compliant with stipulated quality – i.e. possession of relevant certificates is required.

Completed works shall be flat, have the specified geometric shape i.e. entirely be compliant with technical documentation.

Bracing elements – steel, formwork and concrete, required for construction of horizontal or vertical concrete ring beams shall be included in unit price for walls and not priced separately.

All walls constructed in stage one shall include the design elements necessary for connecting with walls to be constructed in subsequent stages.

All surfaces to be treated shall be clean and free from any foreign particles. Treated surfaces shall be flat, clean, with straight corners and edges. Surface finishes shall be applied only to properly prepared surfaces.

Measures for protection of materials and bonding agents shall be taken if temperature of the environment is higher or lower than stipulated values. Protective measures shall not impact the contracted price of works.

Cost shall be priced per unit of measurement indicated next to each item of works. Unit price shall include completion of entire item of works (supply of materials, internal and external transport, installation, protective measures, horizontal and vertical transport, scaffolding, formwork, etc.) and any other activities required for proper completion of works.

This description shall be considered part of every individual item of works and shall not preclude implementation of relevant building regulations and norms regulating these matters.

GYPSUM BOARD BASIC SISTEM SPECIFICATIONS

Basic elements of gypsum board walls include

- Standard gypsum panel product consist of a noncombustible core, composed primarily of gypsum, and a paper surfacing on the face, back and long edges. All gypsum panel products contain gypsum cores.
- Water-resistant gypsum board has a water resistant gypsum core and a water repellent paper.
- Metal single stud frame – made of galvanized steel profiles CW/UW type, metal sheet 0.6mm thickness.
- Filling and isolating layer of mineral wool, singl stud density not less than 40kg/m3

Gypsum wall board joints quality: K3 marked two layer coated and fine smoothing.

Additional and auxiliary elements should be used according to the manufacturer requirements.

A.5.1

Execution of walls by laying hollow clay blocks d=19cm longitudinally, in mortar, ratio 1:2:6, together with simultaneous execution of reinforced concrete ring beam.
Calculations shall be performed per m2 , together with the execution of reinforced concrete ring beams, reinforcement and formworks.

A.5.2

Coating both sides of inner walls using plasterboards panels, placed over adequate metal substructure, thickness d=30mm made of "U" profiles placed at required distance and fixed to the existing walls.
Plaster-cardboard panels, thickness d=2x12.5mm. All joints between the panels and panel-existing wall joints shall be fixed using adequate tape placed in the adhesive plaster.
Wall coating shall be executed in all according to the requirements of manufacturer.
Calculations shall be performed per m^2 of executed coating, together with the required mobile scaffolding.
Code in the design UPZ-1 and UPZ2.

A.5.3

Coating one side of inner walls using plasterboards panels, placed over adequate metal substructure, d=50mm made of "U" profiles placed at required distance and fixed to the existing walls.
Mineral wool shall be placed between the profiles. Plaster-cardboard panels, thickness d=2x12.5mm.
All joints between the panels and panel-existing wall joints shall be fixed using adequate tape placed in the adhesive plaster.
Wall coating shall be executed in all according to the requirements of manufacturer.
Calculations shall be performed per m2 of executed coating, together with the required mobile scaffolding.
Code in the design UPZ-3

A.5.4

Coating one side of inner walls using plasterboard panels, placed over adequate metal substructure, thickness d=50mm made of "U" profiles placed at required distance and fixed to the existing walls.
Mineral wool with one coat of PE foil shall be placed between the profiles. Plaster-cardboard panels, thickness d=2x12.5mm. All joints between the panels and panel-existing wall joints shall be fixed using adequate tape placed in the adhesive plaster.
Wall coating shall be executed in all according to the requirements of manufacturer.
Calculations shall be performed per m2 of executed coating, together with the required mobile scaffolding.
Code in the design UPZ-4, UPZ-5, UPZ-7, UPZ-11, UPZ-12

A.5.5

Coating both sides of inner walls using moisture-resistant plasterboard panels, placed over adequate metal substructure, thickness d=30mm made of "U" profiles placed at required distance and fixed to the existing walls.
Plaster-cardboard panels, thickness d=2x12.5mm. All joints between the panels and panel-existing wall joints shall be fixed using adequate tape placed in the adhesive plaster.
Wall coating shall be executed in all according to the requirements of manufacturer.
Calculations shall be performed per m2 of executed coating, together with the required mobile scaffolding.
Code in the design UPZ-8

A.5.6

Coating one side of inner walls using moisture-resistant plasterboard panels, placed over adequate metal substructure, thickness d=30mm made of "U" profiles placed at required distance and fixed to the existing walls.
Plaster-cardboard panels, thickness d=2x12.5mm. All joints between the panels and panel-existing wall joints shall be fixed using adequate tape placed in the adhesive plaster.
Wall coating shall be executed in all according to the requirements of the manufacturer.
Calculations shall be performed per m2 of executed coating, together with the required mobile scaffolding.
Code in the design UPZ-2A

A.5.7

Execution of walls by bilateral placement of plasterboard panels, where metal profiles CW/UW 75 shall be placed first and filling between the profiles made of PTP mineral wool d=5cm, protected by one coat of PE foil and air coat d=2cm. Two coats of plaster-cardboard panels shall be placed bilaterally as finishing coat, thickness d=2x12.5mm. Outer angles of the walls shall be protected by aluminum angular rail or Appropriate tape, and all joints shall be fixed using adequate tape placed in the adhesive plaster.
Wall coating shall be executed in all according to the requirements of the manufacturer.
Calculations shall be performed per m2 of executed coating, together with the required mobile scaffolding.
Code in the design UPZ-9

A.5.8

Execution of walls by bilateral placement of plasterboard panels, where metal profiles CW/UW 100 shall be placed first and filling between the profiles made of PTP mineral wool d=5cm, protected by one coat of PE foil and air coat d=2cm. Two coats of moisture-resistant RB plaster-cardboard panels shall be placed bilaterally as finishing coat, thickness d=2x12.5mm. Total wall thickness d=15cm. Outer angles of the walls shall be protected by aluminum angular rail or Appropriate tape, and all joints shall be fixed using adequate tape placed in the adhesive plaster.
Wall coating shall be executed in all according to the requirements of the manufacturer.
Calculations shall be performed per m2 of executed coating, together with the required mobile scaffolding.
Code in the design UPZ-10

A.5.9

Material procurement and assembly of double partition wall with sliding door, which shall be executed using the following elements:
- plaster-cardboard panels d=2x12.5cm
- substructure CW/UW 100 including 10cm of mineral wool layer
- air layer, thickness acc. d=6cm
- plaster-cardboard panels d=2x12.5cm

All works shall be executed in accordance with the design descriptions and specifications, with the consent of the Supervisor.
All joints of plaster-cardboard walls shall be fixed using adequate tape placed in the adhesive plaster.
Calculations shall be performed per m^2 of executed coating, together with the fixing works.
Code in the design UPZ-6

A.5.10

Coating the inner side of outer walls using plasterboard panels, placed over adequate metal substructure, made of CW/UW 50 profiles placed at required distance. Plaster-cardboard panels, thickness d=2x12.5mm. All joints between the panels and panel-existing wall joints shall be fixed using adequate tape placed in the adhesive plaster.
Wall coating shall be executed in all according to the requirements of the manufacturer.
Calculations shall be performed per m^2 of executed coating, together with the required mobile scaffolding.
Code in the design SUZ-1, SUZ-2, SUZ-3, SUZ-4, SUZ-5, SUZ-6, SFZ-1, SFZ-2

A.5.11

Coating the inner side of facade walls using plasterboard panels, placed over adequate metal substructure, made of CW/UW 100 profiles placed at required distance and fixed to the existing walls, with the air layer, 10cm thick plus the substructure. Plaster-cardboard panels, thickness d=12.5mm. All joints between the panels and panel-existing wall joints shall be fixed using adequate tape placed in the adhesive plaster.
Wall coating shall be executed in all according to the requirements of the manufacturer.
Calculations shall be performed per m^2 of executed coating, together with the required mobile scaffolding.
Code in the design SFZ-4

A.5.12

The execution of lightly reinforced cement screed as a base for the floors, 1:3 ratio. Cement screed shall be made of fine-grained sand, thickness d=5cm. Top surface is lightly floated.
Calculations shall be performed per m2 of executed item of works.
Code in the design PNT-3; MKS-1; MKS-5

A.5.13

The execution of lightly reinforced cement screed as a base for the floors, 1:3 ratio.
Cement screed shall be made of fine-grained sand, thickness d=4cm.
Top surface is lightly floated.
Calculations shall be performed per m^2 of executed item of works.
Code in the design MKS-3

A.5.14

The execution of lightly reinforced cement screed as a base for the floors, 1:3 ratio. Cement screed shall be made of fine-grained sand, thickness d=4.5cm. Top surface is lightly floated.
Calculations shall be performed per m2 of executed item of works.
Code in the design PNT-1; PNT-2; PNT-4; MKS-4

A.5.15

The execution of lightly reinforced cement screed as a base for the floors, 1:3 ratio. Cement screed shall be made of fine-grained sand, thickness d=4.5cm. Top surface is black and highly polished.
Calculations shall be performed per m2 of executed item of works.
Code in the design PNT-5

A.5.16

The execution of cement screed as the protection of roof waterproofing, 1:3 ratio. Cement screed shall be made of fine-grained sand, thickness d=4cm and fiber reinforced. Top surface is lightly floated.
Calculations shall be performed per m2 of executed item of works.

A.6 INSULATION WORKS

A.6.0 GENERAL PROVISIONS

All insulation works shall be executed by labor force of the required qualification, using modern tools and machines intended for these purposes.

All implemented materials, binders and protective agents shall be of the required quality, i.e. they shall have the certificates of compliance.

The works shall be executed in all according to the relevant regulations, standards and technical documentation. The base course must be hard, smooth, dry and absolutely even. Binders must not have adverse effects on the base course and materials they are in direct contact with. Completed surfaces must have regular geometric positions.

All installations and previous works shall be executed and tested before the execution of insulating works. Insulation joints are acceptable only in exceptional cases when that is required for the obvious reasons.

In case of temperatures that are higher or lower than foreseen ones, all measures shall be taken during the execution of works in order to protect the base and binding course. Protection measures shall not affect the contractual price of works.

During the execution of works, i.e. until the acceptance of the structure, the contractor shall be obliged to take all measures in order to prevent the damages of works. However, if the damages occur, the contractor shall be

liable to remedy all the damages and bring the works into the designed state, at his own expense, and with the approval of the Supervisor. During the execution of the works, the contractor shall be liable to prevent damages to all other works.

All calculations shall be performed according to the measurement units, given for each item of works. Unit price includes the completion of the whole item of works (procurement of base and binding course material, protective agents, external and internal transport, execution of works, protective measures, all horizontal and vertical transportation, required scaffolding, cleaning and other activities required for the execution of works in accordance with the requirements).

This description of works is an integral part of each individual item of works and it does not exclude the implementation of the relevant regulations.

A.6.1.

Placement of floor waterproofing over the base executed using poly-cements.
All works are executed using water impermeable cement mortar , which is applied in two layers by labor force of the required qualifications, using broad knife, roller or brush.All works shall be executed in accordance with the instructions given by the manufacturer.
Calculations shall be performed per m2 of completed item of works.

A.6.2

Procurement and placement of horizontal floor waterproofing within the sanitary blocks. It shall be executed over the base processed by applying two poly-cement coats. In the vicinity of the massive walls waterproofing shall be raised for 20 cm. All works shall be executed by labor force of the required qualification, all in accordance with the instructions given by the waterproofing manufacturer.
Waterproofing shall be placed over the concrete slab.
Calculations shall be performed per m2 of completed item of works

A.6.3

Procurement and placement of waterproofing for the existing basement walls. Waterproofing shall be placed on the inner side of walls.
Prior to waterproofing placement, the base grinding and washing using high pressure water shall be performed, along with base saturation using water, until the matte water logged base is obtained as a result. The primer shall be applied over the base, prepared in the above described manner, within the cement-sand mixture, 1:1 ratio, with permeability reducing admixture (all inaccordance with manufacturer's instructions). It shall be injected, coat thickness acc. d=0.5cm.
The first rendering layer shall be applied in the second round, 10-15 minutes after the primer application. Rendering mixture shall be made of cement and sand, 1:3 ratio, with the admixture reducing water (all in accordance with manufacturer's instructions). This layer shall be applied in a common manner, using a trowel, layer thickness acc. d=1cm. The second rendering layer shall be applied 1 hour later, whereas the material used shall have the same composition as the material used for the previous layer and their thickness shall be the same. The fourth layer shall be applied 1 hour later using materials without any admixtures, layer thickness acc d=0.5cm. All works shall be executed by labour force of the required qualification, and using required tools.
Calculations shall be performed per m2 of completed item of works.

A.6.4

Remedying works on moisture removal from the basement walls by preventing capillary soakage. The grouting works shall be executed in this case, using solan-based material.
Further soakage shall be prevented by drilling horizontal holes Fi=12mm at center-to-center distance of 120mm. The required boring depth is 40mm smaller than the wall thickness. The holes shall be drilled horizontally, directly into the rendering layer, at the location of vertical joints. The holes shall be drilled up to 15 cm above the floor.
After drilling, each hole shall be completely cleared using air compressor. The solan-based material shall be injected into the holes prepared in the above described manner, using adequate injector.
All works shall be executed by labor force of the required qualification, all according to the specifications and manufacturer's instructions.

Calculations shall be performed per m' of completed item of works

A.6.5

Waterproofing placement on accessible and inaccessible flat roofs. Elastic water impermeable waterproofing PVC membranes, shall be used for these purposes. Membrane is a multi-layer, synthetic roof waterproofing sheet based on premium-quality polyvinyl chloride (PVC) with inlay of glass non-woven. Thickness of a membrane 1.5mm
Uses Roof waterproofing membrane for roofs with ballast (e.g geotextile layer, mass acc. 250g/m2, shall be primarily placed over the prepared base. Waterproofing membrane shall be placed so that the minimum overlap reaches 5cm, which shall be welded by hot air. A protective layer of coated PVC foils shall be applied over the placed waterproofing.
Spot-fixing the horizontal waterproofing to the concrete slab shall be performed along the roof perimeter, using galvanized steel shims 4mmx20mm at every 200mm. waterproofing and geotextile shall be placed along the roof parapet and fixed to the concrete.
All works shall be executed by labor force of the required qualification, using adequate tools and equipment.
Calculations shall be performed per m2 of completed item of works.

A.6.6

Execution of the flat roof moisture barrier using one coat of aluminum foil, which is bilaterally bituminous, overall thickness d=0.5cm
Calculations shall be performed per m2 of completed item of works.

A.6.7

Thermal insulation of façade wall inner sides. The mineral wool panels, thickness d=5cm, protected by PE foil on one side. To be used soft, self-supporting rock mineral wool insulation slab, heat conductivity coefficient λ = 0,038W/mK. Incombustibility class A1
The panels shall be fixed to the wall using adequate plastic joints, bolts and plugs at the place where these four panels joint together. The panel joints shall have no gaps in order to avoid the occurrence of thermal bridges.
Calculations shall be performed per m2 of completed item of works.
Code in the design SFZ-1

A.6.8

Thermal insulation of façade walls. Mineral wool panels, thickness d=3cm, protected by PE foil on one side. To be used soft, self-supporting rock mineral wool insulation slab, heat conductivity coefficient λ = 0,038W/mK. Incombustibility class A1.
The panels shall be fixed to the wall using adequate plastic joints, bolts and plugs at the place where these four panels joint together. The panel joints shall have no gaps in order to avoid the occurrence of thermal bridges.
Calculations shall be performed per m2 of completed item of works.
Code in the design SFZ-2

A.6.9

Thermal insulation of façade walls. Mineral wool panels, thickness d=8cm,protected by PE foil on one side. To be used soft, self-supporting rock mineral wool insulation slab, heat conductivity coefficient λ = 0,038W/mK. Incombustibility class A1.
The panels shall be fixed to the wall using adequate plastic joints, bolts and plugs at the place where these four panels joint together. The panel joints shall have no gaps in order to avoid the occurrence of thermal bridges.
Calculations shall be performed per m2 of completed item of works.
Code in the design SFZ-3, SFZ-4

A.6.10

Thermal insulation of partially underground façade walls over their inner sides. The mineral wool panels, thickness d=5cm, protected by PE foil on one side. To be used soft, self-supporting rock mineral wool insulation slab, heat conductivity coefficient λ = 0,038W/mK. Incombustibility class A1.
The panels shall be fixed to the wall using adequate plastic joints, bolts and plugs at the place where these four panels joint together. The panel joints shall have no gaps in order to avoid the occurrence
of thermal bridges.
Calculations shall be performed per m2 of completed item of works.
Code in the design SUZ-1, SUZ-2, SUZ-3, SUZ-4, SUZ-5, SUZ-6

A.6.11

Thermal insulation of the floor directly above the ground. Extruded polystyrene insulation panels, thickness d=3cm, shall be used for these purposes. One coat of PE foil shall be placed over the thermal insulation panels using dry method.
Calculations shall be performed per m2 of completed item of works.

A.6.12

Thermal insulation of the floor directly above the ground. Extruded polystyrene insulation panels, thickness d=2cm, shall be used for these purposes. One coat of PE foil shall be placed over the thermal insulation panels using dry method.
Calculations shall be performed per m2 of completed item of works

A.6.13

Thermal insulation of the mezzanine ceiling. Extruded polystyrene insulation panels, thickness d=5cm, shall be used for these purposes. One coat of PE foil, thickness d=0.2mm shall be placed over the thermal insulation panels using dry method.
Calculations shall be performed per m2 of completed item of works.
Code in the design MKS-5

A.6.14

Thermal insulation of the mezzanine ceiling. Extruded polystyrene insulation panels, thickness d=3cm, shall be used for these purposes. One coat of PE foil, thickness d=0.2mm shall be placed over the thermal insulation panels using dry method.
Calculations shall be performed per m2 of completed item of works.
Code in the design MKS-1; MKS-4

A.6.15

Thermal insulation of the mezzanine ceiling. Extruded polystyrene insulation panels, thickness d=2cm, shall be used for these purposes. One coat of PE foil, thickness d=0.2mm shall be placed over the thermal insulation panels.
Calculations shall be performed per m2 of completed item of works.
Code in the design MKS-3

A.6.16

Thermal insulation of the flat roof using extruded polystyrene insulation panels, thickness d=10cm. Thermal insulation panels shall be placed over previously executed moisture barrier (calculated separately). One coat of PE foil shall be placed over the thermal insulation panels.
Calculations shall be performed per m2 of completed item of works.
Code in the design RKK-1

6.17

Thermal insulation of the ceiling using mineral wool panels, thickness d=5cm. To be used soft, self-supporting rock mineral wool insulation slab, heat conductivity coefficient λ = 0,038W/mK. Incombustibility class A1. Mineral wool panels shall be fixed on the bottom side to the mezzanine RC ceiling, using adequate anchors and adhesive. One coat of PE foil shall be placed over the bottom side of the mineral wool panels.
All works shall be executed in accordance with the project descriptions and specifications.
Calculations shall be performed per m2 of completed item of works.
Code in the design MKS-6

6.18

Thermal insulation of the ceiling using mineral wool panels, thickness d=10cm. To be used soft, self-supporting rock mineral wool insulation slab, heat conductivity coefficient λ = 0,038W/mK. Incombustibility class A1. Mineral wool panels shall be fixed on the bottom side to the mezzanine RC ceiling, using adequate anchors and adhesive.One coat of PE foil shall be placed over the bottom side of the mineral wool panels. All works shall be executed in accordance with the project descriptions and specifications.
Calculations shall be performed per m2 of completed item of works.
Code in the design RKK-1

A.7 FITTING WORKS

A.7.0 GENERAL PROVISIONS

All fitting works shall be executed by labour force of the required qualification, using modern tools and machines intended for these purposes.

All implemented materials, binders and protective agents shall be of the required quality, i.e. they shall have the certificates of compliance.

Prior to the execution of works, the contractor is obliged to provide workshop detail and submit them to the Supervisor for approval.

The works shall be executed in all according to the relevant regulations, standards and technical documentation and certified workshop details.

All fittings shall be made of corrugated metal, flat and corrugated sheet metal together with other materials, in all according to the technical documentation and certified workshop details.

When joints between different materials are concerned, required sealing, outer and inner linings shall be executed and appropriate fittings for opening and closing, with the locking option, shall be placed.

During the execution of works, i.e. until the acceptance of the structure, the contractor shall be obliged to take all measures in order to prevent the damages of works. However, if the damages occur, the contractor shall be liable to remedy all the damages and bring the works into the designed state, at his own expense, and with the approval of the Supervisor.

All calculations shall be performed according to the measurement units, given for each item of works. Unit price includes the manufacture and placement of the whole item of works along with glazing (procurement of base and binding course material, protective agents, external and internal transport, placement, protective measures, all horizontal and vertical

transportation, required scaffolding, sealing, outer and inner lining, all fittings, protection and finishing paint-varnish coat, and other activities required for the execution of works in accordance with the requirements).

This description of works is an integral part of each individual item of works and it does not exclude the implementation of the relevant regulations.

NOTE:

Prior to the execution of works within this item, the control of all measurements must be performed in-situ.

A.7.1 POS P1 - FOLDING GLASS PARTITION WITH THE DOOR

Composition: Glass partition includes glass door, dimensions 94/280cm, six folding panels, dimensions 107/280cm and one fixed glass panel, dimensions 94/280cm, as well as steel substructure of the suspended ceiling, 112cm high.
All panels, including glass door, are continuous transparent glass surfaces without any lateral framing.
Placement: Manufacturer's fittings for the glass partition shall be fixed to the steel substructure within the suspended ceiling, steel substructure shall be executed within this item of works and anchored to the existing reinforced concrete mezzanine ceiling. Anti-*corrosive protection must be provided for the steel substructure.
Panel: Door wing, folding panels and fixed part of the partition are glazed by tempered safety glass, thickness according to the contractor's calculation (app. 5.5.2). The glass shall be transparent. At the panel top and bottom, the glass shall be placed within the appropriate (system) pvc coated, aluminum profile, at the height of 10cm.
Iron work and fittings: The partition shall be equipped with the system fittings, guide rails and slide guides which enable bringing the panel into the required position. The door has hinges and appropriate door handle and locking mechanism.

The door closers and pivot bearings should have been successfully tested in accordance with the requirements of EN 1154, which defines durability subject to usage frequency rates.

Size: Daylight measurements (opening) – 94+640+94 / 280 (glazed panels and doors) +112 (substructure within the suspended ceiling).

A.7.2 POS P2 - GLASS PARTITION WITH THE DOOR

Composition: Glass partition includes glass door, dimensions 90/250cm, two fixed glass panels, dimensions 57/250cm, and three fixed glass panels, dimensions 88/205cm.
All panels, including glass door, are continuous transparent glass surfaces without any lateral framing.
Placement: Manufacturer's fittings for the glass partition shall be fixed to the reinforced concrete floor structure – reinforced concrete slab and beams.
Panel: Door wing and fixed glass panels of the partition are glazed by tempered safety glass, thickness according to the contractor's calculation (app. 5.5.2). The glass shall be transparent. At the panel top and bottom, the glass shall be placed within the appropriate (system) pvc coated, aluminum profile, at the height of 10cm.
The door is made of glass and it is the same as the fixed panels, with top and bottom aluminum profiles, but without vertical profiles.
Iron work and fittings: The partition shall be equipped with the system fittings. The door has hinges and appropriate door handle and locking mechanism.
The door closers and pivot bearings should have been successfully tested in accordance with the requirements of EN 1154, which defines durability subject to usage frequency rates.
Size: Daylight measurements (opening) – 208/250 + 276 / 205

A.7.3 POS P3 - FOLDING GLASS PARTITION

Composition: Glass partition includes five folding glass panels, dimensions 81/250cm.Placement: Manufacturer's fittings for the glass partition shall be fixed to the reinforced concrete floor structure - reinforced concrete slab.
All panels, including glass door, are continuous transparent glass surfaces without any lateral framing.

Panel: Glass panels of the partition are glazed by tempered safety glass, thickness according to the contractor's calculation (app. 5.5.2). The glass shall be transparent. At the panel top and bottom, the glass shall be placed within the appropriate (system) pvc coated, aluminum profile, at the height of 10cm.
Iron work and fittings: The partition shall be equipped with the system fittings, guide rails and slide guides which enable bringing the panel into the required position.
The door closers and pivot bearings should have been successfully tested in accordance with the requirements of EN 1154, which defines durability subject to usage frequency rates.
Size: Daylight measurements (opening) – 208/250 + 276 / 205

A.7.4 POS P4 - GLASS PARTITION WITH THE DOOR

Composition: Glass partition includes glass door, dimensions 90/250cm, four fixed glass panels, dimensions 85/250cm and one fixed glass panel, dimensions 60/250cm.
All panels, including glass door, are continuous transparent glass surfaces without any lateral framing.
Placement: Manufacturer's fittings for the glass partition shall be fixed to the reinforced concrete floor structure - reinforced concrete slab and beams.
Panel: Door wing and fixed glass panels of the partition are glazed by tempered safety glass, thickness according to the contractor's calculation (app. 5.5.2). The glass shall be transparent. At the panel top and bottom, the glass shall be placed within the appropriate (system) pvc coated, aluminum profile, at the height of 10cm.
The door is made of glass and it is the same as the fixed panels, with top and bottom aluminum profiles, but without vertical profiles.
Iron work and fittings: The partition shall be equipped with the system fittings. The door has hinges and appropriate door handle and locking mechanism.
The door closers and pivot bearings should have been successfully tested in accordance with the requirements of EN 1154, which defines durability subject to usage frequency rates.
Size: Daylight measurements (opening) – 493/250

A.7.5 POS P5 - GLASS PARTITION WITH SLIDING DOOR

Composition: Glass partition includes sliding glass door, dimensions 86/250cm, four fixed glass panels, dimensions 65/250cm and one fixed glass panel, dimensions 86/250cm.
All panels, including glass door, are continuous transparent glass surfaces without any lateral framing.
Placement: Manufacturer's fittings for the glass partition shall be fixed to the reinforced concrete floor structure - reinforced concrete slab.
Panel: Door wing and fixed glass panels of the partition are glazed by tempered safety glass, thickness according to the contractor's calculation (app. 5.5.2). The glass shall be frosted, whereas this effect shall be achieved by sandblasting foil which shall be placed within the laminated glass. At the panel top and bottom, the glass shall be placed within the appropriate (system) pvc coated, aluminum profile, at the height of 10cm.
The door is made of glass and it is the same as the fixed panels, with top and bottom aluminum profiles, but without vertical profiles.
Iron work and fittings: The partition shall be equipped with the system fittings, slide guides, glass panel and appropriate door handle.
The door closers and pivot bearings should have been successfully tested in accordance with the requirements of EN 1154, which defines durability subject to usage frequency rates.
Size: Daylight measurements (opening) – 267+162/250

A.7.6 POS P6 - INTERIOR FULL PANEL DOOR IN ALUMINUM DOOR FRAME

Composition: This item includes the frame with jambs and door wings. Door frame shall be made of drawn, pvc coated, aluminum profiles without thermal bridge (interior door profiles). Door wing includes wooden casing, panel with cardboard honeycomb core and veneered medium-density fibreboard coating d=6mm. A door bumper is foreseen at an appropriate position on the floor. The door shall have no threshold. Door casing is adjustable.
Placement: The door shall be fitted onto plaster-cardboard wall, over previously placed UA profile.
Iron work and fittings: The door shall open around vertical axis, via 3 adequate hinges. The door is equipped with the door handle, butterfly lock and self-locking mechanism. All iron works, fittings and sealing profiles are included into the standard catalogue offer. All fitting are made of brushed stainless steel (Inox). Aluminum grid is foreseen on the on the bottom part of the door, included into the standard catalogue offer, enabling air flow, all in accordance with the mechanical design.

Finish: Door medium-density fibreboard shall be veneered (natural ash wood veneer, 0.6mm thick). Water-based matte varnish shall be used for finishing coat, applied by the manufacturer. Door wing, casing and jambs are evenly cut, without any shaping and rounded edges. Aluminum parts have pvc coating, colored .
Size: Daylight measurements (opening) – 86/215cm

A.7.7 POS P7 - INTERIOR GLASS PANEL DOOR

Composition: This item includes the frame with jambs and door wings. Door frame shall be made of drawn, pvc coated, aluminum profiles without thermal bridge (interior door profiles). Door wing is made of glass without any profiles. Glass used in this item is tempered safety glass, thickness according to the contractor's calculation (app. 5.5.2). The glass shall be frosted, whereas this effect shall be achieved by sandblasting foil which shall be placed within the laminated glass.
Placement: The door shall be fitted in the exiting space between two walls coated by plaster-cardboard panels. Skeleton frame made of steel boxes 20/40/3mm is foreseen between the wall and plaster coating.
Skeleton frames shall be fixed by screw anchors to the existing walls. All contacts between steel and aluminum must be prevented. Contact area with the wall shall be closed by aluminum L profile.
Iron work and fittings: The door shall open around vertical axis, via 3 adequate hinges. The door is equipped with the door handle, cylinder lock, mortice lock, 3 keys and self-locking mechanism. All iron works, fittings and sealing profiles are included into the standard catalogue offer. All fittings are made of brushed stainless steel (Inox).
Finish: Aluminium parts have pvc coating, painted Size: Daylight measurements (opening) – 112/220cm

A.7.8 POS P8 - INTERIOR FULL PANEL SLIDING PARTITION

Composition: This item includes a sliding full panel, dimensions 240/315cm, and top guide rails, along which the panel slides, 4.8m long.
Panel includes self-supporting aluminium casing, with steel reinforcement and high quality panels on both sides. Panel core is made of materials having excellent performance in terms of soundproofing.
Placement: Aluminum guide rail, along which the panel slides, shall be fixed laterally to the reinforced concrete beam of the floor structure. Panel shall be suspended by the guide rail at the required number of points. The guide rail shall be hidden in the area of the suspended ceiling.
Iron work and fittings: Iron works and fittings used shall be sliding, system, taken from the standard catalogue offer. They shall facilitate manual panel manipulation.
Finish: Veneer (natural ash wood veneer, 0.6mm thick) shall be used for the finishing coat and coated by acrylic transparent varnish matte. Aluminum panel casing shall not be visible. Soundproofing 47db.
Size: Daylight measurements (opening) – 240/315cm

A.7.9 POS P10 - INTERIOR FULL PANEL DOOR IN ALUMINUM DOOR FRAME

Composition: This item includes the frame with jambs and door wings. Door frame shall be made of drawn, pvc coated, aluminium profiles without thermal bridge (interior door profiles). Door wing is made of wooden casing, panel with cardboard honeycomb core and veneered medium-density fibreboard coating d=6mm. A door bumper is foreseen at an appropriate position on the floor. The door shall have no threshold. Door casing is adjustable.
Placement: The door shall be fitted onto plaster-cardboard wall, over previously placed UA profile.
Iron work and fittings: The door shall open around vertical axis, via 3 adequate hinges. The door is equipped with the door handle, butterfly lock and self-locking mechanism. All iron works, fittings and sealing profiles are included into the standard catalogue offer. All fittings are made of brushed stainless steel (Inox). Aluminum grid is foreseen on the bottom part of the door, included into the standard catalogue offer, enabling air flow, all in accordance with the mechanical design.
Finish: Door wing medium-density fibreboard shall be veneered (natural ash wood veneer, 0.6mm thick). Water-based matte varnish shall be used for finishing coat, applied by the manufacturer. Door wing, casing and jambs are evenly cut, without any shaping and rounded edges. Aluminium parts have pvc coating.
Size: Daylight measurements (opening) – 90/215cm

A.7.10 POS P9- INTERIOR, SINGLE, FULL PANEL, SLIDING DOOR

Composition: This item includes a full panel door and one sliding mechanism fitted into the partition wall made of plaster-cardboard.
Door shall have no obvious frame or casing.
Placement: The door shall be fitted onto plaster-cardboard wall. When opened the door fits completely into the wall thickness.
Iron work and fittings: Iron works and fittings used shall be system, sliding mechanism and mortice door knob.
Finish: Medium-density fibreboard shall be coated by acrylic paint.
Size: Daylight measurements (opening) – 90/230cm

A.7.11 POS 1 SHOP WINDOW

Composition: This item includes vertical and horizontal extruded aluminium profiles with thermal bridges, and adequate glass panel. Thermal brake between external and internal aluminum profile polyamide min 32mm. Profiles with clean and minimalistic forms.

Placement: Aluminium construction shall be joined with the structure using aluminium anchors taken from the catalogue of the standard products. The whole system has required thermal insulation, water impermeability to heavy rain, and in case of strong wind the air permeability is in accordance with the DIN standards.

Panel: -Fixed part of the shop window have thermopane glass glazing. Extenal glass solar range stands out with remarkable photometric and energy characteristics. It has a strong resistance to pollution due to its coating which is embedded in the glass during the coating process.
Transmitance – visible 56%,solar 53%, UV 29%, Reflectance - out 36%,In36%, solar 26%
Outer glass tempered, gap filled with argon gas, inner glass laminated, low-emission, d=4.4.1.
-HEAT TRANSFER COEFFICIENT FOR THE WHOLE ELEMENT .....U=1.8W / m2K
Opening: Shop window is fixed,
Finish: Coating of RAL XXXXX hue
Size : Daylight measurements (opening) – 310/272 cm; production measurements – 310/272 cm

A.7.12 POS 2 ENTRANCE WITH A SHOP WINDOW

Composition: This item includes vertical and horizontal extruded aluminium profiles with thermal bridges, and adequate glass panel. Thermal brake between external and internal aluminum profile polyamide min 32mm. Profiles with clean and minimalistic forms.

Placement: Aluminum construction shall be joined with the structure using aluminium anchors taken from the catalogue of the standard products. The whole system has required thermal insulation, water impermeability to heavy rain, and in case of strong wind the air permeability is in accordance with the DIN standards.
Panel: -Fixed part of the shop window have thermopane glass glazing. Extenal glass solar range stands out with remarkable photometric and energy characteristics. It has a strong resistance to pollution due to its coating which is embedded in the glass during the coating process.
Transmitance – visible 56%,solar 53%, UV 29%, Reflectance - out 36%,In36%, solar 26%
Outer glass tempered, gap filled with argon gas, inner glass laminated, low-emission, d=4.4.1.
-HEAT TRANSFER COEFFICIENT FOR THE WHOLE ELEMENT .....U=1.8W / m2K
Opening: Doors open outwards, around vertical axis.
Iron work and fittings: Iron works include hinges, self-locking mechanism, electrical lock, door handle made of vertical cylindrical profiles included in catalogues of the standard products of respectable manufacturers.
Door is equipped with a lock and keys.
Finish: Coating of RAL XXXXX hue
Size : Daylight measurements (opening) – 95/312 + 170/272 cm; production measurements – 95/312+48/272+170/272cm

A.7.13 POS 3 THREE PART FACADE PARTITION

Composition: This item includes vertical and horizontal extruded aluminium profiles with thermal bridges, and adequate glass panel. Thermal brake between external and internal aluminum profile polyamide min 32mm. Profiles with clean and minimalistic forms.

It consists of three parts – glazed door opening toward the courtyard , fixed glazed panel and window opening around the lower horizontal axis in to the space.
Placement: Aluminum construction shall be joined with the structure using aluminum anchors taken from the catalogue of the standard products. The whole system has required thermal insulation, water impermeability to heavy rain, and in case of strong wind the air permeability is in accordance with the DIN standards.
Panel: -Fixed part of the shop window have thermopane glass glazing. Extenal glass solar range stands out with remarkable photometric and energy characteristics. It has a strong resistance to pollution due to its coating which is embedded in the glass during the coating process.
Transmitance – visible 56%,solar 53%, UV 29%, Reflectance - out 36%,In36%, solar 26%
Outer glass tempered, gap filled with argon gas, inner glass laminated, low-emission, d=4.4.1.
-HEAT TRANSFER COEFFICIENT FOR THE WHOLE ELEMENT .....U=1.8W / m2K
Opening: Doors open outwards, around vertical axis.
Iron work and fittings: Iron works include hinges, self-locking mechanism, electrical lock, door handle made of vertical cylindrical profiles included in catalogues of the standard products of respectable manufacturers.
Door is equipped with a lock and keys.
Finish: Coating of RAL XXXXX hue
Size : Daylight measurements (opening) – 285/ 251cm;

A.7.14 POS 4 SINGLE PART FACADE PARTITION

Composition: This item includes vertical and horizontal extruded aluminum profiles with thermal bridges, and adequate glass panel. Thermal brake between external and internal aluminum profile polyamide min 32mm. Profiles with clean and minimalistic forms.

Placement: Aluminum construction shall be joined with the structure using aluminum anchors taken from the catalogue of the standard products. The whole system has required thermal insulation, water impermeability to heavy rain, and in case of strong wind the air permeability is in accordance with the DIN standards.

Panel: -Fixed part of the shop window have thermopane glass glazing. Extenal glass solar range stands out with remarkable photometric and energy characteristics. It has a strong resistance to pollution due to its coating which is embedded in the glass during the coating process.
Transmitance – visible 56%,solar 53%, UV 29%, Reflectance - out 36%,In36%, solar 26%
Outer glass tempered, gap filled with argon gas, inner glass laminated, low-emission, d=4.4.1.
-HEAT TRANSFER COEFFICIENT FOR THE WHOLE ELEMENT .....U=1.8W / m2K
Opening: Facade partition is fixed,
Finish: Coating of RAL XXXXX hue
Size : Daylight measurements (opening) – 95/ 251cm

A.7.15 FULL PANEL, ALUMINUM PARTITIONS WITHIN THE TOILET – P1

Composition: This item includes fixed panel and door wing. Both fixed panels and doors are made of solid chipboard panels, thickness 14mm, coated on both sides with melamine or equivalent. The partition height is 220cm, including 15cm of free space between the floor and the door (this is also the height of the footing they are supported by). Aluminum cover profiles, dimensions 43x20mm, shall be placed along the top edge and whole front side, thus providing the stability of the system. Aluminum U-profiles, 30x30mm, shall be placed along the vertical panel edges, closer to the wall. Aluminum profiles, 38x18mm, shall be placed on the fixed segments, near the door (door frame).
Placement: The partition shall be fixed to the wall, via vertical aluminium U-profile, all using bolts at mutual distance of acc. 700mm. The partition shall be fixed to the plaster-cardboard wall, tiled with ceramics.
Iron work and fittings: The door wing shall open around vertical axis, via 2-3 adequate hinges made of brushed stainless steel (Inox). The door is equipped with the butterfly lock, with “occupied”/”unoccupied” indicators.
All iron works, fittings and sealing profiles are included into the standard catalogue offer, while brushed stainless steel (Inox) is used as finishing coat.
In case of partition with sliding door, the item of works also includes an adequate sliding mechanism: brushed stainless steel (Inox) guide rail in the top section (which suspends the door), guide rail cover, stoppers and bumpers. The item also includes adequate handle and locking mechanism on the toilet side.
Notes:

- Painted, tone selected from the color chart included in the standard catalogue
- For all variations of the design solution, consult the Supervisor.

Size: 209/220
Pieces: 2

A.7.16 FULL PANEL, ALUMINUM PARTITION OF THE INTERPRETER BOOTH – P2

Composition: This item includes fixed panel and door wing. The door dimensions are 75/220 with fanlight, 30cm high. Fixed panel section, dimensions 123/250cm and 196/56 within the suspended ceiling. Partition is 250cm high, measured from the floor to the suspended ceiling, plus 56cm in the suspended ceiling zone. The door and panels for a panel sandwich, made of two solid chipboard panels, thickness 14mm, coated on both sides with melamine or equivalent and full segment made of solid mineral wool panels, thickness 30mm. Aluminum U-profiles, 40x60mm, shall be placed along the vertical panel edges, closer to the wall. Aluminum profiles shall be placed on the fixed segments, near the door.
Placement: The partition shall be fixed to the wall, via vertical aluminum U-profile, all using bolts at mutual distance of acc. 700mm. The partition shall be fixed to the plaster-cardboard wall and reinforced concrete slab.
Iron work and fittings: The door wing shall open around vertical axis, via 2-3 adequate hinges. The door is equipped with a lock. All iron works, fittings and sealing profiles are included into the standard catalogue offer , while all aluminum profiles have PVC coating, chipboard elements have melamin or its equivalent, all painted.
Notes:

- partition must meet the requirements in terms of sound insulation of 40 dB
- For all variations of the design solution, consult the Supervisor.

Size: 123+78/250+56
Pieces: 1

A.7.17 SINGLE FULL PANEL FIRE DOOR– POS P3

Composition: This item includes frame and door panel. Door frame is made of steel profiles and sheet metal. The door is included into the standard catalogue offer, with manufacturer's anti-corrosive protection and adequate tone of metal paint. A 10cm high threshold is foreseen for this door.
Placement: The door shall be fitted using required anchors, as defined in the manufacturer's instructions. Anchors shall be welded to the concrete wall reinforcement. If there is certain gap between the frame and the wall, it shall be filled with plaster and covered by L-profile of the same colour as door.
Iron works and fittings: The door shall open around vertical axis, via 3 adequate hinges. The door is equipped with a self-closing mechanism or special hinges with springs enabling door closing. The door is provided with a 3-key lock. Handles, locks and downlight are included into the standard catalogue offer of a door supplier. All hardware, tools and sealing profiles are included into the standard catalogue offer of class I, having the required certificate of compliance.
Panel: According to the FP analysis, the door panel shall be fire resistant during the period of 90 minutes. Both sides of the door panel are coated with painted steel sheet metal. Door panel is made of solid insulating plate.
Finish: Painted
Door has the certificate of compliance (FULL SET) issued by a competent national institution and shall be fire resistant during the period specified in the description.
Size : 90/205 cm
Pcs : 1

A.7.18 POS ST1,STAIRS TOWARDS THE INTERPRETER BOOTH – – L=0.69 / 2.30+0.88m

New steel staircase POS ST1, which shall be placed within the opening of the ground floor ceiling. A steel girder P-N1 shall be placed according to the design, prior to the execution and placement of the staircase.

ITEM DESCRIPTION:
A staircase includes permanent steel support structure, secondary girders, steel support plates and wooden treads. This item also includes banisters which are described within the relevant item. Staircases shall be placed within the open space. Therefore, all additional measurements must be determined prior to fitting.

FITTING:
A staircase includes permanent support structure made of box profiles 100x100mm, short steel elements which shall be fitted and welded to the permanent support structure under the foreseen angle and steel plates, thickness 5.0cm, over which the wooden tread shall be placed.

Permanent steel support structure shall be placed over the basement slab and steel plate, size 200x200mm, thickness 10mm and fixed to the reinforced concrete slab using high-quality screws. At the stair landing, support

structure shall be welded to the steel girder of the floor. Additional steel support shall be placed within the ratification zone – short strut, dimensions 100x100mm, 72cm high, which shall be fixed to the support RC slab via steel plate, dimensions 200x200mm, thickness 10mm, all using high-quality screws.

Wooden stair treads shall be placed over steel plates, which are welded to short elements, welded to the skid under the foreseen angle. Secondary steel girders have the same dimensions 100x100mm and they shall be welded to the main girder. Wooden sheet piles shall be screwed to the steel support structure, on the bottom side, at 4 points.

PROCESSING:

All elements shall be prepared in the workshop after verifying the measurements taken in-situ, they shall, then, be taken to the placement location and assembled.
All steel elements must be protected against corrosion and painted .
All wooden elements must have adequate protective coatings and a coat of matte varnish.

A.7.19 POS ST2 –MAIN GLAZED STAIRCASE – L=0.90 / 0.82+3.57+0.82,

ITEM DESCRIPTION:
A staircase includes support structure and glass stair treads. This item also includes banisters which are described within the relevant item.

FITTING:
A staircase includes steel support structure made of welded box profiles 60x120mm which form the stair tread outline adequate for glass treads.

Steel support structure shall be placed over the basement slab and steel plate, size 150x150mm, thickness 10mm and fixed to the reinforced concrete slab using high-quality screws. At the stair landing, support structure shall be welded to the steel girder of the floor.
The girders shall be fixed to the inner side of the wall structure in the inter-landing zone.

Three-layer glass stairs, thickness 32mm, are sand blasted and varnish coated, fitted within the steel girders of the adequate top paint coat. They are attached to the upper side of the glass using headers that run through the glass.

Tempered glass shall be used for stair treads, with 30mm diameter holes, milled under the 45 degree angle, thus providing higher resistance and strength and less damages.

During the execution of glass stairs, the top glass layer shall be drilled and milled first, and then tempered. After tampering, no additional processing can be performed on the glass. Drilling holes and measuring glass dimensions must be accurately executed, since three glass layers shall be joined together later on. After laminating the glass, the following two layers shall be drilled. After the completion of the whole stair, it shall be sand blasted and varnished, prior to fitting. Stair edges must be equipped with anti-slip tape along the whole length of the tread.

Suitable safety spacers must be placed between glass layers and steel support structure in order to separate two different materials.

PROCESSING:
All elements shall be prepared in the workshop after verifying the measurements taken in-situ, they shall, then, be taken to the placement location and assembled, whereby all required safety measures shall be taken.
All steel elements must be protected against corrosion and painted.
All glass elements must have adequate protective coatings and must be adequately processed in the workshop. During the transportation and fitting they must be handled with care.

A.7.20 OG-1MAIN STAIRCASE BANISTER ,DIM: L- 4.11/1.0m

ITEM DESCRIPTION:
This banister includes the glazed section and aluminum skirting where the glass shall be fitted.
FITTING:

Aluminum profiles – skirting, h=10.0cm shall be attached to the support structure of the reinforced concrete slab, using screws. Glass panels shall be fitted to the aluminum profiles executed in such a manner. The glass shall be tampered, placed in two layers, thickness 10mm with protective foil placed between the layers.
Vertical aluminum plinth, thickness 5.0cm shall be placed along the joint with the wall. It shall be fixed to the wall structure vertically.

PROCESSING:
All elements shall be prepared in the workshop after verifying the measurements taken in-situ, they shall, then, be taken to the placement location and assembled, whereby all required safety measures shall be taken.
All aluminum elements must have a protective coating and must be painted.
All glass elements must have adequate protective coatings and must be adequately processed in the workshop. During the transportation and fitting they must be handled with care.

A.7.21 OG-2MAIN STAIRCASE BANISTER ,DIM: L- 0.82+3.56+0.82 / 1.00m

ITEM DESCRIPTION:
This banister includes the vertical banister supports, steel handrails and cables.

FITTING:
Vertical banister supports, 5mm thick profiles, whose width in the upper part reaches 50mm shall be fitted laterally onto the support structure of the staircase through a slip with plate, previously welded to the support structure. Vertical supports shall be fitted using double-tread screws with decorative heads. Along their height, the profiles shall be additionally attached using double-tread screws with decorative heads. Connectors foreseen for cable placement shall also be provided. Handrail (50mm profile) shall be placed in the upper section.
Cables foreseen for this banister are steel, diameter 10mm. Handrail is made od several parts joined to the girders via incise formed by welding.

PROCESSING:
All elements shall be prepared in the workshop after verifying the measurements taken in-situ, they shall, then, be taken to the placement location and assembled, whereby all required safety measures shall be taken.
All steel elements must be protected against corrosion and painted.

A.7.22 OG-3GALLERY BANISTER,DIM: L- 6.42/1.0m

ITEM DESCRIPTION:
This banister includes a glazed section and aluminum skirting where the glass shall be fitted.

FITTING:
Aluminum profiles – skirting, h=10.0cm shall be attached to the support structure of the reinforced concrete slab, using screws. Glass panels shall be fitted to the aluminum profiles executed in such a manner. The glass shall be tampered, placed in two layers, thickness 10mm with protective foil placed between the layers.

Vertical aluminum plinth, thickness 5.0cm shall be placed along the joint with the wall. It shall be fixed to the wall structure vertically.

PROCESSING:
All elements shall be prepared in the workshop after verifying the measurements taken in-situ, they shall, then, be taken to the placement location and assembled, whereby all required safety measures shall be taken.
All aluminum elements must have a protective coating and must be painted.
All glass elements must have adequate protective coatings and must be adequately processed in the workshop. During the transportation and fitting they must be handled with

A.7.23 OG-4INTERPRETER BOOTH BANISTER ,DIM: L- 5.50m

ITEM DESCRIPTION:
This banister includes steel tubular profiles, following the direction of the staircase, filling in the form of horizontal girders, downlight in contact with the basement floor and ground storey floor, as well as secondary girders providing lateral connection with the support structure at foreseen points.

FITTING:
The banister shall be fitted directly onto the floor and attached to the support structure through the panel and screws. It shall be welded laterally to the support staircase profile at adequate heights.

The banister includes one piece of tubular profile, diameter 50mm, following the direction of the staircase. Horizontal fillings are made of steel sheet metal, thickness 10m, width 5cm, shall be placed symmetrically to the main profile, at the foreseen height and welded to the vertical banister elements.

PROCESSING:
All elements shall be prepared in the workshop after verifying the measurements taken in-situ, they shall, then, be taken to the placement location and assembled, whereby all required safety measures shall be taken.

All steel elements must be protected against corrosion and painted.

A.7.24 GREEN WALL

Item code: Z1
Dimensions of the elements:323x663cm

DESCRIPTION:
This item includes a green wall applied to the vertical surface, on the inner side of the structure, within the main glazed staircase. It includes the base, central section intended for the greenery and installation required for adequate functioning of the green wall.

PLACEMENT:
Green wall shall be placed over suitable substructure and fixed to the finishing coat of the wall.
Green wall installations include the following: control valve for releasing clean/used water, water supply pipes (drop-by-drop), vertical and horizontal distribution, panel intended for the greenery with the geotextile membrane, and the collector for the excess water drained from the wall and its reintroduction into the system.

PREPARATION: Green wall elements shall be prepared in the workshop and assembled in-situ. Water and electric power outlets, required for the greenery nourishing within the wall, must be foreseen.

A.7.25. R1- FACADE ADVERTISEMENT PANEL

R1 – dimension: 120x112cm
Pieces: 1
STRUCTURE:The position consists of steel frame as a bearing construction attached to the facade and glass attached to the frame from the inside. The EUIC's logo is attached to the glass on both sides.
MONTAGE:The steel frame has been formed from steel bars dimensions: 100x80mm welded and attached to the facade with screws.
The glass is two layered tempered glass with a transparent foil attached between.
EUIC's logo made from water proof foil and attached on the glass on the both sides.

PREPARATION:All elements must be assembled in workshop and anti-corosive protected. The position will be mounted directly on the site.

A.7.26. SIGN – MAIN ENTRANCE

R2 - dimension: 290X42cm
Pieces: 1
EUIC's logo made from proper water proof foil and attached on the glass.
All surfaces must be clean and dry before application!

A.7.27. SIGN – MAIN ENTRANCE

R3 - dimension: 268x20cm
Pieces: 1
EUIC's logo made from proper water proof foil and attached on the glass.
All surfaces must be clean and dry before application!

A.7.28. SIGN – COURTYARD ENTRANCE

R4 - dimension: 212X17cm
Pieces: 1
EUIC's logo made from proper water proof foil and attached on the glass.
All surfaces must be clean and dry before application!

A.8 STEEL STRUCTURE

A.8.0 GENERAL PROVISIONS

All works on the steel structure shall be executed by labour force of the required qualification, using modern equipment and machines intended for these purposes.

All materials, binders, protective agents must be of the required quality, i.e. must have the required certificates of compliance. Prior to the commencement of works the contractor shall prepare workshop specifications and submit them to the Supervisor for approval. All welders must possess valid certificates of compliance referring to the particular type of works.

This structure shall be executed in all according to the technical documentation, static calculations and workshop specifications, using contemporary methods of execution, all in order to prevent the occurence of defects during welding works. All joints and welded joints must be dry, clean, i.e. without any impurities. All welded joints shall be inspected by the Supervisor. Primary protection of the steel structure shall be performed in the workshop. After the assembly another protective coat shall be applied after which two coats of steel paint shall be applied.

Throughout the execution of works, until the acceptance of the structure, the contractor shall be obliged to take all required measures in order to prevent any damage to the works. If the damages occur after all, the contractor shall remedy all defects and bring the works into the designed state, all at his own expense and with the approval of the Supervisor.

All calculations shall be performed according to the measurement units, given for each item of works. Unit price includes the completion of the whole item of works (procurement of basic materials and binders, external and internal transport, fabrication and assembly, protective measures, all horizontal and vertical transportation, required scaffolding, the expenses of welded joint inspection, protecting and painting the structure, and other activities required for the execution of works in accordance with the requirements).

Unit price also includes all anchors, anchor boxes and all other fixing elements, both on the structure itself and placed into the concrete.

This description of works is an integral part of each individual item of works and it does not exclude the implementation of the relevant provisions of federal normative and relevant regulations in the field of construction.

Newly designed steel structure of the gallery included girders U160 and I100. Trapezoidal steel, sheet metal with concrete filling MB30 shall be placed over the executed structure, total thickness 8cm including the HI-bond. All layers, required subject to the architectural requirements given within the design, shall be executed over the gallery ceiling.

Grandstand structure is made of steel, sheet metal girders P-N4. Girders are made of sheet metal, of “T” cross-section, supported by newly designed steel girder POS-N5 and basement floor structure. All elements of the structure shall be executed in accordance with the project documentation.

Newly designed structure, at the part of the facility foreseen for the interpreters, shall also be made of steel, with trapezoidal steel, sheet metal with concrete filling placed over it. All layers, required subject to the architectural requirements, shall be executed on the top.

A.8.1

Material procurement and cleaning, execution according to the drawings provided within the workshop documentation, basic anti-corrosive protection, test assembly, transportation, assembly and final anti-corrosive protection for the whole steel structure of the roof and the facility. All works shall be executed in all according to the technical requirements, rulebooks referring to the fabrication, transportation, assembly and anti-corrosive protection.
Material used for the execution of this structureshallbe as follows:
Standard hot-rolled profiles and sheet metal,
thickness up to 25mm, made of steel S235JRG2-Č0361,
all in conformity with the standard JUS-EN10025:2003.
Joining bolts, strength class 10.9 according to the
standards JUS M.B1.066 and JUS M.B1.023
(SRPS ISO 898-1:2003).
Steel anchors C20 (Č1331).
Welding electrodes –basic, coated.
Anti-corrosive protection shall be applied within the system of alkyd protection, in two coats, total thickness 60 microns (120 microns), all in accordance with the technical documentation of the manufacturer of the Steel structure. The afore mentioned quantity is approximate. Actual quantity shall be taken from the static calculation and workshop specifications which shall be provided by the contractor
Calculations shall be performed per kg of assembled and painted structure.

A.8.2

Procurement of materials and manufacturing for fire protection for a period of 60 minutes complete steel structure that is mounted tyrants on the subject, and at the current regulations.
Fire protection work appropriate attested fireproof spreads and coatings with the use of the necessary scaffolding.
Quantity data is approximate the actual amount taken from static details.
Calculations shall be performed per kg of assembled and painted structure.

A.8.3

Procurement of materials and manufacturing for fireno protection for a period of 90minutes complete existing steel structure.
Fire protection work appropriate attested fireproof spreads and coatings with the use of the necessary scaffolding.
The amount of steel is given approximately,the actual amount taken on site.
Calculations shall be performed per kg painted structure.

A.9 SHEET METAL WORKS

A.9.0. GENERAL PROVISIONS

All sheet metal works shall be executed by labour force of the required qualification, using modern tools and machines intended for these purposes.

All implemented materials, binders and protective agents shall be of the required quality, i.e. they shall have the certificates of compliance.

Sheet metal works shall be executed in all according to the technical documentation and verified specifications, whereby all contemporary methods of joining-clinching sheet metal shall be applied. Thermal insulations within two pieces of sheet metal must have a required spacer appropriate for these purposes. Sheet metal must have a required coating (galvanized, PVC, paint), as required by the technical documentation. All completed surfaces must have regular geometric forms. All completed sheet metal works must be adequate for their purposes. At the places where sheet metal is in direct contact with other materials (concrete, brick, etc.) it must have adequate protection: coating, roofing felt, etc. sheet metal supports, which are in direct contact with the sheet metal, must be made of the same material.

During the execution of works, i.e. until the acceptance of the structure, the contractor shall be obliged to take all measures in order to prevent the damages of works. However, if the damages occur, the contractor shall be liable to remedy all the damages and bring the works into the designed state, at his own expense, and with the approval of the Supervisor.

All calculations shall be performed according to the measurement units, given for each item of works. Unit price includes the completion of the whole item of works (procurement of base and binding course material, external and internal transport, fabrication and fitting, protective measures, all horizontal and vertical transportation, required scaffolding, required protective coating at determined locations, thermal insulation fillers between two pieces of sheet metal and other activities required for the execution of works in accordance with the requirements).

This description of works is an integral part of each individual item of works and it does not exclude the implementation of the relevant regulations.

A.9.1

Fabrication and fitting of a hanging gutter, made of PVC coated aluminum sheet metal, d=0.70mm, together with the required binders. PVC film laminated onto galvanized sheet aluminum. The film thickness is 250 μm, and the film is in solid colours.
The main components of the film are polyvinyl chloride, a plasticizer of phthalate
type, and pigments.
The gutter shall have rectangular cross-section, unfolded width app. 75cm.
Calculations shall be performed per m' of completed gutter.

A.9.2

Fabrication and fitting of a vertical gutter, made of PVC coated aluminum sheet metal, d=0.70mm, together with the required binders. PVC film laminated onto galvanized sheet aluminum. The film thickness is 250 μm, and the film is in solid colours.
The main components of the film are polyvinyl chloride, a plasticizer of phthalate
type, and pigments.
The vertical gutters shall have round cross-section, dimensions Fi=125mm.
Calculations shall be performed per m' of completed and fitted gutter.

A.10 TILING WORKS

A.10.0. GENERAL PROVISIONS

All tiling works shall be executed by labour force of the required qualification, using modern tools and machines intended for these purposes.

All implemented materials, binders and protective agents shall be of the required quality, i.e. they shall have the certificates of compliance.

The works shall be executed in all according to the relevant regulations, standards and technical documentation. Tile class, purpose and quality are determined by the technical documentation. The colour and method of tile placement shall be determined by the Supervisor. All installations, that are hidden, must be placed and tested prior to the commencement of tiling works. When tiles are placed using adhesive, the base course must be clean, hard, smooth and with straight and sharp edges. Completed surfaces must have regular geometric forms.

During the execution of tiling works, expansion strips shall be placed if required. In case of temperatures that are higher or lower than foreseen ones, all measures shall be taken during the execution of works in order to protect the base and binding course. Protection measures shall not affect the contractual price of works.

During the execution of works, i.e. until the acceptance of the structure, the contractor shall be obliged to take all measures in order to prevent the damages of works. However, if the damages occur, the contractor shall be liable to remedy all the damages and bring the works into the designed state, at his own expense, and with the approval of the Supervisor. During the execution of the works, the contractor shall be liable to prevent damages to all other works.

All calculations shall be performed according to the measurement units, given for each item of works. Unit price includes the manufacture and placement of the whole item of works along with glazing (procurement of base and binding course material, protective agents, external and internal transport, placement, protective measures, all horizontal and vertical transportation, required scaffolding, expansion strips placement, cleaning, and other activities required for the execution of works in accordance with the requirements).

This description of works is an integral part of each individual item of works and it does not exclude the implementation of the relevant regulations.

The sample has to be approved by Supervision.

A.10.1.

Floor tiling using granite ceramics, d=10mm. Fine porcelain tiles classifiable in group Bla UGL under the UNI EN 14411 standard and meeting all the prerequisites of the UNI EN 14411-G standard.
Tiles consists of a uniform, compact body obtained by the dry pressing of a spray-dried mixture of kaolin and feldspar minerals and aggregates with very low iron content.
Sizes: 60x60cm
Thickness: 8-10mm
Firing temperature: >1200 °C
H2O absorption: ≤ 0.05%
Bending strenght: >45 N/mm²
Deep abrasion resistance: 120-150mm³
Frost resistance: Resists
Thermal shock resistance: Resists
Non flammable
The tiles shall be placed joint-to-joint in the high-quality adhesive course, thickness app. d=10mm. All joints shall be sealed by fugue filler in the tile color. During the execution of tiling works, special attention should be paid to achieving the accurate inclination towards the floor grid. When perimeter walls are concerned, if required, appropriate plinth, height h=10cm, shall be made of the above mentioned tiles.
Calculations shall be performed per m2 of completed item of works.

A.10.2.

Wall tiling using fine porcelain wall tiles, dimensions from 50x25cm, to 60x30cm.Thickness of tiles from 8-10mm. The tiles shall be placed joint-to-joint in the suitable adhesive course. All joints shall be sealed by fugue filler, in the tile color.
Full body porcelain tiles classifiable in group Bla UGL under the UNI EN 14411 standard and meeting all the prerequisites of the UNI EN 14411-G standard.
Tiles consists of a uniform, compact body obtained by the dry pressing of a spray-dried mixture of kaolin and feldspar minerals and aggregates with very low iron content.
Sizes: 60x30cm
Thickness: 8-10mm
Firing temperature: >1200 °C
H2O absorption: ≤ 0.05%
Bending strenght: >45 N/mm²
Deep abrasion resistance: 120-150mm³
Thermal shock resistance: Resists
Non flammable
Calculations shall be performed per m2 of completed item of works.

A.11 FLOOR LAYING WORKS

A.11.0 GENERAL PROVISIONS

All floor laying works shall be executed by labour force of the required qualification, using modern tools and machines intended for these purposes.

All implemented materials, binders and protective agents shall be of the required quality, i.e. they shall have the certificates of compliance.

The works shall be executed in all according to the relevant regulations, standards and technical documentation. The base course must be hard, smooth, and absolutely even. Binders must not have adverse effects on the base course and materials that are used. Completed surfaces must have regular geometric positions. During the execution of works, expansion strips shall be placed if required. All installations, that are located on the floor, must be placed and tested prior to the commencement of floor laying works. Diversions in colour and tone are not acceptable.

In case of temperatures that are higher or lower than foreseen ones, all measures shall be taken during the execution of works in order to protect the base and binding course. Protection measures shall not affect the contractual price of works.

During the execution of works, i.e. until the acceptance of the structure, the contractor shall be obliged to take all measures in order to prevent the damages of works. However, if the damages occur, the contractor shall be liable to remedy all the damages and bring the works into the designed state, at his own expense, and with the approval of the Supervisor.

During the execution of the works, the contractor shall be liable to prevent damages to all other works.

All calculations shall be performed according to the measurement units, given for each item of works. Unit price includes the completion of the whole item of works (procurement of base and binding course material, protective agents, external and internal transport, execution, polishing-planing, protective measures, all horizontal and vertical transportation, required scaffolding, expansion strips placement, angle plinth placement, cleaning, and other activities required for the execution of works in accordance with the requirements).

This description of works is an integral part of each individual item of works and it does not exclude the implementation of the relevant regulations.

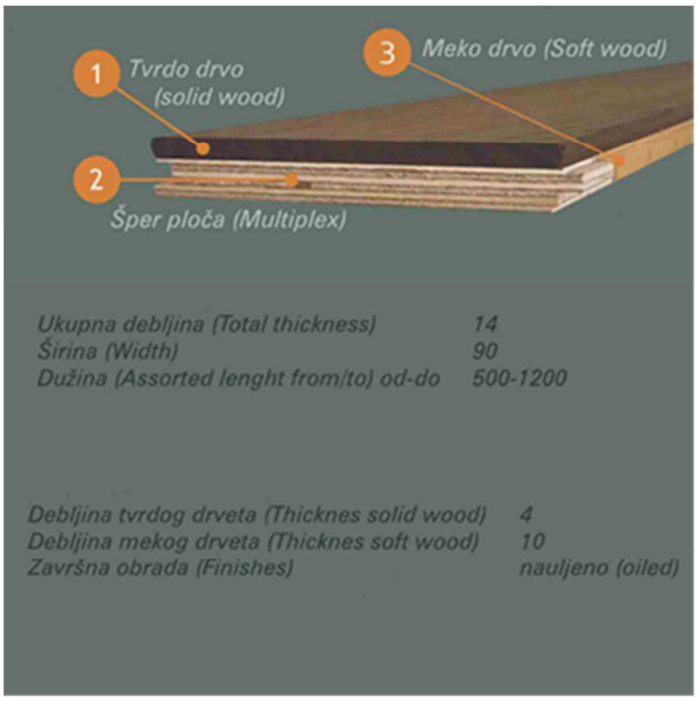
A.11.1

Base course leveling for wooden floor laying self leveling using mass in two courses, approximate thickness d=5mm.
Calculations shall be performed per m2 of completed item of works.

A.11.2

Procurement, transportation and laying of 3 layers of oak wood strip flooring, thickness aprox. d=15mm,

Multilayered wood flooring, made out of 3 layers: solid wood, soft wood and finishes.
Construction: 1-strip, 3-layers
Total thickness: 14-15 mm
Width: 140mm
Length: 500-1800mm
Class: R-class, end blasted and oiled
Quality: heavy duty, for public use.
Strip flooring shall be glued to the solid base course (cement screed). Adequate oak wall skirtings, h=8cm shall be placed next to the walls, together with vineer skirting 15/15mm.
Calculations shall be performed per m2 of laid wood strip flooring, together with skirtings.
The sample has to be approved by Supervision.



A.11.3

Procurement, transportation and laying of massive wood flooring, made of oak sheet piles, which shall be glued to the solid base course (cement screed-calculated separately) using adequate adhesive.
Thickness: 15-20mm
Lenght: 500-1800 mm
Width: 140mm
Class: I class - No knots, no split, with even colouring, texture of the wood with rings.
Finishes: water base varnish with extra UV protection
Adequate oak wall skirtings shall be placed next to the walls. After the placement, wood flooring shall be sanded and and coated with transparent matte varnish in 3 (three) layers.
Calculations shall be performed per m2 of laid flooring.
The sample has to be approved by Supervision.

A.11.4

Coating stair treads using massive oak sheet piles, which shall be laid over steel stairs via suitable anchor plates and fixed to them on the bottom side using adequate bolts.
Dimension of stair treads 700/300/40mm.
Wood sheet piles shall be treated using sandpaper coated with transparent matte varnish in 3 (three) layers.
Calculations shall be performed per pcs of completed item of works.
The sample has to be approved by Supervision.

A.11.5
Coating stair treads and forehead using massive oak sheet piles, which shall be laid over OSB slabs via suitable anchor plates and fixed to them on the bottom side using adequate bolts.
Dimension of stair treads 1250/300/20mm, foreheads 1250/200/20mm
Wood sheet piles shall be treated using sandpaper coated with transparent matte varnish in 3 (three) layers.
Calculations shall be performed per pcs of completed item of works.
The sample has to be approved by Supervision.

A.11.6
Coating stair treads and forehead using massive oak sheet piles, which shall be laid over OSB slabs via suitable anchor plates and fixed to them on the bottom side using adequate bolts.
Dimension of stair treads 1200/600/20mm, foreheads 1200/400/20mm
Wood sheet piles shall be treated using sandpaper coated with transparent matte varnish in 3 (three) layers.
Calculations shall be performed per pcs of completed item of works.
The sample has to be approved by Supervision.

A.11.7

Procurement, placement of OSB (Oriented Strand Boards), thickness d=20mm, over a steel structure of OSB slab. The OSB shall be used as a base course for laying wood flooring and stairs. OSB shall be fixed to the metal substructure using self-tapping screws.
Calculations shall be performed per m2 of completed item of works.

A.12 SUSPENDED CEILINGS

A.12.0 GENERAL PROVISIONS

All suspended ceilings shall be executed by labour force of the required qualification, using modern tools and machines intended for these purposes.

All implemented materials, binders and protective agents shall be of the required quality, i.e. they shall have the certificates of compliance.

The works shall be executed in all according to the relevant regulations, standards and technical documentation approved detailed design.

The method and direction of executing suspended ceilings shall be in accordance with the description and details provided in the project documentation and approved by the Supervisor. Ceiling samples must be submitted to the Supervisor for approval.

During the execution of works, i.e. until the acceptance of the structure, the contractor shall be obliged to take all measures in order to prevent the damages of works. However, if the damages occur, the contractor shall be liable to remedy all the damages and bring the works into the designed state, at his own expense, and with the approval of the Supervisor.

All calculations shall be performed according to the measurement units, given for each item of works. Unit price includes the completion of the whole item of works (procurement of base and binding course material, protective agents, external and internal transport, placement, protective measures, all horizontal and vertical transportation, required scaffolding, and other activities required for the execution of works in accordance with the requirements).

This description of works is an integral part of each individual item of works and it does not exclude the implementation of the relevant regulations.

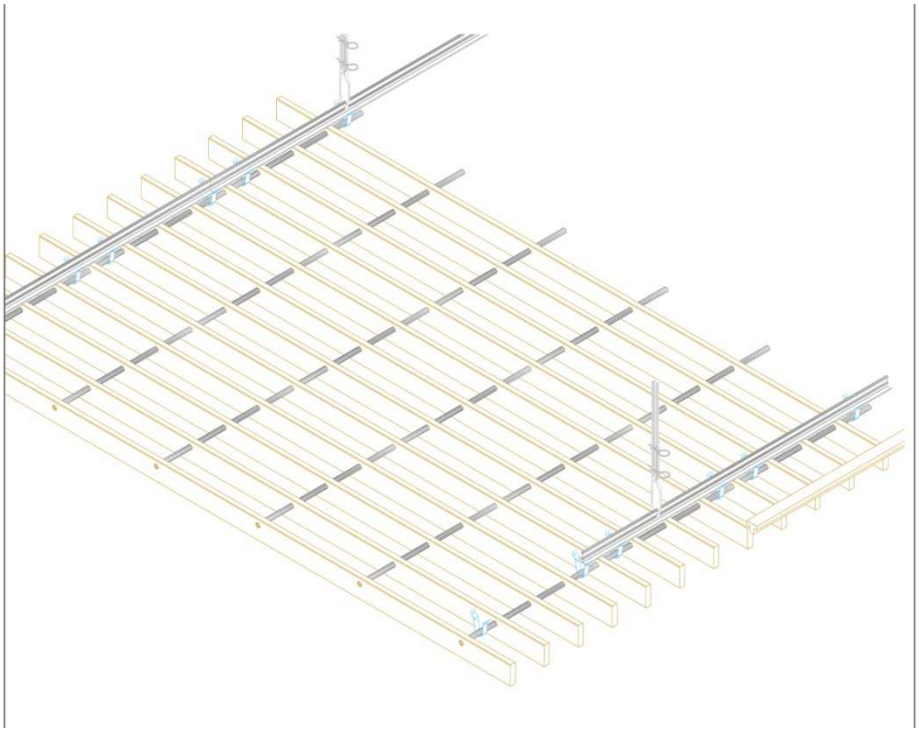
A.12.1

Hanging ceiling grid consisted of veneered medium- density fiberboard (MDF) ash tree veneer or equivalent open hovering , intersection 60/ 100mm on the axial distance of 160mm.Ceiling is seated on the appropriate steel substructure for ceiling support and hanged on reinforce construction rib like slab with steel pad and anchors for concrete.Veneer finis is transparent water based dye.

Steel substructure has to be anti corrosion protected with water based finish dye for metal.

Calculations shall be performed per m2 of the completed item of works, substructure included.

Marking taken from the design PLF-1



A.12.2

Execution of the suspended ceiling made of drywall panels, thickness d=12.5mm placed over the appropriate, metal substructure with adjustable hangers, fixed to the plate floor.
The ceiling shall be executed in several levels, in all according to the design specification.
The height of ceiling suspension shall be 50cm. Expansion joints, light openings, hangers, screens and inspection Openings shall be executed in accordance with the interior design.
The calculations for this item of works include joint sealing and smoothing.
Calculations shall be performed per m2 of the completed item of works, substructure included.

A.12.3

Execution of the suspended ceiling made of moisture resistant, drywall panels, thickness d=12.5mm placed over the appropriate, metal substructure with adjustable hangers, fixed to the plate floor.
The height of ceiling suspension shall be 50cm.
The calculations for this item of works include joint sealing and smoothing.
Calculations shall be performed per m2 of the completed item of works, substructure included.

A.12.4

Enlightened 2 parts ceiling made from polycarbonate 5mm hanged on the steel substructure.

Total height 150mm. side edges are made from al profile h=150mm powder coated in anthracite gray color.
Steel substructure has to be anti corrosion protected with water based finish dye for metal.

A.12.5

Procurement and installation of the suspended gypsum ceilings access points . Shall be placed over the appropriate substructure for suspending the ceiling, in all according to the manufacture documentation.
Dimension 50x50cm

Calculations shall be performed per piece of completed unit, together with the substructure.

A.12.6

Procurement and installation of the suspended gypsum ceilings access points . Shall be placed over the appropriate substructure for suspending the ceiling, in all according to the manufacture documentation. Dimension 30x30cm

Calculations shall be performed per piece of completed unit, together with the substructure.

A.13 COATING AND PAINTING

A.13.0 GENERAL PROVISIONS

All coating and painting works are to be carried out with the appropriate professional labour force, with the full use of modern tools and machinery designed for these purposes.
All materials, adhesive, bonding and protective agents must be of the required quality, i.e. they shall have the certificates of compliance.
The quality of works must be observed, in accordance with applicable regulations, standards and technical documentation. The base course must be hard, smooth, dry and absolutely even. Before applying the final layer, the substrate should be prepared in accordance with applicable regulations and instructions of the material manufacturer.
The coatings must completely cover the substrate. In areas where the substrate does not require special preparation, puttying should be carried out in order to soothe minor unlevelling. The incorporated materials must be well adhering, resistant, not harmful to health, with no adverse effects to the materials with which they are in contact, the processed surfaces should be with sharp edges. Variations in colour and tone are unacceptable.
In case of temperatures that are higher or lower than foreseen ones, all measures shall be taken during the execution of works in order to protect the used materials. The protective measures should continue for as long as they are required. The protective measures will not affect the works contract price.
During the execution of works, i.e. until the acceptance of the structure, the contractor shall be obliged to take all measures in order to prevent the damages of works. However, if the damages occur, the contractor shall be liable to remedy all the damages and bring the works into the designed state, at his own expense, and with the approval of the Supervisor. During the execution of the works, the contractor shall be liable to prevent damages to all other works.
The calculation is done per unit of measure indicated for each item of works.
The unit price includes the completion of the item of works (procurement of base and binding course material, protective agents, external and internal transport, execution of works, protective measures, all horizontal and vertical transportation, required scaffolding, cleaning and other activities required for the execution of works in accordance with the requirements).
This description is an integral part of each separately described items of works and does not exclude the application of existing regulations in the construction industry.

A.13.1.

Skimming drywall walls and ceilings, using skim plasters until are completely smooth. Skimming shall be performed over previously fixed joints (calculated separately).
Calculations shall be performed per m2 of skimmed surface, required scaffolding included
The necessary scaffolding

A.13.2

Painting walls and ceilings using two coats of high-quality dispersion paint, the tone according to the requirements of the design engineer with adequate base preparation. Paint type and color will be defined within offered paint producer and his tone card .
Calculations shall be performed per m2 of the completed item of works, required mobile scaffolding included.

A.14 FACADE WORKS

A.14.0 GENERAL PROVISIONS

All facade works shall be executed by labour force of the required qualification, using modern tools and machines intended for these purposes.

All implemented materials, binders and protective agents shall be of the required quality, i.e. they shall have the certificates of compliance.

All works shall be executed in all according to the relevant regulations, standards and technical documentation. The base course must be solid, smooth, and absolutely even. Prior to applying the finishing coat, the base course shall be prepared according the relevant regulations and instructions of the material manufacturer. All other coats shall be executed in such a manner that they completely cover the base course. All materials must adhere well, must be adequate for their purposes, resistant and must have adverse effects neither to the health nor materials they are in direct contact with. Treated surfaces must have sharp contacting edges. In case of temperatures that are higher or lower than foreseen ones, all measures shall be taken during the execution of works in order to protect the executed courses. Protection measures shall be taken whenever they are required. Protection measures shall not affect the contractual price of works.

During the execution of works, i.e. until the acceptance of the structure, the contractor shall be obliged to take all measures in order to prevent the damages of works. However, if the damages occur, the contractor shall be liable to remedy all the damages and bring the works into the designed state, at his own expense, and with the approval of the Supervisor. During the execution of the works, the contractor shall be liable to prevent damages to all other works.

All calculations shall be performed according to the measurement units, given for each item of works. Unit price includes the completion of the whole item of works (procurement of base and binding course material, skimming and impregnation, external and internal transport, execution, polishing-planning, protective measures, all horizontal and vertical transportation, required scaffolding, cleaning, and other activities required for the execution of works in accordance with the requirements).

All additional facade works are included into individual items of works and shall not be calculated separately.

This description of works is an integral part of each individual item of works and it does not exclude the implementation of the relevant regulations.

A.14.1

Rendering facade walls made of brick and concrete using compo, 1:2:6 ratio, in two coats, with troweling the second finishing coat. Concrete parts of the walls shall be prayed previously with cement slurry.
Calculations shall be performed per m2 of the completed item of works, required scaffolding included.

A.14.2

Applying thermal facade to the facade walls, made of extruded polystyrene sheets, minimum 25kg/m3, thickness d=8cm.
Thermal facade system includes

- Fixing - All extruded polystyrene sheets shall be glued with adhesive mortar and attached to the wall using PVC hangers (umbrellas)
- Insulation material - made of extruded polystyrene
- Reinforced layer - glass fibre mesh with a density of min 145 g/m² and adhesive and reinforcing mortar
- Priming paint - acrylic paint
- Plaster - acrylic plaster
- Paint - acrylic paint

all in accordance with the manufacturer's instructions.
Color will be defined within offered paint producer and his tone card .

Perforated aluminum “Z” profiles shall be placed along the perimeter of the structure, over the whole plinth, as a protection against rodents. Structure corners and facade opening shall be reinforced by placing PVC perforated “L” profiles, dimensions 30/30mm, into the coat of enriched plaster.
Calculations shall be performed per m2 of the completed item of works, along with finishing coat, additional battens and required scaffolding.

A.14.3

Painting concrete and rendered facade surfaces, using acrylic facade paint, resistant to the adverse effects of the weather conditions. Coats shall be applied until a uniform tone is achieved. Paint coats shall be applied over the base course prepared adequately for the used type of paint. Paint type and color will be defined within offered paint producer and his tone card .
Calculations shall be performed per m2 of the completed item of works, base course preparation and required scaffolding included.

A.14.4

Cleaning the existing street granite facade. Facade is made of artificial stone. Cleaning shall be executed using adequate chemical agents and finally washing it by warm water under specified pressure and with the addition of quartz sand. After facade washing, quartz sand shall be cleared off the sidewalk. During the facade washing using water under pressure the remaining part of the structure must be protected against any damages. All works shall be executed according to the design, with the consent of the Supervisor and under supervision of the Supervisor.
Calculations shall be performed per m2 of the completed item of works.

A.15 FURNITURE CUSTOM MADE

A.15.0 GENERAL PROVISIONS

The drafting of for office furniture (chairs, tables and desks, storage compartments, safes, fireproof pieces of furniture, lockers, etc) must take into account the existing legislation in the beneficiary country and especially the regulations in force concerning safety, hygiene, health and occupational medicine.
To this purpose, there must be clearly identified:
- The definition of needs to be satisfied
- The core features of the furniture
- The specifications regarding the use of the furniture
- Any other specifications regarding the design or manufacture of the furniture

Defining the needs to be satisfied implies identifying the requirements to be met by the furniture:
Example:
For a safe, the core features could aim at:
1. Providing a resistance level (safety)
2. Providing the desired level of confidentiality (security)
3. Providing storage space
4. Adjusting to the operating environment and to the weather conditions
5. Protecting its content from fire damage

The specifications must mainly take into account the following requirements:
- Safety: (physical: stability of the furniture; electrical: good cable isolation; choice of materials and products: fireproof, etc)
- Durability: (expected duration related to the foreseen use of the furniture)
- Ergonomics: (furniture usage in accordance with its operating environment and its functionality, facilitating installation or moving and meeting also certain aesthetic criteria)
- Quality: (criterion to be determined taking into account the adjustment of the piece of furniture to its function, the maintenance, any necessary repairs, the ability to meet the requirements of hygiene, health, environment, soundproofness)

Example:
For a safe, the core features could aim at:
1. Providing a resistance level (safety)

1.1 Safety of the locking system: safety of locks and of their environment

1.2 Safety of the structure: safety of the main structure, of the door, etc
1.3 The capacity of protecting the content from fire damages: fireproofness
2. Providing the required level of confidentiality (security)
2.1 Ensuring the safety of the means of access to the content: resistance to unauthorised openings (e.g. lock picking), selection of mean of access, lock safety
2.2 Ensuring the safety of the structure: safety of the main structure, safety of the doors
3. Providing storage space
3.1 Storing of documents: possibility of keeping documents and materials, allowing storing/sorting and consultation of documents
3.2 Allowing usage by one or more persons: providing possibilities of selective access
3.3 User friendly
3.4 Adjustable to the operating environment: possibility of ground location, durability, being easy to use, aesthetic and stable.
3.5 Time endurance: reparable, cleanable, resistant to frequent usage and whether changes, etc
• The specifications regarding the use of the product must take into account the requirements regarding the operational and specific functions defined by the Contracting Authority, namely:
o The listing of functional criteria allowing to asses the product's capacity to fulfil each of its operational functions
o The performance attached to each criterion, by analysing its value, quantified eventually by tests, e.g.: resistance to shocks, to force, to intensive usage, to abrasion, according to the quantified values
Example:
For a safe, the core features could aim at:
1. Providing a resistance level (safety)
1.1 Safety of the locking system: safety of the locks and their environment
1.1.1 Resistance to forcing and drilling attempts, specific protection
1.2 Safety of the manufacturing: safety of the central structure, of the door, etc
1.2.1 Indeformability, rigidity, resistance of sidewalls, resistance to wrenching, to forced door opening, to shearing
1.3 The capacity of protecting the content from fire damages: fireproofness
1.3.1 Fire proof walls, safe locks, resistance to dropping and resistance to building collapse
2. Providing the required level of confidentiality (security).
2.1. Ensuring the security of the means of access to the content: resistance to unauthorised openings, selection of mean of access, lock safety,
2.1.1 Safe lock resistant to lock picking, secret cipher, one key only, good locks, etc
2.2. Ensuring the security of the structure: security of the main structure, security of the doors
2.2.1 Level of deformability, access hindering
3. Providing storage space
3.1 Storing of documents: possibility of keeping documents and materials, allowing storing/sorting and consultation of documents
3.1.1 Test loads, functionality of the equipments, visibility
3.2 Allowing usage by one or more persons: providing possibilities of selective access
3.3 User friendly
3.3.1 Ergonomic locks, angle-shaped handles, keys, adjustable boxes
3.4 Adjustable to the operating environment: possibility of ground location, durability, being manageable, aesthetic and stable.
3.4.1. Flatness, harmony, colours, finishing, dimensions, load, stability, equilibrium, compatibility in terms of colour/finishing/dimensions with the furniture already in place
3.5 Time endurance: reparable, cleanable, resistant to frequent usage and whether changes, etc
3.5.1 Maintenance, quality of finishing, modularity of equipments, interchangeability
• The specifications regarding drafting and manufacturing, must take into account the requirements implying a result oriented obligation of the contractor.

GENERAL MATERIAL AND FINISHING CHARAKTERISTICS
MDF (medium-density fibreboard) panels are wood-based particle boards for interior fitments for use in dry conditions. Board type meets EN 622-5 standard.
Board thickness varies from 19m to 40mm, depending on the specific type of furniture, and is specified in descriptions of furniture elements. Board density approx. 700 kg/ m^3.

VENEER – natural ash wood veneer, 0.6mm thick.

FINISHING OF VENEERED MDF – matt lacquered (30% water based transparent lacquer, UV resistant)

FINISHING OF COLOURED MDF – polyurethane finish (white colour RAL 9003), lacquered in high gloss (100% transparent lacquer, UV resistant)

REFINED CHIPBOARD – melamine faced particleboard: wood-based material according to EN 312 and EN 14322, used with ABS tape d=2mm, of the same colour and pattern.

A.15.1TABLES FOR VISITORS

Tables intended for visitors, size 100x60x75cm. Table legs are of “P” shape, made of veneered MDF d=40mm, ash tree veneer or equivalent.
Desktop is made of MDF d=40cm, white colour RAL 9003, high gloss.
Partition, 30cm high, is made of MDF d=19mm, white colour RAL 9003, high gloss, joined to the desktop by wooden plugs
Mark from the design N01

.**A.15.2. RECEPTION DESK - INFO SPOT**

Information desk, total size 340x65x115cm. The desk is of skew “P” shape, made of veneered medium-density fiberboard (MDF) d=25mm, ash tree veneer or equivalent. Frontal cord concealer is made of MDF d=25mm, colour white RAL 9003 - high gloss.

Inner side of the desk - desktop is made of MDF, white colour RAL 9003, high gloss, thickness d=25mm. Lateral parts, cable mask and drawer fronts are made of MDF, thickness d=19mm. drawers are made of white smooth refined chipboard d=18mm, with abs tape of the same colour and pattern.
Drawers are equipped with telescopic slides l=300mm, with slow-motion mechanism, and matte aluminum handles.
A □60mm opening is foreseen at the bottom surface for cables together with matte aluminium downlight. Mark from the design N02

A.15.3. MONITOR STANDS

A shelf, size 300x23x4cm. It is made of MDF d=40mm, white colour RAL 9003, high gloss. The shelf is mounted onto the wall brackets, concealed brackets.
Mark from the design N03

A.15.4. EXHIBITION STAND

Exhibition stand, total size 110x35x220cm.
This structure is made of metal, box profiles 3x3cm, PVC coated, white colour RAL 9003. The stand top is made of MDF d=19mm. Ash veneer or equivalent. Matte transparent water-based varnish is used as the finishing coat.

Brochure and leaflet holders are made of transparent polycarbonate d=5mm, screwed into the MDF.
Mark from the design N04A

A.15.5. BOOK SHELVES

Shelving system made of veneered medium-density fiberboard (MDF), d=40mm, with built-in hydrant and radiator, and distinctive horizontal division.

The shelves shall be fitted onto the wall bracket.
Shelf size: 160x30x4cm – 5 pieces.
Hydrant cabinet dimensions: 68x142x30cm.
Radiator cover size: 178x80x30cm.

This item also includes the cabinet intended for the HYDRANT and two fire extinguishers, all in accordance with the fire protection design. This element includes lateral MDF supports and veneered MDF door, with the letter

“H” distinctly marked. A MDF radiator cover is placed in the bottom part and fixed using screws and if required, removed for the front frame.
The door of the hydrant cabinet shall be equipped with three hinges and a key. Radiator cover is a patent cover placed on a substructure.

This item also includes wood sheet piles - RAILINGS, dimensions 40x20mm – 12 pieces, placed according to the layout, which shall be placed on the outside line of the element, thus making a whole.

Total dimensions of all wall elements are 178x280cm.
Mark from the design N04

A.15.6. WORKPLACE FOR EMPLOYEES

Desk, size 140x70x75cm, P shape. Lateral sides and desktop are made of MDF d=40mm, white colour RAL 9003, high gloss applied bilaterally. The desk has vertical partition, dimensions 140x30cm, thickness 25mm made of MDF, white colour RAL 9003, high gloss, which is joined to the desktop by wooden plugs.

A □60mm opening is foreseen at the bottom surface for cables together with matte aluminumdownlight.
Mark from the design N05

A.15.7. CABINET

Cabinet provided with a desk, dimensions 140x50x75cm. The cabinet, all compartments and plinths are made of MDF d=19mm, white colour RAL 9003, high gloss.

The back side is a HDF panel, d=3mm, wood colour and pattern.

The cabinet is supported by aluminum, adjustable legs, h=5cm.Mark from the design N05A

A.15.8. CHEST OF DRAWERS

A chest of drawers provided with the desk, dimensions 45x45x60cm, including 4 drawers. The chest is made of MDF d=19mm, white colour RAL 9003, high gloss. Front sides of the drawers are made of MDF d=19mm, white colour RAL 9003, high gloss. The remaining parts of the drawers are made of white smooth refined chipboard d=18mm, with ABS tape 2x18mm of the same colour and pattern.

Drawers are equipped with handles, and slow-motion mechanism l=400mm.
Chest of drawers is supported by silicone casters fi 50mm.
Furniture hardware is included into the standard catalogue of products.Mark from the design N06

A.15.9. CABINET WITH SHELVES

A cabinet with shelves, with two compartments: bottom one, dimensions 160x60x75cm, and top one, dimension 160x40x75cm. Cabinet, all visible partitions, door of the bottom compartment and mask of the top compartment are made of MDF d=19mm, white colour RAL 9003, high gloss. Inner shelves and partitions are made of white smooth refined chipboard d=18mm, with abs tape 2x22mm of the same colour and pattern.
The back side is a HDF panel, d=3mm, wood colour and pattern.

The cabinet is supported by aluminum, adjustable legs, h=5cm, and the compartment - shelves are wall mounted using wall brackets, at the height of 130cm above the floor.Mark from the design N07

A.15.10. SHELVES /WALL MOUNTED/

A wall shelf, in two parts: bottom part, dimensions 200x35x60cm, and top part, dimensions 200x35x75cm.

Shelf, all partitions and mask at the top shelf are made of MDF d=19mm, white colour RAL 9003, high gloss.
The back side is a HDF panel, d=3mm, wood colour and pattern
The shelves are wall mounted using wall brackets, the bottom one at the height of 15cm above the floor, and the top one at the height of 130cm above the floor.
Mark from the design N08

A.15.11. KITCHEN ELEMENTS

P shape kitchen, total size 181x60x220cm + 160x60x220cm + 181x60x85cm.
Bottom elements and top, suspended elements, inner shelves and drawers are made of white smooth refined chipboard d=18mm, with abs tape 2x18mm of the same colour and pattern.

Doors to the bottom elements, front drawer sides, doors to the top elements and plinth are made of MDF d=19mm, white colour RAL 9003, high gloss, applied bilaterally.

Worktop is made of composite material - aluminum hydroxide and acrylic polymer binder and it is placed over the substructure made of wooden scantlings 3x5cm. The back side of the kitchen - between the bottom and top, suspended elements is made of composite material d=10mm, and it is wall mounted.
Drawers and doors are equipped with aluminum handles, included in the standard catalogue of products, type.
Sliders and drawers are telescopic, with slow-motion closing mechanism. All hinges are of the slow-motion type.

The built-in sink is double, dimensions 90x60cm. Built-in heating panel, dimensions 40x60cm with two hot plates.
The kitchen has a built-in trash can, volume 12l, which is fixed to the door wing of the bottom element.
The kitchen elements are supported by aluminum legs h=10cm, while the plinth, made of MDF, is placed over them using toggles.
A concealed aluminum profile, dimensions 17x8mm is attached to the LED tape 14W, at the bottom of the suspended elements.
Mark from the design N09

A.15.12. VANITY - TOILET CABINET

Toilet cabinet, dimensions 104x43x85cm, with a built-in washbasin.
Washbasin panel is made of solid surface material, which is placed over the substructure made of steel scantlings 3x5cm.
Solid surface material is composed of acrylic polymer and alumina trihydrate (ATH), a material derived from bauxite ore.Cross-section cuts show consistent color and particulate patterning evenly distributed throughout the material.
Characteristics of material

- Non-porous
- Stain resistant
- Seamless: In the fabrication process, joints can be made invisible by joining the relevant pieces with own color-matched two-part acrylic epoxy. The pieces are clamped tightly together in order to express any excess adhesive. After the adhesive dries, the area is sanded and polished to create a seamless joint. This seamless appearance is a signature characteristic of the material.
- Repairable and renewable: Cuts and scratches can be buffed out
- Thermoformable: Flexible when heated, can be shaped and molded into generally limitless forms

Sink is also cast in the same material.
The bottom part of the cabinet and inner shelves are made of white smooth refined chipboard d=18mm, with abs tape of the same colour and pattern 2x18mm.
The door of the bottom part is made of MDF d=19mm, white colour RAL 9003, high gloss.
Doors do not have handles, but push mechanism enabling opening the door and slow-motion hinges, rounded edges of the cabinet on the top section.
This element is wall mounted, using wall brackets.
Mark from the design N10

A.15.13. TOILET MIRROR

Bathroom crystal mirror, dimensions 104x135cm, glued to the finishing coat of the wall. The mirror has sanded edges.
The mirror is wall mounted, glued to the finishing coat of the wall, using adequate adhesive which provides required cohesion and bearing capacity.
Mark from the design N11

A.15.14. INTERPRETERS' DESK

Interpreters' desk, dimensions 113x60x75cm, P shape. Lateral sides and desktop are made of double white smooth refined chipboard d=2x18mm, with abs tape 2x40mm of the same colour and pattern. The back side is made of single white smooth refined chipboard d=18mm, with abs tape 2x22mm of the same colour and pattern.
A ?60mm opening is foreseen at the desktop for cables together with matte aluminum downlight.
Mark from the design N12

A.15.15. SHELVES ABOVE WORKING UNITS

Wall shelves, dimensions 150x35x60cm.
Shelves and all partitions are made of MDF d=19mm, white colour RAL 9003, high gloss. The back side is a HDF panel, d=3mm, wood colour and pattern.
Shelves are wall mounted using wall brackets. They are placed at the height of 130cm above the floor.
Mark from the design N13

A.15.16. SCREEN

Panel - dimensions 80x200cm, made of veneered MDF d=19mm, wood colour and pattern - ash tree or equivalent.
Panel has slits, dimensions 70x1.5cm, at 5.5cm distance along its height.
It is used to conceal the electric distribution cabinet and it shall be fixed to the wall using hinges, and opens in the same manner as any door.
Mark from the design N14

A.16 MOBILE FURNITURE

A.16.1M01, M06 CHAIR FOR VISITORS (STACKABLE) 46 PIECES

Chair with solid wood base combined with moulded plywood seat. Chairs are stackable.

MATERIAL:

- Frame, legs, seat and backrest: Type of wood - oak, matte lacquered.

Dimensions of chair approximately : W 49 x D 50 x H 46/80 cm

A.16.2 M02 - ARMCHAIR FOR VISITORS 5 PIECES

Lounge armchair for visitors. Armchair is small, comfy and with compact form, crafted for maximum comfort, its deep seat and high angled arms offer a relaxed approach. It's comfort, high quality and clean lines are quality that will always be modern.

MATERIAL: Ash wood, steel & Polyurethane foam

- Base: Tapered ash wood legs add an understated finish - a welcomed contrast against its cushioned form.
- Frame: Wooden frame is upholstered, featuring light gray fabric covering.
- Fabric:Felt- * 80% wool and 20% polyamide with a subtle two tone appearance. Soft, tactile and very practical.

Dimensions of armchair approximately: W 80 x D 80x H 40/73

A.16.3 M03 - CLUB TABLE **3 PIECES**

Round club table for visitors.

The tables are minimalist in essence with clear functional qualities and an aesthetic expression.

MATERIAL:

Base: Soap treated, lacquered, or stained solid oak or ash wood

Tabletop: Plywood or linoleum colored in white or gray. Top edges follows frame treatment

Dimensions of table approximately: Ø 50 x H 49 cm

A.16.4 M04-CONFERENCE TABLE - LARGE **1 PIECE**

Conference table, with great attention for aesthetic and ecological topics.

A modular system to extend meeting tables infinitely according to your needs.

MATERIAL:

- Frame: white painted metal
- Top: acid etched glass on top and dove gray painted under part

Dimensions of conference table (large) approximately: W 340 x D 100 x H 75

A.16.5 M05 - CONFERENCE CHAIR (STACKABLE) **12 PIECES**

Conference chair for meeting room. Folding and nesting chair with flip up seat, with generous proportions for comfort. Chair has supportive strong double wide slanted arm, which does not interfere with work surface. Chairs are stackable.

MATERIAL:

- Frame and legs: silver aluminum powder coat
- Seat: aluminum upholstered with fabric
- Backrest: Molded poly, mesh or upholstered backrests
- Rolling casters: standard, safety locking casters (soft wheeled)

Dimensions of conference chair approximately: W 55x D 62 x H 40/79

A.16.6 M07 CHAIR FOR EMPLOYEES **4 PIECES**

Swivel chair for employees, with slender and flexible design of the backrest. Chair is adjustable supplied with glide-tech mechanism, high backrest, and 4D armrest.

MATERIAL:

- Frame : steel
- Seat, backrest: cushion pad covered with fabric- color gray
- Armrest: cushion pad covered with leather

Dimensions of chair approximately: W 55x D 62 x H 40/79

A.16.7 M08 - EXECUTIVE TABLE **1 PIECE**

Executive table, with great attention for aesthetic and ecological topics. Geometrical inspiration. Frames and tops come together in a harmonious color scheme.

MATERIAL:

- Frame: white painted metal
- Top: acid etched glass on top and whit painted under part
- Panel: melamine modesty panel

Dimensions of executive table approximately: W 220 x D 100 x H 75

A.16.8 M09-EXECUTIVE CHAIR **1 PIECE**

Executive chair, very comfortable, high quality and with lean lines.

MATERIAL:

- Frame, legs : steel
- Seat, backrest: aluminum base with cushion pad covered with leather
- Armrest: steel or with cushion pad covered with leather

Dimensions of chair approximately: W 55x D 62 x H 40/79

A.16.9 M09a - CHAIR FOR CONTRACTING AUTHORITYS **2 PIECES**

Swivel chair for Contracting Authoritys. Chair is supplied with glide-tech high backrest, and 2D armrest.

MATERIAL:

- Frame and legs : steel
- Seat, backrest: cushion pad covered with fabric- color gray

- Armrest: cushion pad covered with leather

Dimensions of chair approximately: W 55x D 62 x H 40/79

A.16.10 M10- CONFERENCE TABLE (SMALL) 1 PIECE

Executive table, with great attention for aesthetic and ecological topics. Geometrical inspiration. Frames and tops come together in a harmonious color scheme.

MATERIAL:

- Frame: white painted metal
- Top: acid etched glass on top and whit painted under part
- Panel: melamine modesty panel

Dimensions of conference table (large) approximately: W 240 x D 100 x H 75

A.16.11 M11 - CHAIR FOR EMPLOYEES - INFO DESK 2 PIECES

Perfect office chair that brings a warm and welcoming feel to an otherwise rather cool and technical genre. The chair uses the same simple and familiar shell, while the elegant steel frame acquires a narrative charm when it is combined with the spherical castors.

MATERIAL:

- Shell: Injection moulded polypropylene, Solid-coloured - white
- Base: Casted aluminium - Powder coated white

Dimension of the chair approximately:W:51 x D:52 x H:46/77 cm

A.17 OTHER EQUIPMENT

A.17.1MOVABLE WARDROBE RACK 4 PIECES

W:140-210 x D:60 x H:150 cm

Strong, movable rack for wardrobe, with adjustable tubes - 2x35cm. Weight of the rack is 7kg.

MATERIAL:

- Frame: chromed steel
- Wheels: rubber or silicone, with safety locking

Dimension of the rack approximately:

A.17.2 UMBRELLA HOLDER 2 PIECES

Umbrella holder made of white acrylic.

Dimension of the holder approximately:

W:30 x D:15 x H:50 cm

A.17.3 GARBAGE BIN **5 PIECES**

Wire garbage bin, capacity 20l.

Garbage bin is made of metal wire, white coated

Dimension of the garbage bin approximately:

Ø 30 x H 35 cm

A.17.4 DOORMAT **1 PIECE**

A built-in doormat, with linear aluminium profiles connected with PVC perforated profiles to form a surface. Aluminium profiles are obtained with

textile stripes.

Dimension of the doormat approximately:
W:123 x D:58cm

A.17.5 WINDOW ROLLER SHADES **3 PIECES**

A blackout roller shade for main window, equipped with motor, aluminium extruded top and bottom rail. High quality blackout fabric according to technical specifications.

Dimension of the roller shade approximately:

W:190+95 x H:250cm - 1 PIECE

W: 95 x H 250cm - 2 PIECES

A.18 KITCHEN EQUIPMENT

A.18.1BUILT-IN DISHWASHER MACHINE **1 PIECE**

A mini dishwasher machine.Energy Efficiency Class: A+.

Capacity: 6 place settings. Control buttons on front of fascia, upper part

Stainless steel interior.

Color of exterior - white.

Dimension of the dishwasher machine approximately:W:55 x D:50 x H:45cm

A.18.2 MINI REFRIGERATOR **1 PIECE**

A built-in, undercounter no frost mini refrigerator.

Energy Efficiency Class: A+.

Dimension of the refrigerator machine approximately:W:45 x D:50 x H:65cm

A.18.3 CERAMIC HOB **1 PIECE**

A built in ceramic hob, with two cooking zones and sensor control buttons on the hob.

Dimension of the ceramic hob approximately:

W30 x D50cm

A.18.4 COFFE MACHINE **1 PIECE**

A freestanding coffee machine.

It features a marine-grade brass boiler, with chrome-plated brass group head and filter, polished stainless steel housing and iron frame.

Dimension of the coffee machine approximately:

W20 x D30 x H 35cm

A.18.5 KETTLE, 1 PIECE

A freestanding kettle, with a 1.7l capacity.

Kettle has stainless steel finish with soft grip handle.

Dimension of the garbage bin approximately: (H)25 x (W)21x (D)15

A.18.6 GARBAGE BIN 1 PIECE

A built in garbage bin. Bin lid is fixed to kitchen element (door).

Exterior of teh bin and lid is made of inox, and interior bin is made of of plastic. Dimension of the garbage bin approximately:Ø30 x H40cm

A.19 BATHROOM EQUIPMENT

A.19.1TOALET SEAT COVER DISPENCER - wall mounted 2 PIECES

Wall mounted toilet seat cover dispenser , made of stainless steel.

It is curved and contemporary. Dispenses one cover at a time.

Fully enclosed for sanitation

Dimension of the dispenser approximately: W 31 x D 6.5 H 42 cm

A.19.2 TOILET PAPER DISPENSER - (wall mounted) **2 PIECES**

Wall mounted toilet paper dispenser, made of stainless steel.

Dispensesindividual folded sheets of toilet tissue, without the need to touch the dispenser.

Fully enclosed for sanitation

Dimension of the dispenser approximately: W 35 x D 17 H 15 cm

A.19.3 HAND PAPER TOWEL DISPENSER (wall mounted) **2 PIECES**

Wall mounted hand paper dispenser, made of stainless steel.

Dispenses one cover at a time.

Fully enclosed for sanitation

Dimension of the dispenser approximately: W 32 x D 26 H 45 cm

A.19.4 FOAM/SOAP DISPENSER (wall mounted) **2 PIECES**

Wall mounted soap dispenser, made of stainless steel.

Fully enclosed for sanitation

Dimension of the dispenser approximately: W 13 x D 12 H 25 cm

A.19.5 BIN CAN **4 PIECES**

Free standing garbage bin, made of stainless steel.

Bin has a steel pedal covered with black plastic, for opening the garbage lid.

Garbage bin has interior bin, made of plastic.

Fully enclosed for sanitation.

Dimension of the garbage bin approximately: Ø20 x H 35 cm

A.19.6 TOILET CLEANER BRUSH - wall mounted **2 PIECES**

Wall mounted toilet cleaner brush.

Surface of the brush holder, and brush handle are made of stainless steel.

Dimension of the brush with holder approximately:

Ø10 x H 45 cm

A.20 VARIOUS WORKS

A.20.1

Vertical cascade gypsum board walls in multifunctional auditorium
The interior finishing panel walls of gypsum cardboard plates mounted over the corresponding metal construction from the "U" profile d = 50mm that are placed at the appropriate distance and fixed to existing walls. Gypsum board thickness
d = 2x12,5mm. Panels are installed vertically and cascaded and sheared by the distance to the detail. In the sheared part at the back of the panel on the full height are positioned vertical led light strips The total distance between the vertical edges of the panels and existing structural wall on which the panel is mounted is 250mm. All compositions between the plates and the existing walls are bandaged with appropriate tape in adhesive plaster.
Calculation per m2 built surface along with the necessary scaffoldings.

A.20.2

Procurement and instalation of wall paper on the wall next to the elevator. Graphic print on high quality paper type - matte paper 130-170 gr/m2 or similar. Print should be made with ink-jet printer.
According to the size of the graphic print, it is possible to print image from parts considering technical large format printer possibilities and printing area options.
All compounds and joints should be vertical with minimum overlapping. It crucial to apply graphic design on the wall with maximum precision.
OVERALL SIZE: (floor to the ceiling height x wall to wall distance) 263x554cm+263x65cm+43x103cm (above elevator door).Calculations shall be performed per m2 of executed net surface.

A.20.3

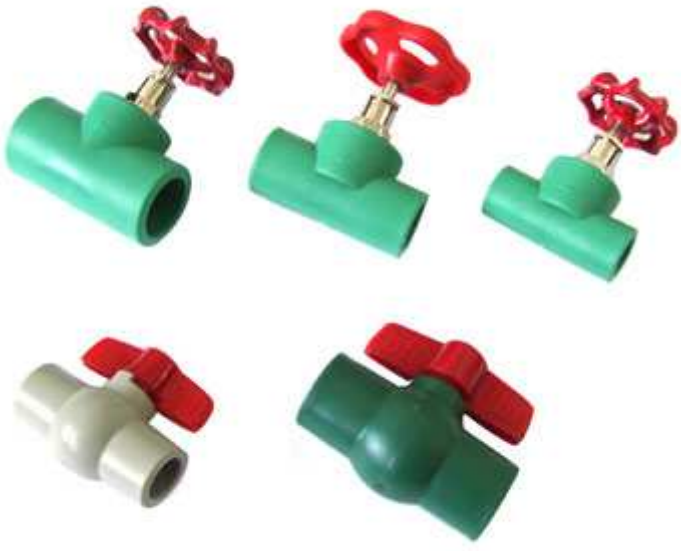
Cleaning all floors, windows, doors and sanitary equipment after the completion of all construction and specialists works.
Calculations shall be performed per m2 of executed nett surface

B. PUBLIC HEALTH WORKS

B.1 PPR pipes

Applied for potable water pipeline systems which are hygienic and non-toxic.
The pipes are high temperature and high pressure resistance and can work under continuous normal working pressure with water temperatures up to 95 .
The pipes are lightweight and the specific gravity is 1/7 of metal pipes.
The hot melt connection machine is used to connect the pipes and fittings, which makes the installation convenient and reliable. The installation can be finished within a few seconds.
The pipe has a long lifespan of up to 50 years or more under normal conditions.

B.2 PPR valves



1) Ball Valves

The ballcock with a chromed ball and teflon seats is designed with an emphasis on long service life and perfect functionality. The progressive construction does not reduce the flow rate in the ball and, therefore, does not significantly increase the pressure loss in the distribution system.

2) Ball Valves with drain

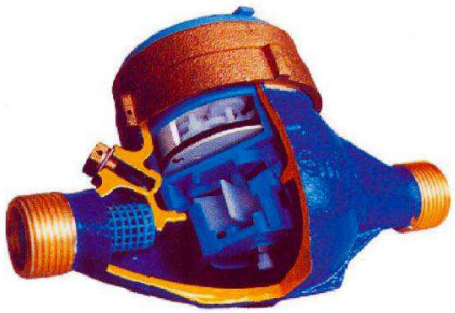
The ballcock with a chromed ball and teflon seats is designed with an emphasis on long service life and perfect functionality. The progressive construction does not reduce the flow rate in the ball and, therefore, does not significantly increase the pressure loss in the distribution system. The outlet valve makes it possible to drain or de-aerate an enclosed part of the distribution system.

B.3 Angle valves

Bathroom water angle valves

- high-quality all-copper body, no rust, no rust water;
- production of fine products refined body with forged brass, excluding the traditional sand casting porosity and leakage may be hidden dangers.
- lead-free standards, the human body without harm, in line with environmental protection;
- multi-layer chrome plating, looks bright as a mirror, look as new, never fade;

B.4 Watermeter



MULTI JET WATER METER WITH WET MECHANISM

Compliant according to standard ISO 4064 Class B. This class of meter is used to measure the volume of clean water, with temperatures up to 40C and pressure up to 16 bars.

B.5 PPR pipes

• very light material
• simple and easy way of both transport and manipulation
• fast and cheap assembling
• pipe connections are resistant to water and other type of fluids
• they are resistant to corrosion in alkaline, acid or aggressive environment
• they are fine electrical insulator, and also resistant to mechanical impact
• guaranteed life time of more than 50 years

• practically no costs of pipeline maintenance
• connection with muffs and gaskets made of EPDM or rubber (EN 681)
• EN 1451
• Flame retarant DIN4102 B1

B.6 Drain

Bathroom drain

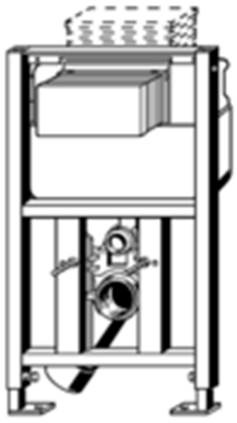
Components:

sealing flange, plug, top 100x100 mm rotatable and height-adjustable, plastic frame, stainless steel 1.4301 grate, removable odour trap

Technical data

Load class K=300 kg
quality controlled in accordance with EN 1253

B.7 Flushing



Components

- powder-coated steel frame, 2L concealed cistern, WC connection elbow DN90 (depth-adjustable) made of PP, eccentric adapter DN90/100 made of PP, WC connection fitting, fixing material for element (for floor) and ceramic, screws (self-drilling) for fixing to metal support profiles, hole Ø 11 mm for fixing in wooden frame construction, alignment help

Cistern components

- corner valve with pre-mounted water connection Rp½, filling valve set, drain valve se

Technical data

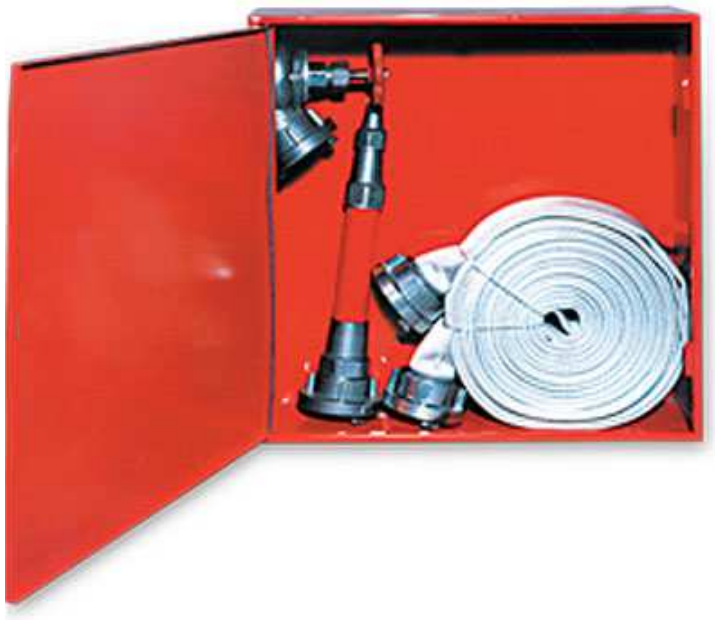
Partial flush volume factory setting approx. 3 l
Partial flush volume setting range approx. 3–4 l
Full flush volume factory setting approx. 6 l
Full flush volume setting range approx. 6–9 l

B.8 Water heater

Water heaters with enamel tank have a volume of 8 liters. They can be mounted above or below the kitchen counter.

Enamel tank is insulated with quality polystyrene thermal insulation. Mini water heaters are constructed as flow-through (open) system and are designed to work in conjunction with a low-pressure water mixing battery.

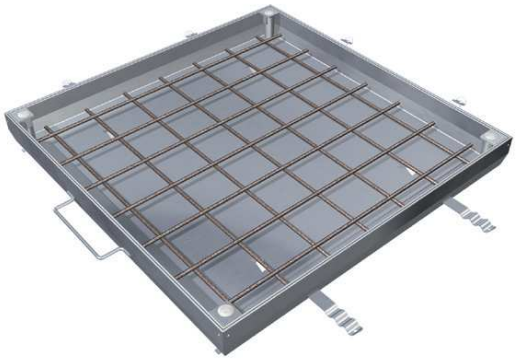
B.9 Wall hydrant



Standard equipment hydrant closet:

- Fire hose c / o 52, 15 regarding pot. couplings C
- Nozzle valve c / o 52 Al of the tree. coupling C
- Angle w. Al valve, with stable coupling C
- Adjustable nut c / o 52

B.9-aManhole covers



Covers with finest finishing a perfect fit into the surrounding area by filling lid final lining, as well as the surrounding floor. The lid can be filled with standard top coverings (tiles, paving, granite, marble, laminate wood, coatings, carpets or other materials). The covers are made in all grades the load to the D400, in vodotijesnoj and plinotijesnoj performance, stainless steel, galvanized steel and aluminum.

Characteristics of covers

- indoor and outdoor applications
- material - AL (aluminum)
- class loads up to D400
- watertightness and gastightness
- locking screw

ACO TopTek or equivalent.

B.10 Built in washbasin

Built-in washbasin, material sanitary porcelain, colour white, no tap deck with overflow, dimensions 420x350mm.

B.11 Wall-mounted toilet

Wall-mounted toilet with WC-seat and cover, hinges in stainless steel, with quick-release and softclosing hinges and duroplast seat-cover.

B.12 Basin mixer

Low-pressure, single lever basin mixer, single hole mounted on top of vanity unit, chrome finish.

B.13 Toilet paper holder

Surface mounted single sheet toilet paper dispenser.

B.14 Toilet brush

Wall-mounted inox toilet brush.

B.15 Soap dispenser

Surface mounted liquid soap dispenser, inox and glass.

B.16 Sink mixer

Low-pressure, single lever sink mixer, single hole mounted on top of kitchen top, chrome finish.

C. HVAC WORKS

C.1 GENERAL PROVISIONS

The specifications provided in this Section shall relate to the HVAC equipment supplied by the Contractor, which shall be installed by the Contractor, in compliance with the provisions of these Specific Technical Requirements regarding HVAC Works.

Listed below are specific details, divided in clauses/sections regarding said HVAC equipment.

C.2 RADIATORS(R)

Radiators shall be made of cold-rolled sheet steel. Radiators shall be equipped with an integrated valve set, and suitable for double pipe system and one side connection from below. Radiators shall come with a fitted valve top with a pre-set k_v value. Radiators shall be equipped with the drain plug and the pivotable vent plug and dummy plug, all fitted with seals.

All radiators shall be equipped with a detachable top cover and two closed side panels.

Radiators shall be undercoated and painted in the colour as per architectural requirements.

Heat output shall be verified and attested in accordance with EN 442 and shall meet the following technical and construction specifications:

- Operating pressure: 6 bar
- Test pressure: 9 bar
- Operating temperature: 110°C

C.3 FLOOR CONVECTORS(FC)

Floor convectors with fans - principle of operation is forced convection. Room air temperature is controlled via room thermostats regulating fan speed.

Floor convectors shall be equipped with a radiator and an isolating valve and wall mounted control panel.

C.4 BALANCING VALVES

Balancing valves shall be straight or wye pattern with the straight line characteristic of fluid flow to valve stem lift. Balancing valves shall be capable of providing:

- Precise flow measurement,
- Precise flow regulation,
- Positive shut-off function.

Each valve must have designation indicating manufacturer name, nominal pressure, nominal diameter and flow direction.

Balancing valves should have the following technical and installation specifications:

- Provide minimum 4 full 360-degree hand-wheel turns of flow regulation adjustments,
- Include calibrated non-rising hand-wheel equipped with visual position read-out and concealed memory stop to retain previous setting after complete closure,

- Include two metering test ports with protection caps for use with portable differential pressure metering stations,
- Nominal pressure NP6,
- Max. operating pressure 10bar,
- Max. working temperature 120 oC,
- Include pre-setting capability,
- Install to ensure the flow direction matches the flow direction arrow on the valve body,
- Install valve at least 5D downstream from any fitting and at least 10D downstream from any pump. Two pipe diameters downstream from the valve should be free of any fitting,
- Installation of valve in piping must prevent sediment build-up in metering ports,
- Accompanying flanges, sealing and installation materials to be provided with balancing valves.

Balancing valves to be provided as follows:

1. Up to DN50:

- Treaded end connections, plug type with calibrated orifice,
- Body, stem and plug to be bronze or dezincification brass,
- EPDM O-rings for stem and seat seal,
- +/- 5% pressure drop to flow correlation accuracy over the operating range.

C.5 CHECK VALVES

Check valves are used in hydronic piping heating systems to limit water flow in opposite direction. Supporting material necessary for installation and sealing including flanges, if necessary, shall be delivered along with check valves. Flanges shall be manufactured in accordance with governing standards. Each valve shall have designation indicating name of the manufacturer, nominal pressure, nominal diameter and flow direction.

The check valves shall meet the following technical and construction specifications:

- Nominal pressure 6 bar,
- Max. working pressure 10 bar.
- Max. medium temperature 120oC,
- Max. ambient temperature 60oC,

Check valves shall be delivered as follows:

- up to DN50: with threaded end connections, lift-type check valve spring assisted or swing check valve for installation in both horizontal and vertical direction (in vertical lines with upward flow only); bronze valve body and bonnet, rotating or lifting bronze disc, stainless steel spring.

C.6 PUMPS

The pumps shall be centrifugal, single head. All pumps shall be canned rotor type such that pumped fluid lubricates the bearings and no maintenance is required. Pumps shall be provided with individual variable frequency drive and designed for installation with pump and motor shafts mounted horizontally or vertically. Pumps shall be factory assembled and tested for combined temperature and pressure suitability.

Centrifugal pumps shall be of compact block-design. Drive assembly that includes motor, mechanical seals and impeller is built in the same housing and shall be statically and dynamically balanced. Motor shall be electronically commuted with permanent magnet rotor. Drive assembly should be easily dissembled without disturbing casing connection to the piping. Pumps shall be delivered with appropriate accessories for threaded or flanged connections.

The circulating pumps shall meet the following technical and construction specifications:

- Min. fluid temperature: 0 oC,
- Max. operating temperature 110 oC,
- Outside air temperature of 40 oC,
- Nominal pressure NP6,
- Max. working pressure 10 bar,
- Sound pressure level: <70 dB at 1m distance,
- Frequency: 50Hz,
- Voltage: 220-240 V,
- Standard threaded connections according ISO 228/1 or similar or flanged connections according ISO 7005-2 or similar,
- Casing: Cast iron according to EN-JL1040, DIN 25 B ASTM or equivalent,
- Impeller: stainless steel according to DIN 304 AISI or equivalent, cast iron or bronze,
- Shaft: stainless steel,
- Bearings: carbon axial bearing and ceramic radial bearings,
- Mechanical protection class: IP44,
- Insulation class: according to IEC 85,
- Integrated automatic differential pressure and capacity control by frequency converter which controls pump speed,
- Differential pressure and temperature reading,
- Control module with built-in variable frequency drive, control panel and ability to accommodate additional modules,
- No external motor protection,
- Casing with insulation shell (optional),

The pumps shall meet the following installation specifications:

- Install pumps according to manufacturer's written instructions.
- Install pumps to provide access for periodic maintenance, including removing motors, impellers, couplings, and accessories.
- Support pumps and piping per manufacturer's recommendations.
- Make all necessary transitions in order to properly install pumps into existing piping layout.

C.7 RADIATOR LOCKSHIELD VALVES

Lockshield valves are used in hydronic heating systems to regulate and shut-off hot water flow.

Each valve must have designation indicating manufacturer name, nominal pressure, nominal diameter and flow direction.

The radiator lockshield valves shall meet the following technical and construction specifications:

- Brass manufactured according to SRPS C. D2.100,
- Max. temperature 120˚C,
- Nominal pressure NP10 bar,
- Cold water tested according SRPS EN 13480-5:2007,
- EPDM "O" ring sealing,
- Regulaton connector to be covered by cap to protect from unauthorized regulation
- Operation of the shut-off/regulation cone with an allen key.

C.8 RADIATOR VALVES

Radiator valves shall be used to regulate and shut-off water flow through radiators in hydronic piping heating system. Straight and angle models shall be used. The valves are consisted of valve body, operating stem with pressure pin and regulation spring, setting dial and pre-setting regulation device. Regulation could be automatic or manual (only during installation).

The radiator valves shall meet the following technical and construction specifications:

- Valve body material to be brass or bronze with nickel plating, internally threaded
- Stainless steel stem with double EPDM O-ring
- Outer O-ring replaceable under pressure
- Max. ambient temperature 60oC
- Max. medium temperature 120oC
- Nominal pressure 6 bar
- Max. working pressure 10 bar
- CEN certified and SRPS EN 215 part 1 tested or similar

- Pre-setting capabilities.
- M30x1.5 mm connection for thermostatic heads.

C.9 THERMOSTATIC HEADS

Thermostatic heads as continuous proportional controller regulate water flow through radiators in hydronic piping heating system. Regulation control is achieved by changes in the valve stroke related to changes in temperature of the space, where valve is located. Valve stem is driven by incompressible temperature sensing liquid located in the thermostatic head body. The thermostatic heads must have connection capabilities suitable for radiator valves of different manufacturers.

The thermostatic heads shall meet the following technical and installation specifications:

- Thermostatic head sensor to be incompressible fluid,
- Setting temperature range 6^{o}C - 26^{o}C,
- Valve stroke limiter,
- Frost protection setting,
- Max. sensor temperature 50 ^{o}C,
- Closing time max. 24 minutes,
- Tested according SRPS EN 215 part1 or similar,
- Independently changeable regulating temperature with utilization of special key and without protective cap removal,
- Protection ring against influence of radiator/valve radiation effect,
- Connection on radiator valves which have an M30x1.5 mm thermostatic insert ,
- Thermostatic heads shall be installed horizontally,
- Color must match radiator color.

C.10 RUBBER FLEXIBLE CONNECTORS

Rubber flexible connectors shall be used for noise and vibration attenuation in hydronic heating systems. Connectors shall be heat resistant, abrasive resistant as well as chloride and sulfate resistant.

Rubber connectors shall meet the following technical and construction specifications:

- Fiber-reinforced rubber body with steel flanges
- Operating temperature range: -15oC to 130oC
- Nominal pressure 6 bar
- Maximal working pressure 16 bar

C.11 SHUT OFF VALVES

Shut-off valves are used for flow regulation (opening and closing) in hydronic piping heating system. They are opened and closed by the means of manual wheel or lever. Supporting flanges and material necessary for

installation and sealing shall be delivered along with shut-off valves. Each valve shall have designation indicating name of the manufacturer, nominal pressure, nominal diameter and flow direction.

The shut-off valves shall meet the following technical and construction specifications:

- Max. ambient temperature 60oC,
- Max. medium temperature 120oC,
- Nominal pressure 6 bar,
- Max. working pressure 10 bar.

.Shut-off valves shall be delivered as follows:

- with threaded end connections up to DN50
- with flanged end connections from DN65

C.12 STRAINERS

Strainers shall be used in hydronic piping systems in order to capture and eliminate debris in the system. Install strainer on supply side of each valve, solenoid valve, in-line pump and elsewhere as indicated. Each valve shall have designation indicating manufacturer name, nominal pressure, nominal diameter and flow direction.

Supporting material and accessories necessary for proper installation and sealing, including flanges, if necessary, shall be delivered along with strainers. Flanges shall be manufactured in accordance with governing standards.

Strainers shall meet the following technical and construction specifications:

- Nominal pressure 6 bar
- Maximal working pressure 10 bar
- Maximal medium temperature 120oC
- Y-pattern strainers: cast iron body, threaded connection up to DN50, flanged end connection DN65 and larger, bolted cover, perforated stainless steel basket and bottom drain connection.
- Basket strainers: cast iron body, flanged end connection, bolted cover, perforated stainless steel basket and bottom drain connection.

C.13 THERMOMETERS

Straight and angle glass tube thermometers shall be used for temperature measuring in hydronic heating systems.

Thermometers shall meet the following technical and construction specifications:

- Metal case, liquid-in-glass type, mercury or alcohol filled with glass window and magnifying lens
- Measuring range 0-120oC
- Nominal pressure 6 bar
- Brass case with straight or angle type connection

- Tube background: nonreflecting aluminium with permanently etched scale markings
- Stem: cooper-plated steel, aluminium or brass and of length to suit intallation
- Accuracy: ±1% of measuring range

C.14 PRESSURE GAUGES

Contact pressure gauges are used for measuring pressure of fluid (water) in central heating systems.

The pressure gauge shall meet the following technical and construction specifications:

- Stainless steel casing, hermetically sealed,
- Threaded end connection, stainless steel, standard radial (1/2" external threaded),
- Mechanical protection class : IP54,
- Measurement range 0-6 bar,
- Accuracy is ±1% full scale,
- Max. operating temperature 100 ˚C,
- Max. ambient temperature 60 ˚C,
- SRPS EN 472:2005 and EN 837-1,
- Colour and visibility of background and numbers shall allow easy reading,
- Pressure gauge shall be mounted using three way valve.

C.15 PIPING

Steel seamless pipes, made of St 37.0 (SRPS EN 10216-1:2007), are used for hot water distribution in heating systems. The piping shall be connected by:

- Fittings,
- Flanges or welded connections.

Sealing shall be performed in accordance to DIN 2690.

Pipe dimensions to be based according to SRPS EN 10220:2005 as follows:

DN	External Diameter (mm)	Wall thickness (mm)
15	21,3	2
20	26,9	2,3
25	33,7	2,6
32	42,4	2,6
40	48,3	2,6
50	60,3	2,9
65	76,1	2,9

80	88,9	3,2
100	114,3	3,6
125	139,7	4
150	168,3	4,5

45^{o} and 90^{o} elbows to be used for piping with nominal diameter larger than DN15 .No pipe bending is allowed on site. Weld thickness and welding materials shall be appropriate for pipe wall thickness and for chemical composition of pipes being welded, pipes axis shall be positioned in a single plane, outer and inner side of weld joints shall be cleaned, pipe diameter must not be reduced. Pipe welds shall be initially prepared as follows:

- By edge trimming, usually bellow angles of 60°-70°, at welding positions where pipe wall thickness of 3mm is exceeded,
- All dirt and rust to be removed from pipe surface before welding process occur,
- Visible and not built into construction.

For flanged connections the standard flange dimensions for related working pressure shall be used. Flanges shall be manufactured in accordance with governing standards.

Install horizontal piping at uniform grade between 0.5 and 1% upward in direction of flow.

Supports and anchors to be easily de-installed and placed in sufficient distances to prevent excessive pipe deformations due to its weight and other working forces. Maximum permissible distance per DN is listed below:

Nominal diameter DN	Distance m
15	1,5
20	2,0
25	2,0
32	2,5
40	2,5
50	2,5
65	3,0
80	3,0
100	4,0
125	4,5
150	5,0

Minimum permissible distance between pipes at the same plane including thermal insulation must be:

- 60mm for diameters lower than 150mm,
- 100 mm for diameters between 150 to 200mm.

Pipe surface to be treated as follows:

- Cleaning of pipes and welded joints in the workshop, until SA 2.5 level (Swedish standard) is met, complies with SRPS EN ISO 8501-3:2008
- Two layers of basic paint.

Pipe fittings shall be protected by anticorrosive coating.

C.16 TESTING, BALANCING AND COMMISSIONING

After completion of installation work, testing of heating system shall be performed according to SRPS M.E6.012.

Testing includes filling the system with cold water and hydraulic test pressure on strength i.e. cold test. Duration of testing shall be min. 6 (six) hours. Test pressure, shown by the test manometer, shall be constant throughout testing. Equipment and piping passed the test if no signs of damage and deformation are observed.

Test pressure is: Pi=2+Pst+Hcp (bar),

where:

Pst (bar), hydrostatic pressure

Hcp(bar), pump head.

After cold hydraulic test all piping shall be flushed out with fresh water until clean water is obtained. All drainage valves on equipment shall be opened and strainers shall be cleaned.

Hydraulic test pressure on leakage *i.e.* warm test shall follow cold test. Duration of testing should be min. 24 (twenty four) hours.

Test pressure is: Pi=Prad (bar),where,

Prad (bar), working pressure

Leave joints, including welds, uninsulated and exposed for examination during hydraulic test. Hydraulic testing shall be performed by Contractor with attendance of the mechanical work coordinator. Hydraulic testing report, signed by the mechanical work coordinator, shall be made in 2 (two) copies and delivered to the Contracting Authority. Responsibilty of the Contracting Authority is to provide water as well as electric and heating energy. Contractor's responsibility is to provide measuring equipment and labour.

Regulating valves, as per project, as well as water flow per main branches, measured with ultrasound flow meter, shall be adjusted during operation mode of circulating pumps according to working parameters provided by the mechanical work coordinator.

It is necessary to put the installation into operation and perform air temperature measurements in the central part of all heated rooms at level of 1.2 m above the floor, 3 (three) hours after system operation commence. Thermostatic head valves shall be adjusted according to working parameters provided by the mechanical work coordinator.

After testing and balancing, a commissioning report shall be provided. This report shall also include attests and warranties for all installed equipment. Additionally, operation instructions manual for all new installed equipment shall be enclosed. Two copies of the report including operation manuals shall be provided to the Contracting Authority.

C.17 INSULATION

C.17.1 Hot water pipework insulation

In order to reduce heat losses all piping, fittings and equipment subject to insulation shall be insulated by mineral-fiber based material with or without a factory applied jacket. Insulation shall be performed in accordance with standards SRPS U.J5.070 and SRPS ISO 8497:2007. Insulation shall be easily removable at piping specialties and equipment connections.

Insulation material must meet the following specifications:

- Heat conductivity min. λ=0.035-0.06 W/mK,
- Inflammable,
- Max. temperature resistance of 500°C,
- Chemically neutral,
- Mold or bacterial growth resistant,
- Meets the fire and smoke safety requirements,
- Corrosion resistant,
- 25mm thick insulation, for pipe diameter lower than DN50,

Leave joints, including welds, uninsulated and exposed for examination during hydraulic test. Before commence of insulation installation work, surface to be thoroughly cleaned and all corrosion, mineral sediments or dirt to be removed. Apply only on clean and dry surfaces. Apply vapor retarder jacket along with vapor retarder mastic on insulation that could be exposed to water. Apply insulation to straight pipes, flanges, fittings, elbows and valves per manufacturer's recommendations. After installation, insulation shall be protected by 0,55mm thick sheet aluminum cover. Coordinate insulation application with type, size and location of piping supports and insulation shields.

C.17.2 Ductwork insulation

Fresh and supply air ductwork shall be insulated with vapor barrier insulation. Thermal insulation material shall be based on synthetic rubber with characteristic closed cell structure, black, without admixture of dust, fibers, plastics, without the presence of toxic gases in smoke, without impact on the environment, self-extinguishing, thermal conductivity of 0.04W/mK, the resistance to vapor diffusion> 7000; acoustic level to 30dB (A)). Insulation shall be non-combustible (non-flammable and self-extinguishing), Class A and without Halogen (Halogen Free-HF).

Insulation thickness for fresh and supply air ductwork shall be 32mm.

C.18 CLEANING AND PAINTING

Pipes and supports are cleaned and painted in order to be protected against ambient conditions. Potential impurities, corrosive and mineral sediments are removed by cleaning. Following appropriate cleaning, painting should be carried out.

All piping, both insulated and non-insulated, must be painted. Pipes which are planned to be insulated must be cleaned according to Swedish standard SIS-grade SA 2.5, and then 16 hours following cleaning at the latest, two non-corrosive layers of base paint to be applied onto cleaned surface of pipes and supports. Time between two layers deposit must not be longer than 24 hours.

For both layers, total thickness of each layer must not be lower than 250 microns. Max. permissible tolerance of paint thickness per layer to be ±(5-10)%. In the case that paint layer thickness does not meet tolerance limits, additional paint layer is required.

Pipes that are not supposed to be insulated, to be cleaned the same way as above mentioned pipes. Painting to be done by paint resistant to temperatures of water flowing through pipes. In case where pipes are exposed, paint color should match that of interior and other piping.

For radiator painting a 110 ^{o}C temperature resistant paint shall be used. Paint color should match color of the rest of radiators that are not painted, as well as color of interior. Hangers and supports to be cleaned and covered by anticorrosive coating and painted in two durable paint layers the same way as pipes.

C.19 AIR HANDLING UNIT (AHU)

The air handling units shall be rated for the minimum duty specified on the Design documents and BoQ.

The internal resistance of the unit including the specified components, dirty filters and wet coolingcoils, and any other component which may form part of the unit is to be added to the external system resistance scheduled.

All materials and construction methods used shall be suitable for outside installation.

Air handling units shall be configured as indicated on the Design documents and BoQ.Air handling units will generally be of modular construction.

AHU Sections shall be arranged to ensure an even distribution of air across the face of all components.

All air handling units shall have motorized dampers on fresh air and exhaust air connections.

The unit section shall be of rigid construction formed from either folded, rolled or extruded steel sections forming a frame with purpose made corner joints in steel, aluminium or composite material, or shall be formed from multi angled supports forming a pillar and post construction.

The unit shall be mounted on a corrosion protected, epoxy painted, one piece steel base complete with purpose made lifting points.

Hinged full size access panels are to be provided on all sections of the units, retained by an approved corrosion proof quick release cam type handles. One handle on each access panel shall have a key operated lock. The lock shall be common suited keys to access panels on all air handling units. Access panel seals shall maintain air tightness for the life of the unit.

Units isfor external mounting and shall have weatherproof joints and be complete with an oversized sealed pitched or curved roof with drainage channels between roof sections.

All fan casings shall be of substantial construction, adequately stiffened and braced to prevent vibration and drumming and be capable of withstanding the pressure involved without leakage or distortion. Inspection covers shall be provided on fan casings to allow easy access to internal working parts. Casing construction shall allow withdrawal of the impeller after the fan is installed. Fan motor/impeller assemblies shall be statically and dynamically balanced and tested for over speed before despatch from the manufacturer’s works.

Filter frames shall be packaged or built up combination frames fabricated from corrosion protected steel and stiffened to prevent distortion designed to receive and rigidly support filters. Frames shall be securely fixed into position with necessary seals to prevent air leakage between individual frames, between the frame and duct/ air handling unit casing, and between frame and filter. Filters shall be arranged for side or front withdrawal. Filter retaining clips or other securing device shall be capable of pulling the filter cell on to its seat whilst exerting equal pressure on all faces. Filters shall be of the type indicated in the Technical specifications and shall provide an efficiency exceeding the value stated when operating at rated capacity.

Each filter bank on ventilation systems and air handling plant shall incorporate two sets of pressure tappings on the upstream and downstream side. One pair of tappings shall connect to an externally mounted inclined manometer gauge indicating pressure differential across the filter. The gauge shall be accurate to 25 Pa and shall incorporate a graduated scale on which the reading of maximum pressure drop shall occur at not less than 70% of total scale length. The manometer scale shall be clearly marked with positions equivalent to “Filter Clean” and “Filter Dirty”. The second set of tappingshall be fitted with a pressure switch for purposes of initiating an alarm.

All coils shall be fabricated and installed in air handling units so that no bypassing of air occurs.

Full bore drain traps shall be provided at the connection to the cooling coil drain pans. For drain traps under suction provide a drain trap of depth equivalent to at least twice the working air pressure in depth but not less than 75 mm. An air break shall be provided between trap outlet and drainage system.

Eliminator plates shall be manufactured from extruded re-enforced polypropylene spaced to eliminate moisture carryover from the cooling coil. Eliminator plates shall be of adequate rigidity to avoid deformation and buckling, and fixed within the air handling unit enclosure to prevent breakaway when subjected to the maximum and/or varying fan pressures. Eliminator plate fixings shall facilitate easy removal for cleaning and maintenance.

The heat exchange assembly shall be contained in a galvanized sheet steel casing complete with access doors and suitable for air handling unit mounting. The heat exchanger assembly shall include bypass motorized dampers to control the exchanger output.

C.20 LOUVERS (L)

Fixed metal wall louvers shall be used in ventilation and air-conditioning systems where there is necessity to bring outdoor air inside the building or exhaust some air outdoor. Exterior metal wall louvers shall be fabricated and installed to withstand the effects of loads and stresses from wind and normal thermal movements, resulting in change in ambient temperature, without evidencing permanent deformation of louver components including blades, frames, supports, fasteners and anchors.

Fixed, extruded-aluminium, weather resistant, wall louvers with extruded-aluminium frames, extruded-aluminium rain resistant louver blades and wire mesh screen on rear shall be used. Wire mesh screen shall be of galvanized steel with mesh size 6x6 mm. For Louvers dimensions, dept, free area, static pressure loss and water penetration requirements refer to the drawings and specifications. Install louvers per manufacturer's recommendations. Locate and place louvers plumb, level and at indicated alignment with adjacent building elements. Install concealed gaskets, flashings, joint fillers and insulation as necessary to make louver weather-tight.

C.21 VRVAIR CONDITIONING UNITS (IU/CU)

VRV unit in version of heat pump, designed for outdoor installation along with inverter and standard type of compressor, air-cooled condenser, inverter control. Internal units shall comprise an internally mounted terminal unit (IU) suitable for ceiling void mounting, wall mounting as indicated on the Drawings and remote externally mounted outdoor unit (CU). All material used in the construction of the units shall be corrosion resistant, non combustible and shall not emit toxic fumes when heated.

Internal and external sections shall be of the low noise type specifically designed for its application and shall be completely factory assembled, tested and packed, and installed in accordance with manufacturer's recommendations.

The installation shall comprise necessary compressors, condensers, motors, direct expansion coils, mounting frame, starter and control panels, thermostatic valves, all interconnecting refrigerant piping and fittings, insulation, together with all necessary controls and safety devices and interconnecting control and power wiring necessary for the satisfactory operation and protection of the equipment supplied.

All controls and components, etc., shall be suitable for operation at and between extreme ambient conditions

The minimum duty of each unit shall be as specified in the BoQ.

The Contractor shall ensure that the manufacturer's recommendations with respect to maintenance access are strictly adhered to. Adequate space provision shall be made around the indoor units and condensers for access and/or removal.

The condenser/compressor unit shall be supplied on a rigid corrosion protected steel base mounting frame or be suitable for wall mounting.

All factory applied acoustic and thermal insulation including facings, adhesives and mastic shall be fire resistant and conform to the requirements of the Statutory Authorities.

The cooling fluid shall be environmental friendly.

All units shall be supplied by the same manufacturer.

External and internal unit shall be interconnected with copper refrigerant tubing and electrical cable, sized by the Contractor.

Each control panel shall facilitate and display:

- Confirmation of operation
- Program function
- Programmable timer
- Night set back mode
- Filter dirty status
- Temperature setting
- Airflow setting and auto fan speed control
- Fault
- Auto restart after power failure

C.22 CONSTRUCTION AND ERECTION OF DUCTWORK

a) The Contractor shall provide and erect all the necessary ductwork, control dampers, grilles, diffusers, etc., to form complete air distribution and exhaust systems

b) All ductwork shall be manufactured as far as practicable to site dimensions taken by the Contractor. Where site dimensions cannot be taken in advance, dimensions shall be taken from architectural/structural detail dimensioned drawings and the Contractor shall make suitable provisions to accommodate any discrepancies that may occur between the drawings and the site dimensions.

c) All ductwork shall be constructed and erected so as to be rigid and free from sway, drumming and movement. Ductwork shall be true-to-size and accurately lined-up.

d) For variable air volume systems the Contractor shall ensure adequate stiffening to prevent deformation due to system pressure changes.

e) The geometry of ductwork shall be arranged to encourage aerodynamic flow.

f) Duct sizes given on the Design documents are clear internal dimensions and allowance shall be made for both internal and external insulation where applicable. The inside of ductwork must be free from un-necessary obstruction.

g) Lengths of ducts and other constructional details for the specified test class shall be selected to achieve maximum economy of manufacture and erection subject to compliance with the construction table and access into the building(s).

h) Flat oval ductwork may be offered as an alternative to rectangular section ductwork shown on the Design documents provided it is sized to give the pressure drop per unit length as the ductwork shown.

i) All metallic ductwork systems shall be constructed and installed to provide electrical continuity throughout to comply with the requirements of the IEE Regulations. Electrical continuity shall be demonstrated on each completed system.

Where items including joints and components incorporated into the ductwork systems break the electrical continuity bonding conductors shall be supplied and installed to bridge the items.

Bonding conductors shall be 6 mm2 minimum green/ yellow PVC stranded copper cable or 10 mm x 1.5 mm tinned copper braid with crimped tinned copper lugs suitable for bolt fixing at each end.

Each bonding conductor shall be fitted with an approved metal label stating "ELECTRICAL BOND - DO NOT REMOVE".

The bonding conductor lugs shall be bolted with spring serrated washers to an adjacent flange bolt and extended clear of any thermal insulation or other finish. To ensure negligible impedance all contact surfaces shall be thoroughly cleaned prior to assembly and fixing.

Where the thermal insulation is vapor sealed the sealing shall be continued around the bonding lug where it passes through the thermal insulation.

In addition a M10 cadmium plated bolt shall be provided on the ductwork system as close as practical to the system fan drive motor. The bolt shall be extended to clear any thermal insulation or other finish and shall be provided with back nut and locking nut. The bolt shall be used by the Contractor to connect an equipotential bonding conductor to the main earthing systems.

j) Particular attention shall be paid to protecting partially completed ductwork systems against building debris entering the airways.

k) All instruments providing local indication and all sensors associated with the automatic control/BMS installation are to be installed within a ductwork system strictly in accordance with the manufacturer's recommendations.

The thickness of duct sheets shall be dependent on the duct dimension in accordance with the following table:

Larger duct size (mm)	Sheet thickness (mm)
to 400	0.6
400 - 600	0.8
600 - 800	0.8
800 - 1000	0.8
1000 - 1500	1.0
1500 - 2250	1.0
2250 3000	1.2

C.23 BENDABLE AND FLEXIBLE DUCTS

a) Provide un-insulated or pre insulated flexible duct as indicated on the Design documents. Where pre-insulated the insulation shall comply with the requirements of the 'Thermal Insulation Section' of this Specification.

b) Flexible ducts where required shall be neatly fixed and adequately supported so as to prevent sagging and transfer of weight to adjacent ductwork.

c) Flexible ducts shall be continuous with no intermediate joints.

d) The bending radius must be sufficient to prevent tensioning of the outside of the bend and restriction of the throat likely to cause deformation and/or leakage. In no case shall flexible ductwork be used to correct misaligned rigid ductwork.

e) Jointing of flexible ducts to rigid ductwork and fittings shall comply with the relevant construction standard and test requirements. Nipples employing patented 'O' Ring or other similar joint may be put forward.

C.24 VOLUME CONTROL DAMPERS (VCD)

Dampers shall be provided where indicated on the Design documents and as necessary to adjust air flow to achieve the required air distribution throughout the ductwork systems and at the terminals.

Single or multi blade dampers shall be used with appropriate damper casings. Damper casings shall incorporate spigots or flanges to match the connecting ductwork. Multi blade dampers shall be of the opposed blade type.

Damper blades shall be constructed from galvanized mild steel to suit the particular construction requirements of the system in which they are installed and be of aerofoil section.

On rectangular ductwork with an aspect ratio in excess of 1:3 damper spindles shall cross the short dimension.

C.25 NON RETURN AIR DAMPERS (NRD)

Provide and install non return air dampers in the positions indicated on the Design documents.

Dampers shall be approved proprietary type or shall comprise galvanized sheet steel angle framed casings and multiple weight balanced galvanized sheet steel blades. Damper blades shall be fixed to galvanized mild steel spindles set in nylon bush bearings. Blade assemblies shall overlap in the closed position and shall be sufficiently stiff to prevent flutter and/or regenerated noise under design flow conditions.

All damper blades and stops shall be fitted with extruded vinyl or similar approved edge seals.

Dampers shall be constructed to offer minimum resistance to air flow and in any event the resistance to the design air flow shall not exceed 50 Pa with the blades in the open position.

Dampers shall have the same stability and integrity ratings as the ductwork system in which they are installed.

C.26 GRILLES AND DIFFUSERS

C.26.1 General

The Contractor shall to be responsible for ensuring all terminal devices are selected to meet the design criteria in respect of noise, performance and comfort.

Selections shall consider performance under summer and winter operating conditions and variable flow as appropriate.

All grilles and diffusers shall have the throw and throw patterns stated in the Technical specifications or as detailed on the Design documents.

The Contractor shall be responsible in producing his own drawings to ensure that all requirements are met.

All grilles and registers shall be mounted upon a substantial sub-frame connected to the ductwork and provided with neoprene jointing rings inserted under the frame or otherwise arranged to obviate air leaks around the grille.

Unless specified otherwise all grilles and diffusers shall be provided with opposed blade volume control dampers shall be operable through the face of the grille.

Vanes shall be arranged so that they remain permanently in their set position without vibration or noise, and during testing shall be set so as to achieve optimum air distribution in the areas concerned without draughts or dead pockets.

Noise generation by air flow through all grilles, diffusers and terminal registers shall have a broad-band sound spectrum, free from discrete frequencies and pure tones. The combined noise levels of all supply/return grilles diffusers and terminal registers etc., in conjunction with, other services, shall not exceed the noise from specified criteria.

In general supply diffusers shall be fitted with purpose made plenum boxes to ensure stable air discharge flow patterns under all flow specified conditions. Spigot connection sizes and their associated ductwork connections shall be sized by the Contractor such that the specified room noise criteria are not exceeded.

Where grilles and diffusers are used for return air into ceiling voids purpose designed acoustic plenums shall be provided in positions as indicated on the Design documents.

Fixing shall be of the concealed type unless stated otherwise. The fixing method offered shall provide necessary adjustment to locate grilles and diffusers firmly against ceilings, floors, walls or ductwork whilst allowing for building tolerances and movement. The means of access/adjustment to dampers shall be compatible with the installation arrangement and fixing method.

Spigot connections to grille plenums shall be arranged so that they are above the designated ceiling lighting zone or 150 mm above the face of the ceiling whichever is the greater.

Plenums attached to wall and ceiling grilles/diffusers through which it is possible to see, shall be internally primed and painted two coats matt black.

C.26.2 Linear Slot Diffusers (SD)

Linear slot diffusers shall be manufactured from extruded aluminum sections fabricated into modular assemblies with blades mounted on to retaining aluminum tubes or retained by the profiled aluminum frame.

Blade positions shall be adjustable to allow air distribution patterns to be set once installed.

All active sections of diffusers shall be provided with purpose made plenum boxes constructed of 1 mm galvanized sheet steel incorporating a circular inlet spigot connection incorporating and complete with volume control damper operable from the diffuser face and equalizing grid. Plenum boxes shall be arranged to ensure stable air discharge patterns and maintain room air distribution patterns under all flow conditions down to the design minimum.

The internal finish of linear diffusers shall be black.

Plenum boxes shall be fixed to the structure by a system incorporating the facility for leveling. The Contractor shall allow in his Tender for final alignment and leveling.

Non active diffuser sections shall be provided with proprietary blanking plates.

Where linear diffusers are shown on the Design documents as being continuous they shall be provided with all necessary jointing strips and mitre pieces to ensure correct alignment between adjacent sections.

C.26.3 Swirl diffusers (VD)

Swirl diffusersare suitable for high rooms or halls (installation height ~5m).

The diffuser face comprises an outer ring incorporating a discharge nozzle, air control blades (adjustable or fixed), a central cover cap and a rear mounted spigot. The blade position can be adjusted either manually by taking off the cap and loosening the winged screw or by means of an electric actuator.

The outer discharge ring is supplied on request with or without a flange. The units with a removable face have a safety cable between plenum box/casing and diffuser face.

C.26.4 Disc Valves (AV)

Supply and extract disc valves shall be constructed from steel and be stove enameled to a RAL colour. Each disc shall be complete with sub-frame and edges.

C.27 FANS

C.27.1 General

All fans of similar type (eg axial, centrifugal, etc.,) shall as far as is practicable be provided by the same manufacturer. All fan casings shall be of substantial construction, adequately stiffened and braced to prevent vibration and drumming and be capable of withstanding the pressure involved without leakage or distortion.

All fans shall be capable of achieving the duty and or duties specified in the BoQ as a minimum when mounted in the air distribution system as installed by the Contractor.

Air volumes given in the BoQ are referenced to a basic air density of 1.2 kg/m^3.

All fan pressures indicated in the BoQ have been based on the calculated resistance through the ductwork system as shown on the Design documents and include an allowance for duct mounted items of plant and equipment eg grilles. The fan pressure is stated external to air handling units or fan inlet and outlet connections.

The Contractor shall prior to ordering fans determine the required fan performance to achieve the specified air flow rate based on the actual items of plant proposed, and his detailed co-ordinated ductwork drawings. The Contractor shall, add necessary margins for commissioning, air handling unit casing and ductwork leakage so that pressures can be increased by 10% at the same volume.

C.27.2 Duct Mounted Extract Fans (EF)

The unit shall be of single skin construction fabricated from galvanized mild steel or self color aluminum sheet. The fan impeller shall be of the mixed flow or centrifugal type with the impeller and motor mounted on a common shaft. The mounting set of the fans shall facilitate easy installation and removal, and prevents the transfer of vibration to the duct.

Anti-vibration mounts shall be fitted in the motor arm assembly.

Where necessary to comply with the acoustic and vibration section of the specification the Contractor may propose units of double skinned construction.

C.28 HEAT METERS

Compact ultrasonic heat meter for measuring energy consumption in hydronic heating applications shall be used. Compact ultrasonic thermal heat meter consists of the following components: ultrasonic flow sensor, calculator with integral hardware and software for measuring flow rate, temperature and energy consumption and temperature sensors. The flow sensor permits very high measuring accuracy and can be used in the supply or return line. The heat meter has to be installed so that the direction of flow corresponds to the direction of an arrow on the flow sensor. The calculator contains all the necessary circuits for recording the flow rate and temperature and for calculating, logging and displaying the data. The calculator housing shall have possibilities to be mounted directly on the flow sensor or on the wall. The cable length between the calculator and the flow sensor shall be minimum 1.5 m. The calculator shall have memory capabilities to store and save the measured values, device parameters and types of error at regular intervals. The storage frequency shall be selectable from various storage intervals. The heat meter shall be equipped with a pair of temperature sensors.

Ultrasonic heat meter shall meet the following technical and construction specifications:

- Max. operating pressure 16 bar,
- Medium temperature range 10-150°C,

- Protection class: calculator IP54, flow sensor IP54,
- Lithium battery, 230V AC or 24V AC,
- Threaded and flanged end connections,
- Measuring accuracy class2 and 3 according to EN1434 requirements,
- Optical interface with M-Bus module,
- Equipped with mounting accessories, sensor sockets and adapters ,
- Installed per manufacturer’s recommendations,
- Delivered with valid calibration certificates according actual national regulations.

D. ELECTRICAL WORKS

D.0 GENERAL PROVISIONS

The specifications provided in this Section shall relate to the electrical equipment supplied by the Contractor, which should be installed by the Contractor, in compliance with the provisions of these Specific Technical Requirements regarding Electrical Works.

The electrical installation should be in accordance with the standards and codes of SRPS as well as international standards and codes (EN/IEC). In cases where specific requirements of SRPS conflict with other standards and codes, the requirements of SRPS shall take precedence. Only the latest editions of the standards shall apply.

Electrical services should be segregated as specified throughout the installation to obviate the following:

- Electrical interference from one circuit to another.
- A fault on one circuit affecting another.
- Unnecessary fire damage.
- Difficulties in circuit identification.
- Voltage limits for general safety.

All equipment and materials, bulk materials and accessories used in the electrical installation work should be new and of the highest quality to the best modern practices. All materials should be approved types, supplied by approved manufacturers and should be fully suitable for use in the conditions stated.

All equipment and materials must be supplied with needed certificates.

Listed below are specific details, divided in clauses/sections regarding electrical equipment.

D.1 EXISTING INSTALLATIOS-DISMANTLING WORKS

This Section includes dismantling works, transport and all labour neccessary for complete uninstallment of old electrical equipment and materials.

Dismantled electrical installations (distribution board, luminaries, outlets, cables, cable trays etc.) should be transported to disposal area.

Unit of measurement is lump sum (LS).

D.2 POWER SUPPLY

This Section includes delivery, transport and all labour, bulk materials and accessories for the complete installation and erection of power supply of the facility in accordance with the drawings.

The Contractor should procure and install new measuring set (digital three-phase measuring groupand current measuring transformer) in accordance to technical regulations and conditions of the electricity supply authority.

Unit of measurement is number of items (No).

D.2.1 Digital three-phase measuring group

Three-phase, transformer type up to four-tariff, class 1 or 0,5 digital W-hour meter and class 2 or 3 digital VAr-hour meter with measuring of max 15 minute engaged power, ripple receiver and function of switch clock, of the followingcharacteristics should be used:

- Rated voltage Vn 3x230/400V (+15%, -20%)
- Rated frequency fn 50 Hz
- Base current IB 5A
- Maximum current 5A
- Constant of meter 1000 impulses/kWh (kVArh)
- Class of accuracy for W meter IEC 1036 class 1

- Class of accuracy for VAr meter IEC 1268 class 2 or 3
- Class B, 1Wh/pulse
- Function of switch clock
- Function of ripple receiver
- Mains frequency fn 50-60Hz

New measuring group should be installed instead of existing one in accordance with electricity supply authority regulations.

D.2.2 Measuring transformers (current reducer)

As a part of measuring group, current transformers with following characteristics should be installed:

- current measuring transformer 150/5A

D.3 DISTRIBUTION BOARD

This Section includes delivery, transport and all labour, bulk materials and accessories for the complete installation and erection of distribution boardfor main power supply and measuring set, lighting, socket outlets, HVAC installation and other appliancesin accordance with the drawings.

Distribution boardshould be surface (flush) mounted type as indicated on the relevant drawing. The boards should be totally enclosed, dust protected. Enclosure should be fabricated from robust galvanized sheet fully rust-proofed, stove enamelled, of minimum thickness of 1.5mm. The enclosure should be protected to IP43.

Unit of measurement is number of items (No).

D.3.1 GMRO

Distribution boardshould be wall-mount, made of pickled sheet, protected against the corrosion and primed, protection degree IP43, with following equipment:

- Main three-pole low-voltage automatic switch for 400V, 50Hz, 160A with thermo magnetic safety unit, auxiliary contact and a mechanism for manual control with lever and axis. – 1 piece
- Three-pole low-voltage automatic switch for 400V, 50Hz, 63A with thermo magnetic safety unit, auxiliary contact and a mechanism for manual control with lever and axis. – 2 pieces
- Three-pole low-voltage automatic switch for 400V, 50Hz, 40A with thermo magnetic safety unit, auxiliary contact and a mechanism for manual control with lever and axis. – 3 pieces
-

* Measuring set (position D2.1. I

D.3.2 RO-Pr

Distribution boardshould be wall-mount, made of pickled sheet, protected against the corrosion and primed, protection degree IP43, with following equipment:

- Three-pole low-voltage automatic switch for 400V, 50Hz, 40A with thermo magnetic safety unit, auxiliary contact and a mechanism for manual control with lever and axis. – 1 piece
- Single-pole automatic circuit-breaker with both thermal and electro-magnetic release MCB C60N/4A, 6kA, type "B" – 1 piece
- Single-pole automatic circuit-breaker with both thermal and electro-magnetic release MCB C60N/10A, 6kA, type "B" – 15 pieces
- Single-pole automatic circuit-breaker with both thermal and electro-magnetic release MCB C60N/16A, 6kA, type "B" – 15 pieces
- Two-pole rotary cam switch 230V, 10A, three-position L-0-D – 1 piece
- Contactor 9A, 400V, for control voltage 230V, 50Hz
- Light sensitive switches with photo-probe

- Bus-bars, coils, cable inlets, wiring, name plates and other additional material – lump sum

D.3.3 RO-Po

Distribution boardshould be wall-mount, made of pickled sheet, protected against the corrosion and primed, protection degree IP43, with following equipment:

- Three-pole low-voltage automatic switch for 400V, 50Hz, 63A with thermo magnetic safety unit, auxiliary contact and a mechanism for manual control with lever and axis. – 1 piece
- Three-pole low-voltage automatic switch for 400V, 50Hz, 40A with thermo magnetic safety unit, auxiliary contact and a mechanism for manual control with lever and axis. – 1 piece
- Single-pole automatic circuit-breaker with both thermal and electro-magnetic release MCB C60N/10A, 6kA, type "B" – 11 pieces
- Single-pole automatic circuit-breaker with both thermal and electro-magnetic release MCB C60N/16A, 6kA, type "B" – 21 pieces
- Bus-bars, coils, cable inlets, wiring, name plates and other additional material – lump sum

D.3.4 RO-KL

Distribution boardshould be wall-mount, made of pickled sheet, protected against the corrosion and primed, protection degree IP43, with following equipment:

- Three-pole low-voltage automatic switch for 400V, 50Hz, 63A with thermo magnetic safety unit, auxiliary contact and a mechanism for manual control with lever and axis. – 1 piece
- Single-pole automatic circuit-breaker with both thermal and electro-magnetic release MCB C60N/2A, 6kA, type "B" – 3 pieces
- Single-pole automatic circuit-breaker with both thermal and electro-magnetic release MCB C60N/4A, 6kA, type "B" – **5 pieces**
- Single-pole automatic circuit-breaker with both thermal and electro-magnetic release MCB C60N/6A, 6kA, type "B" – **3 pieces**
- Single-pole automatic circuit-breaker with both thermal and electro-magnetic release MCB C60N/10A, 6kA, type "B" – **1 piece**
- Single-pole automatic circuit-breaker with both thermal and electro-magnetic release MCB C60N/16A, 6kA, type "B" – **6 pieces**
- Three-pole automatic circuit-breaker with both thermal and electro-magnetic release MCB C60N/16A, 6kA, 3p, type "C" – **3 pieces**
- Three-pole automatic circuit-breaker with both thermal and electro-magnetic release MCB C60N/25A, 6kA, 3p, type "C" – **1 pieces**
- Automation station with minimum 36 data points andBACnet on IP – Freely programmable compact automation stations for HVAC and building services, Native BACnet automation stations with communication viaBACnet over Ethernet / IP&BACnet over LONTALK, PPC processor for high performance and reliable operation, Comprehensive management and system functions (alarm management, time scheduling, trends, remote management, access protection etc.), For stand-alone applications or for use within a device or system network, Supports the following methods of operation:QAX... room units, Local or network-compatible operator units, system or web operation via system network – **1 piece**
- Operator unit - Networkable operator unit for viewing and operating one or several automation stations. Unit should have High-grade display with adjustable contrast, Simple key operation with direct access to the required plant information, Generic operation and display of plant functions (alarm handling, timeschedulers, calendars, setpoint adjustments, display of current values, etc.), Integrated acoustic and/or visual collective alarm, Graphic online-trend function, Support of integrated access protection in the overall system. Ability to add or delete new users, Automatic logout, Heating curve graphicsetc. – **1 piece**
- Two-pole rotary cam switch 230V, 16A, two-position 0-1 – **1 piece**
- Two-pole rotary cam switch 230V, 16A, two-position 1-2 – **1 piece**
- Two-pole rotary cam switch 230V, 16A, three-position 1-0-2 – **2 piece**
- Transformer of control voltage, 230/230V, 50Hz, rated power of 600VA – **1 piece**
- Rectifier for 24VDC power supply, 230/24VDC – 1 piece
- Auxiliary relay, 4 change-over contacts for control voltage of 230V, 50Hz – **16 pieces**
- Time relay with a time delay after actuation, along with coil of 230V,

delay range from 1.5 to 30 sec – **2 pieces**
- Pushbutton of 230V, 10A, Dia. 22mm, to be door mount, along with 1 normally closed and 1 normally opened contacts–**4 pieces**
- Emergency switch-off pushbutton in case of fault, complete with one normally closed and one normally opened contacts to be door mount – **1 piece**
- Signal LED lamp, different color, to be mounted to cabinet door front– 16 piece
- Fluorescent light for cabinet lighting, 230V, 50Hz, 14W – **1 piece**
- Limit switch to be mounted onto cabinet door for light switching on, 6A, 230V, 50Hz – 1 piece
- Socket outlet, DIN rail mounted, 230 VAC, 16A – **1 piece**
- Programming of controller – **1 piece**
- Commissioning of controller – **1 piece**
- Bus-bars, coils, cable inlets, wiring, name plates and other additional material – **lump sum**

D.3.5 RO-TP

In the existing distribution board in common heating substation following equipment should be installed:

- Two-pole rotary cam switch 230V, 16A, two-position 0-1 – **2 pieces**
- Contactor 9A, 400V, for control voltage 230V, 50Hz -– **2 pieces**
- Auxiliary relay, 4 change-over contacts for control voltage of 230V, 50Hz – **2 pieces**
- Three-pole motor protective switch, **(0,4-0,63)A**, 400V, 50Hz, along with electromagnetic and bimetal protection, 1 normally opened and 1 normally closed auxiliary contacts– **2 pieces**
- Bus-bars, coils, cable inlets, wiring, name plates and other additional material – lump sum

D.4 LIGHTING FIXTURES INSTALLATIONS

This Section includes delivery, transport and all labour, bulk materials and accessories for the complete installation of luminairesin accordance with the drawings.

They should be complete with internal wiring between lamp holder and termination point. Wiring should be in silicone rubber insulated flexible cables of appropriate sizes.

All luminairesshall conform to SRPS/IEC standard and should be supplied complete with appropriate control gear where necessary (ECG for dimmable lamps), lamps, support, connectors, mounting and fixing accessories etc. whether explicitly mentioned in the description of each light fitting or not.

The lamps should be furnished and installed in all luminaires. Lamps should be LED type, cool white color and sizes as indicated.

Luminaires (named on drawings as dimmable) should have dimmableelectronic control gear which could be controlled via dimmer (push button).

Luminaries in toilets should be regulated via presence sensors.

All luminairesshould be installed as positioned on adequate drawings. If there is no space, or position is non-adequate or some other equipment is installed on the same place, the light point should be moved to a more suitable place with approval ofContracting Authority's representative.

All luminary types should be approved by Contracting Authority.

Unit of measurement is number of items (No)/meter (m).

D.4.1 Luminaire TYPE S1

Ceiling surfacemounting (indoor use) LED roundluminaire with narrow beam. The unit is equipped with LED lamp 1xDLE/840, 230VAC, 4000K, 1200lm, IP20.

D.4.2 Luminaire TYPE S1A

Ceiling surfacemounting (indoor use) LED round luminaire with narrow beam. The unit is equipped with LED lamp 1xDLE/840, 230VAC, 4000K, 1200lm.

D.4.3 Luminaire TYPE S2

Ceiling track mounted LEDluminaire, adjustable. The unit is equipped with LED lamp 1xSLE/840, 230VAC, 4000K, 1330lm, IP20.

D.4.4 Luminaire TYPE S3

Ceiling pendant LED luminaire. The unit is equipped with LED lamp 1xDLE/840, 230VAC, 4000K, 1100lm, IP20.

D.4.5 Luminaire TYPE S4

Ceiling surfacemounting LED boxed linear luminaire. The unit is equipped with LED lamp 5x3R/840, 230VAC, 4000K, 3250lm, IP40. Approximate dimension 150cm x 8 cm.

D.4.6 Luminaire TYPE S4A

Ceiling recessedmounting LED boxed linear luminaire. The unit is equipped with LED lamp 5x3R/840, 230VAC, 4000K, 3250lm, IP20. Approximate dimension 150cm x 8 cm.

D.4.7 Luminaire TYPE S5

Ceiling recessedfixed mounting LED round luminaire. The unit is equipped with dimmable LED lamp 1xDLE/840, 230VAC, 4000K, 2000lm, IP20. Approximate dimension ø200mm.

D.4.8 Luminaire TYPE S6

Ceiling recessedfixed mounting LED round luminaire. The unit is equipped with LED lamp 1xLSL/830, 230VAC, 3000K, 450lm, IP20. Approximate dimension ø100mm.

D.4.9 Luminaire TYPE S7

Ceiling/wall-mounting dimmable LED stripe, 24V, and 4000K. Including all necessary power supply,

D.4.10 Luminaire TYPE S8

Ceiling recessedmounting LED boxed linear luminaire. The unit is equipped with LED lamp 5x3R/840, 230VAC, 4000K, 3250lm, IP20. Approximate dimension 150cm x 80 cm.

D.4.11 Luminaire TYPE S9

Ceiling recessedemergency LED luminaire (exit/man running sign). The unit is equipped with LED lamp 230VAC, NiCd battery 1.5Ah, IP20.

D.4.12 Luminaire TYPE S10

Wallmounting LED boxed linear luminaire. The unit is equipped with LED lamp 1x2R/840, 230VAC, 4000K, 1250lm, IP54. Approximate dimension 60cm x 9 cm.

D.4.13 Luminaire TYPE SS

Wall outdoor surface mounting LED luminaire. The unit is equipped with LED lamp 230VAC, 3000K, 400lm, IP44.

D.5 WIRING DEVICES

This Section shall include all labour, materials, equipment, appliances and accessories necessary for the complete performance of all switches, push buttons socket outlets etc., in accordance with the drawings.

Switches and socket outlets should be modular type consisting of mechanism (1M and/or 2M module), flush-mounted box, frame and support (1M, 2M, 3M, 4M, 6M or 8M as indicated on drawings).

Dimmer switches should have separate button on the front face for switching on/off and for +/-dimming of luminaires that have dimmable electronic control gear. Dimmer switches should be used with push buttons for dimming from 2 places.

Switches and push buttons shouldbe flush mounted type, 10A/16A, 250V, modular type (1M and 2M) with mounting height as indicated on the drawings.

Socket outlets should be flush/trunking mounted type, (L+N+PE), 16A, 250V, modular type (2M) with mounting height as indicated on the drawings.

All wiring device types should be approved by Contracting Authority.

Unit of measurement is number of items (No).

D.5.1 One way switch 1M

One way switch 250V, 10A, 1 module, flush mounted, wall-mount box, frame and support is to be both delivered and mounted. Protection degree should beIP20.The colour should be white. Fast connection via automatic terminals, no tool required.

D.5.1a One way switch 2M

One way switch 250V, 20A, 2 modules, flush mounted, wall-mount box, frame and support is to be both delivered and mounted. Protection degree should be IP20.The colour should be white. Fast connection via automatic terminals, no tool required.

D.5.2 Two way switch 1M

Two way switch 250V, 10A (20A), 1 module, flush mounted, wall-mount box, frame and support is to be both delivered and mounted. Protection degree should beIP20.The colour should be white. Fast connection via automatic terminals, no tool required.

D.5.3 Dimmer switch

Dimmer switch110-230V, 2 modules, flush mounted, wall-mount box, frame and support is to be both delivered and mounted. Includes separate button on the front face for switching on/off and for +/-dimming of luminaires that have dimmable electronic control gear.Protection degree should be min IP20. The colour should be white.

D.5.4 Push button

Push button 110-230V, 1 module, flush mounted, wall-mount box, frame and support is to be both delivered and mounted for dimming of luminaries together with dimmer. Protection degree should be min IP20. The colour should be white.

D.5.5 One way switch with indicator

One way switch 250V, 20A, 1 module, with LED indicator, flush mounted, wall-mount box, frame and support is to be both delivered and mounted. . Protection degree should be IP20.The colour should be white. Equipped with a terminal for neutral connection.To be equipped with an indicator. Fast connection via automatic terminals, no tool required

D.5.6 Switch with directional arrows

Switch with directional arrow and central OFF position 250V, 10A, 2 modules, flush mounted, wall-mount box, frame and support is to be both delivered and mounted. Operated with push buttons. Protection degree should be IP20.The colour should be white. Used for the direct control of motor driven load.

D.5.7 Socket outlet TYPE U1

Single-phase socket(2P+E) 250V, 16A, 2 modules, flush mounted, with the protection contact, wall-mount box, frame and support is to be both delivered and mounted. Protection degree should beIP20.The colour should be white.

D.5.8 Socket outlet TYPE U2

Single-phase socket (2P+E) 250V, 16A, 2 modules, trunk mounted, with the protection contact, wall-mount box, frame and support is to be both delivered and mounted. Protection degree should beIP20.The colour should be white.

D.5.9 Presence sensor

Light sensitive adjustable (with time management) presence detector 230V, 10A, for direct on/off luminaries. Time delay should be 30 minutes maximum. Thecolour should be white.

D.6 CABLES AND CABLE TRAYS

This Section includes all labor and delivery of all materials and accessories for the complete performance of the cablesin accordance with the drawings.

All cables should be suitable for installation and continuous service in the ambient conditions. Cables of the following600/1000V voltage ratings, halogen free type (NHXHX, NHXHX Fe180, LHCH, JH (St) H, etc) should be used.

Conductors should be high conductivity copper. Copper conductors should be stranded for 1.5 mm2 and over. Conductors with cross sectional areas smaller than those specified will not be accepted. Insulation for each conductor should be color coded or otherwise identified as required by the Regulations. Color coding should be maintained throughout the installation. The current carrying capacity of conductors has been determined in accordance with the specified regulations, the specified type of insulation and the expected conditions of installation. The cables should be as far as practicable, of one manufacturer only. All cables shall comply with the relevant standards.

Cables should be installed on cable trays or directly into gypsum/concrete walls.

For cable trays standard metal racks (50mm deep) made of perforated steel sheet, subsequently hot-galvanized, should be used. Trays are mounted above suspended ceilings and suspended on concrete ceilings or walls

All cable trays should be supplied complete with consoles, posts, elements for bonding, arched and branched arched connections and all required sundry material, whether explicitly mentioned in the description or not.

In case for installing of cables in to walls and/or floor HF pipes should be used.

For reception at entrance hall, wiring devices should be installed in PVC trunking system (approximate dimension 80x105 mm) with all necessary accessories, covers, supports, angles, junctions etc.

Unit of measurement is meter (m).

D.7 EQUIPOTENTIAL BONDING

This Section includes all labor and delivery of all materials and accessories for the complete performance of the equipotential bondingin accordance with the drawings.

Grounding of the premise should be realized by installing of additional pipes (3m length) in the ground (at the backyard). Pipes should be mutually connecting with Fe/Zn 25x4mm tape, and further connected to the main potential equalizing bus bar (GSIP) which should be placed near to GMRO.

All distribution board, HVAC equipment, elevator and other metallic parts of the electrical/mechanical installation should be connected to GSIP by adequate cross section cable or Fe/Zn 25x4 mm tape.

All non-current carrying metallic parts of the electrical/mechanical installation should be connected to the grounding system (to the earth bar in the board/GSIP). Non-current carrying metallic parts of the electrical installation include:

- Metal conduit cable armor (steel and aluminum) raceways, outlet boxes, cabinets, etc.
- Exposed metal parts of apparatus.
- Enclosures, doors, grilles, barriers and the like protecting or shielding electrical equipment from direct access.
- Pipes, valves, flanges and all other metal infrastructure

In sanitary and kitchen facility box for equipotential bonding (PS49) should be installed. Metal parts in sanitary and kitchen facility should be connected to PS49 with conductor NHXHX-J min cross section 1x4mm2. PS49 box should be connected to the earth bar in the board with conductor NHXHX-J min cross section 1x6mm2.

All other metal parts (HVAC equipment, cable trays, rack, etc. should be connected to the earth bar in the board with conductor NHXHX-J min cross section 1x16mm2.

Unit of measurement is number of items (No) and meter (m).

D.8 TESTING AND COMMISSIONING

On completion of the entire electrical installation work, The Contractor shall test, correct, adjust, balance and regulate the section concerned as necessary until required conditions are obtained.

The inspection of the work shall comprise of but not limited to:

- Against the electric touch
- Measuring of cable resistance insulation, electrical equipment and devices
- Effectiveness of grounding
- Insulation resistance test
- Test of ring circuit continuity
- Operation tests of protective and control device to ensure correct functioning.

The results and readings obtained should be equal or better than the requirements of the standards and the local electricity supplier regulations and these should be recorded.

The Contractor shall do a follow-up and provide all necessary arrangements with the supply authority for the purpose of providing permanent electricity supply. Also, the Contractor shall provide all facilities and attendance to the supply authority for any other tests carried out before energizing the installation.

All tests or inspection at the manufacturer’s works should be in accordance with the relevant standards..

The Contractor shall supply all instruments and tools required for carrying out the tests. Also Contractor shall include other certified company for specific tests like test of grounding system resistance.

In case that the above mentioned tests are satisfactory and no errors or faults appear in the installation, the Contractor shall submit the necessary test forms, duly filled out, to the local electricity supply authority and to repeat, if necessary, the tests in the presence of local electricity supply authority's inspector.

The Contractor shall do a follow-up and make all necessary arrangements with the electricity supply authority for the purpose of providing permanent electricity supply to the facilities.

Unit of measurement is lump sum (LS)

E. ELEVATOR DESIGN

E.1 TECHNICAL PRELIMINARES – ELEVATOR

E.1.2 GENERAL

The here mentioned facilities including accessories must be produced, supplied and executed according to:

• all regulations and conditions of the Serbian public authorities.

• the general- and building regulations etc.

• the EU-specifications in the last-valid version.

• the European lift guidelines 95/16/EG.

• the technical conditions of the public media providers

• concerning the connections.

• the valid VDE-, VDMA and EN- regulations, specially EN 81.

• the health and safety regulations.

• in agreement with the regulations and conditions of the Serbian public.

• building authorities, the technical observation clubs and the fire brigade.

The scope of work includes the completely and operational production and installation of the whole lift facilities including accessories and all necessary secondary works and services.

E.1.3 SITE FACILITY

With reference to provision, preparation and removal of the necessary site facilities for the contractor work and the therefore necessary areas (storage, places for containers, etc.), the contractor must provide all the necessary facilities.

The whole site facilities, maintenance and accommodation must be done by the contractor and all costs for the site facilities are to be included in the unit prices.

The contractor must nominate a managing tradesman who is responsible for all works on the building site. The name of the tradesman must be given to the site supervision. A changing of this tradesman during the works must be announced to the site supervision in time.

The contractor is obliged to make an additional distributor if necessary, according to the VDE regulations on his own costs.

E.1.4 TRANSPORT

For the necessary transportations during the installation works no workers or transporters will be available. This is the duty of the contractor.

E.1.5 COORDINATIONS

The coordination of the installation works with all workers and companies on the building site is the duty of the contractor.

All the work detailed construction drawings (always in Serbian and English language) must be drawn and presented well in advance to the Contracting Authority and his authorized full service designer to be approved.

The works on site must be observed works man like by the contractor. This includes also the attendance at the building conferences and the providing of the results to the workers.

All necessary specifications concerning the air ventilation of the shaft and the machine room must be presented to the ventilation company and the specifications for power supply must be presented to the electrical service company in time. Any subsequent claims regarding such problems which arise as a result of failing coordination will not be recognized and the contractor is fully responsible for bearing such costs.

E.1.6 APPLICATIONS, FEES, TECHNICAL CONTROL BOARD

The contractor is responsible for all applications and for any application fees and any other costs resulting from the approvals process.

Any required approvals by official technical approval bodies (TÜV) according to the Serbian law have to be requested by the contractor and the dates of such visits are to be coordinated with the Supervisor.

E.1.7 SAMPLES

The contractor must present samples of all materials to the Contracting Authority to be approved. The presentation of the samples and technical documents (brochures, inspection reports, etc.) must take place in time according to the time schedule.

Before the drawings are made, different detailed solutions, such as anchorage points, types of anchorage, must be clarified with the Contracting Authority and his authorized full service designer.

To each handed over offer (to the Contracting Authority) sufficiently detailed prospectus must be added.

The tendered product has to be offered and priced, an alternative product can only be offered on the attached excel sheet and with an additional data sheet which shows the equality to the tendered product. For the price fixing the price of the announced product is crucial.

E.1.8 CHARACTERISTICS

All facilities and parts must get a durable mark so that it is possible to have an impeccable operation and to do the maintenance and controlling works without problems each time.

All cables and media lines must be marked on both sides in accordance to the cable list etc.

Diagrams (schemes) of the facilities in color must be installed in the machine rooms behind glass.

E.1.9 INSTALLATION DRAWINGS

For all the work detailed construction drawings, sections, wiring diagrams, drawings for slits, drillings and recesses, drawings for base constructions, etc. in Serbian and English must be drawn and presented well in advance to the Contracting Authority and his authorized full service designer to be approved.

The approval of the Contracting Authority does not excuse the contractor of his responsibility of function and guaranty.

Two weeks after awarding the installation drawings must be presented to the Contracting Authority in 4 complete sets and digital 4 times as pfd-files on DVD. Only drawings of the contractor will be accepted as installation plans.

E.1.10 INSTALLATION WORKS

The installation must be done according to the approved installation drawings of the contractor. If works will not be done in accordance with the approved drawings the arising costs are the responsibility of the contractor.

All journeys and departures of the contractor's persons for the installation works, etc. must be included in the unit prices.

Also included are all additional charges for overtime work to match with the time limits of the time schedule.

E.1.11 PROTECTION OF THE WORK

The contractor is liable for the protection of all work carried out by him until the handover of the building. All parts must be protected from damage and from the effects of cement and calcium by means of a protective foil. All such protective foil must be removed and correctly disposed of immediately before handover.

E.1.12 TEST OPERATION, MEASUREMENT, PURCHASE

The test operation (trial run) must be done by the contractor in the presence of the Contracting Authority.

If the power supply is not installed completely at this moment the contractor is responsible for the delivery of a temporary power supply. During the test operation and above the Contracting Authority and the staff must be introduced to the facilities.

For the last purchase the test operation and the measurement of the facilities must be done by the contractor in the presence of the Contracting Authority and the site supervision including a written documentation. All discovered defects must be repaired immediately by the contractor on his own costs

E.1.13 HANDOVER OF THE FACILITIES

The handover of the facilities to the Contracting Authority must be done after the test operations and after introducing of the staff including a written record of the hand over procedure and the following documents:

The contractor must handover the operation instructions in 4 complete sets with the following structure.

1. Description of the facilities and the functions

2. Operation instructions for each facility

- technical data
    - behaviour in the case of a breakdown

3. Maintenance and installation documents

4. Address and telephone lists of the company in the case of a breakdown

5. Source of supply of the products:

- List of replacement parts with names of the types and products (producers).

6. Wiring diagrams

7. Technical documentation

8. As-built drawings

9. Checking records of the introduced staff (copies)

Purchase reports (certificates) and test information of the facilities and all parts with the duty of approval.

10. 4 DVD´s with digital copies as pdf-files of the above mentioned items.

A complete checking of all facilities must be made by the contractor 3 months after purchase and start of operation by the Contracting Authority. All necessary adjustments and corrections must be done within one month.

E.1.14 ATTENDANCES (SECONDARY WORK)

All conditions mentioned in the technical preliminaries and the following works and services are secondary works must be included in the unit prices.

- Producing and delivery of all above mentioned documents.
- Remove of all waist and rubble arising from his works and workers and the correct disposal.
- Transport of all materials and parts even if they are supplied by the Contracting Authority from the hand over place to the installation area and if necessary the transport back.
- All fees for TÜV, ladders for the shaft and hand lights, etc.
- Primer for all steel parts from the contractor.

E.1.15 SAFETY

The contractor is fully responsible for the proper security of his work. Furthermore the coordination of the safety work in his working area will be transferred to him.

Before commencement: the assembly, mounting and security instructions etc. must be displayed at the construction site office. The erection crew must be properly instructed by the contractor.

E.1.16 NOTICE TO WORKING MATERIALS

If a dangerous work material is used during the work (for instance liquid gas, adhesive, solvents, coating materials, solvent welding materials etc.) then it must be mentioned in the tender pointing out the danger, if this could be dangerous for employees. (For instance: explosions, fire, a health impairing atmosphere, etc.).

Furthermore these working materials on site must be recognizable in order to avoid any danger to other workers on site.

DETAILS OF THE WORKS AND SERVICES

The following works and services are also included in the scope of work and must be included in the unit prices:

• Connection switch in the rising pipes - if necessary including connection pipes to the control box.

• sub distributors including connection to:

- lift facility

- light in the shaft

- light in the car

• Controller with remote release.

• Connection of the power supply to the connection switch in the rising pipes and the control box.

• Emergency power system and evacuation in case of fire including determined parking position - if necessary.

• Equipment for emergency power system - if necessary.

• Delivery of all built in parts (anchor channels, welding plates, fixing materials, etc.) for the installation by the contractor.

• Delivery and mounting of all steel beams and separating grills to separate the elevators in the shaft - if there is more than one lift in a shaft.

• All steel sub structures for the lift and the front side of the shaft.

• Strengthening of the doorsteps made by steel hollow sections.

• Delivery and mounting of an element for the shaft pit for the lift buffers (there is no concrete base construction supplied by the Contracting Authority).

• Providing of scaffolding elements (C-frames) for the shaft scaffolding made by the contractor.

• Security coverings in front of all shaft openings.

• Power supply during the installation works and for the test operations from the distributor of the contractor to the installation area including the temporary lighting for the installation.

• Corrosion protection of all parts also in the hollow space.

• Final painting of machines, control boxes, etc. in RAL according to the choice of the Contracting Authority.

• Thermo regulator and connection (16 A) with the control box for ventilation of the machine room if required.

• Car position display on the machines.

• Signs behind glass panels including mounting onto the walls (for example diagrams, instructions, etc.), if required.

• Providing of weights for checking and testing.

• Key box for machine room key if required.

• Filling of oil for the machines.

• Full maintenance for the first 12 months after operation start by the Contracting Authority.

• Access ladder for the shaft pit accord to EN 81.

• Application and purchase including costs.

• Final cleaning before the handover to the Contracting Authority.

• Instructions of the staff.

ADDITIONAL TECHNICAL PRELIMINARIES

All facilities must be produced and installed with the following control systems:

1. Control system for the case of fire:

If the fire-detection-system sends a control signal to the control box the car drives to a defined stop and it stays there with open doors.

2. Drive for evacuation:

By power failure the car drive to the ground floor and it stays there with open doors.

3. Interfaces:

As potential free contacts to the building control unit for the following controls:

• emergency call

• sum failure

• distance control (remote control)

• alarm system

E.2 ELEVATOR

E.2.1 PASSENGER LIFT

Production, supply and installation of a hydraulic passenger lift in accordance with the technical conditions and following specification and attached drawing.

Technical data:

Type of lift: Hydraulic passenger lift in accordance with EN 81, Part 1, suitable for use by disabled persons.

No. of lifts: 1

Manufacturer:

Type: Lift with reduced pit height

Load capacity: 450 kg or 6 persons

Travel height: ca. 2,80 m

Travel velocity: ca. 0,50 m/s

Number of stops: 2

Number of doors: 2 (at -2,80 m and ±0,00 m)

Lift shaft: Concrete and brick shaft

Machine room: in cabinet, next to lift shaft (at -2,80m)

Control: SIMPLEX, collective control

Shaft dimensions (internal): W/D: ca. 1450 x 1450 mm

Pit: 200 mm

Upper station height: 3820 mm

Shaft door: semi-automatic

Cabin door: bus

Width: 0,80 m

Height: 2,00 m

Cabin: internal clear dimensions W/D/H: ca. 0,98/1,15/2.20 m

Drive: hydraulic

Mains connection: 3 x 400/230 volt, 50 Hertz

Frequency: 180/h

Max. motor power: 6 kW

Technical description:

Drive:

Hydraulic drive, 2:1 pulley ratio, drive is located in cabinet next to lift shaft (at -2,80m) , together with lift controller.

Cabin:

Clear internal dimensions: W/D/H: ca. 980 x 1150 x 2200 mm

Cabin framework:

Steel profile construction with type-tested braking catch equipment, guide rails self-lubricating.

Cabin lining: basic construction of flanged steel sheet. Floor frame of steel profiles with steel sheet floor plate fixed, together with the wall panels, in the cabin frame isolated against vibration.

Cabin doorways: Internal clear dimensions W/H: ca. 800 x 2000 mm

Bus lift door stainless steel set in accordance with manufacturer's sample card.

Cabin interior:

• Walls in plastic laminate in accordance with manufacturer's sample card.

• Cabin corners: stainless steel .

• Cabin button as box section in stainless steel, with all necessary command and electronic display

Modern lighting, also cabin emergency light.

Floor prepared for granite tiles.

Cabin ceiling of stainless steel, fixed such that easy replacement of a lamp is possible.

Cabin ventilation envisaged in cabin front wall at lower level of lift.

Handrail: stainless steel

Shaft doorway sets:

Clear internal dimensions: W/H: ca. 800 x 2000 mm

Semi-automatic doors, powder coated, with safety door fastening, standard door frames.

Electrical Equipment:

Complete set of control equipment in a closed cabinet with devices built specially for lift operation.

The floor indication is rear-illuminated. Digital cabin location indicator including travel direction arrows.

Floor call buttons:

Ground and First floors access for all

Special functions to be provided:

Travel direction arrows

Cabin emergency light

Overloading warning signal

Command and signal equipment at stops.

At each stop, a polished stainless steel button, with polished s/s buttons to call the cabin.

Digital cabin location indicator display in polished stainless steel provided at all stops.

F. FIRE SAFETY

MOBILE FIREFIGHTING EQUIPMENT

The mobile equipment for fire extinguishing is basic standardized fire fighting equipment. The mobile firefighting equipment includes the portable and transport apparatuses for fire extinguishing.

For the purpose of fire safety carrying out, on the basis of appropriate criteria, means for fire extinguishing, type, capacity and number of firefighting apparatuses are determined and their arrangement in the structure is presented by plan.

During determination of means for fire extinguishing, type, capacity and number of firefighting apparatuses, the fallowing criteria are taken into consideration:

- the fire endanger estimation
- structure and individual premises purpose
- inflammable and dangerous substances usage, their storage, transportation and manipulation
- fire load of structure and premises
- possible classes of fire
- other conditions which have impact on the possibility of fire braking out and spreading

The possible classes of fire and extinguishing means selection

According to fire endanger estimation and physical-chemical characteristics of substances which are used in this structure, it can be concluded that classes of fire A and fire braking out on devices and installations under electrical voltage (electric motors, transformers, distribution installations and etc) are possible.

The classification of possible types of fire is made according to standard “The classification of fire according to type of inflammable substances” JUS ISO 3941 (“The Official Gazette of FRY”, No. 5/94).

C l a s s A

In this class belong fires which include hard substances, often organic nature, which normally form live coals during fire.

For A class fire extinguishing, as a way of extinguishing the water is used, with or without supplements, and in exceptional circumstances foam or powder is used.

C l a s s B

In this class belong fires which include liquids or meltable hard substances.

For B class fire extinguishing, as a way of extinguishing the foam, dry powder and carbon dioxide are used.

Fires on electrical installations and devices include fires on electric plants under weak and heavy current voltage, such as: cables, motors, generators, transformers, electronic devices and etc.

The best way for extinguishing of those fires is to use dry powder, carbon dioxide and other inert gases for fire extinguishing which are especially suitable for electronic equipment fire extinguishing, because they don’t damage those expensive and sensitive devices.

The water and foam mustn’t be used because they conduct electric current.

Firefighting apparatus choice

According to estimation of possible fire classes and choice of suitable fire extinguishing means for those classes of fire, manual and transport apparatuses for fire extinguishing are placed in the structure and they are:

- apparatuses for extinguishing with dry powder, mark **“S”**

From the group of apparatuses for fire extinguishing with dry powder, the manual apparatuses of **S-9** capacity are placed and they comply with standard SRPS Z.C2.035 ("The Official Gazette of SFRY" No. 68/80).

Number of firefighting apparatuses determination

The number of firefighting apparatuses is determined on the basis of fire load.

The instruction for apparatuses placing

Apparatuses for fire extinguishing are distributed and placed in the vicinity of place of possible fire braking out, always on visible and accessible spot. All manual apparatuses are placed on walls, in the height from 1 to 1,5 m to the top of the apparatus.

Mutual distance of apparatuses for fire extinguishing mustn't be more than 20m.

Maintenance of apparatuses which are in use

Maintenance of apparatuses which are in use is classified and carried out in three categories of operation: accuracy inspection, service maintenance and control checking.

Accuracy inspection of fire extinguishing apparatuses which are in use is done periodically on every 12 months after warranty period expiration.

Service maintenance includes recharging after using, that is replacing of worn-out or damaged parts fixed during accuracy inspection.

The control checking includes checking of mechanical characteristics of apparatuses for the purpose of secure performance.

The control checking is done in accordance with stipulations of standard JUS Z.C2.022 Point 2.2 and standard of particular types of apparatuses for fire extinguishing.

The time limit between two control checkings mustn't be longer than 5 years for all types of apparatuses. Apparatuses for fire extinguishing by carbon dioxide are checked according to the Rulebook of technical norms for movable closed vessels for compressed, liquid and gases which are dissolved under pressure ("The Official Gazette of SFRY", No. 25/81).

Completed accuracy inspection and service maintenance are written down in the control list.

The positive result of control checking should be visually marked on the apparatus with the label.

The label contains the following facts:

- control checked and
- quarter and year of checking performance

The disposition of apparatuses for fire extinguishing

Placing of apparatuses in the structure is conducted according to the disposition given in the enclosed graphic documentation.

Level	***Apparatuses category***
	S - 9
	pcs.
Basement level	2
Ground floor	2
Total:	***4***

Necessary number of extinguishers

- Apparatuses for extinguishing with dry powder, mark **S-9** which comply with standard SRPS Z.C2.035 (“The Official Gazette of SFRY”, No. 68/80) - 4 pcs.