(**ATCC) WOOD-METAL AND GLAZING WORKS**

**Type and Scope of Performance**

Object of this tender is wood-metal building works. Performance includes the manufacture, delivery, and assembly of wood-aluminium elemen­ts.

Additional object of this tender is glazing works. Performance includes delivery, fitting, and sealing of all glass panes and infills.

**Construction System**

The tender is based on the construction descriptions of the system provider batimet GmbH, [www.batimet.com](http://www.batimet.com). The choice of profiles, accessories, sealants, and fittings must accord with the valid documentation of the respective system manufacturer. Only systems may be offered in which all the components are uniformly made available by the system­ manufacturer. The use of the named articles acquired from diverse suppliers results in the exclusion of the "system guaranty for the complete service to be performed".

**Description of Performance**

The basis of the quotation is the planning documents and description of performance of the architect. Any uncertainties should be clarified with the company which invites to tender and prior to submission of the quotation. The Bidder is obliged to examine the details described in the specification for completeness, professional execution, and suitability for the planned purpose. Any amendments or additions which appear to be logical or necessary should be included in the quotation on the basis of reasons given.

**Quality Assurance**

According to State Building Law, building products require a certificate of conformity with technical regulations, general building approvals, general building authority test certificates, or approvals in individual cases.

The confirmation of conformity belongs to the scope of performance of the Contractor and shall be undertaken unrequested in written form by means of:

a) Declaration of conformity of the manufacturer

 or

b) Certificate of conformity

**Confirmation via Certificate of Conformity**

shall be in accordance with the respective general building approvals, approvals in individual cases, or with the regulations of Building Rules List A. Building products which are not produced in series require the declaration of conformity of the manufacturer. The declaration of conformity and the declaration that a certificate of conformity has been issued shall be submitted by the manufacturer by means of labelling the building products with the conformity symbol (CE marking) with notice of the purpose of use.

The CE marking shall be attached to the building product, to a package insert, or to the packaging or on the delivery note or attachment to the delivery note. The manufacturer may only submit a declaration of conformity if, through his internal company production controls, he has ensured that the building product he has produced accords with the decisive technical regulations, the general building approval, the general building test certificate, or the approval in an individual case. The verification of his own company production control is also under the scope of performance of the Contractor. Insofar as examination of the building products by a testing authority is specified (external monitoring), then evidence of this must also be provided. A certificate of conformity must be issued by a certification authority if the building product conforms to the decisive technical regulations, the general building approval, the general building test certificate, or the approval in an individual case and is subject to an internal company production control and external monitoring. External monitoring shall be carried out by inspection authorities in accordance with state building regulations.

In particular, for the following building products the Contractor shall submit CE-markings with the corresponding technical values in conformity with the product norm for windows and outside doors DIN EN 14351-1 or product norm for curtain walls DIN EN 13830.

**Documentation for Authorities, Public Offices, and Utility Companies**

The documents required by building approval authorities, other official bodies, and utility companies shall be collated in good time by the Contractor for his areas of responsibility and he shall obtain all necessary approvals with the agreement of the Principal. All costs incurred are included under the quoted prices. Should the Principal have additional costs by reason of delays, incorrect or incomplete documents which necessitate additional examinations or tests, these costs are borne by the Contractor.

**Static Proof Documents / Structural Stability Evidence**

The Contractor shall test the statics of all offered constructi­ons and at the request of the Principal shall submit verification of his observance of all statics requirements for the whole facade incl. all component parts in verifiable form. The Contractor shall execute at his own responsibility all static calculations and pre-dimensioning for all parts to be used in installation. On submission of his tender, the Contractor confirms that he has taken into account the measurements and calculations for the performance and design as set forth in the tender for form, height, and wind loads (pressure and suction) together with all further effective loads. Any reservations in respect of statics of the planned execution of performance according to tender shall be notified in writing to the Principal at the latest with the submission of tender by the Bidder.

**Aluminium Materials**

To be used are extruded aluminium profiles with alloys EN AW 6060 and EN AW 6063 in anodized quality as set forth in DIN EN 755 and DIN EN 12020. For anodized aluminium sheets in anodized quality the alloy AlMg 1, semi-rigid, (EN AW 5005A) shall be used. At request of the Principal, the Contractor shall submit test results, certificates, or certificates in verification of the named requirements in respect of project-related certification by the manufacturer.

**Steel Materials**

Steel parts (anchoring and sub-assemblies, welded structures etc.) shall be provided in galvanized finish. Sheet steel is also galvanized. Remedial work undertaken on faulty parts or damage or the remedial finishing works of welding joints must be carried out according to DIN EN ISO 1461.

**Stainless Steel**

Anchoring elements and agents which are subject to corro­sion attack and which are not accessible for maintenance purposes e.g. fixing and anchoring structures in curtain facades (cold facades) and all connecting parts must be made of stainless steel. As anchoring, connecting, and fixing ele­ments, only non-corroding steels or steels of the steel group A2 may be used without proof of special corrosion protection as set forth in DIN 18516-1 for accessible construc­tions, otherwise A4. Further, it must be ensured that building components subject to voltage, in particular if these are alloyed, tend towards voltage corrosion or other inter-crystalline or otherwise effected decomposition are stable in the aging process. At the request of the Principal, the Contractor shall submit evidence of observance of the above requirements in respect of project-related certification by the manufacturer or test certificates and approvals.

**Assembly of Diverse Materials**

For the assembly of diverse materials, it must be ensured that there is no contact corrosion and no other unfavourable influences. Intermediate layers of synthetic foil or similar must be provided.

**Profile Selection**

The profiles required for the desired purpose can be selected from the documents presented by the sys­tem provider. Heat-insulated profiles are only permitted when the inner and outer shells are connected in power and form by through-going heat insulation profiles.

Profiles must bear loads as set forth in DIN 1055. Thrusting power occurring between inner and outer shells must be borne reliably by the connection joints. The effective inertia moment s (1x) stated by the system manufacturer must be taken into account in the choice of profiles.

Evidence of proven heat transition coefficients of the profiles (Uf) must be provided by calculations in conformity with DIN EN ISO 10077-2, heat transition coefficients of the glazing (Ug) are to be determined as prescribed by DIN EN 673, DIN EN 674, DIN EN 675.

Ventilation of the rebate base in insulation glazing must accord with the guidelines of the insulation glass manufacturer.

Minimum and maximum window casement sizes and weights for the profile system must be observed.

**Profile Connections**

Corner connections must correspond to the inner profile contours in cross section. Attention must be paid to the perfect adherence of mitres.

**Wood and Wood Materials**

For the quality of the wood, DIN 68360 Part 1 applies: "Wood for carpentry work, quality for external use". The maximum value of moisture content of the individual parts must not exceed 15%. The scatter range of the moisture area must not be greater than 4% and with the use of finger joints as length connection and use of lamellar cross sections, not greater than 2%. When finger joints are used for corner joint connections, the scatter range of the moisture content must not exceed 2% and the maximum value of individual parts 10%. Measurement of moisture content shall be carried out and recorded prior to commencement of forming work.

**Profile Forms in Wood**

Profile forms are to be carried out in accordance with DIN 68121 "Wooden profiles for windows and French windows" and DIN 18361 "Glazing works". All profiles shall be designed such that water is diverted immediately in controlled manner. The edges of the profiles are rounded with a radius of at least 2 mm. Rebates for the setting-in of the glazing must correspond to the norms and in the case of multi-pane insulation glazing, also in accordance with installation guidelines of the insulation glass manufacturer. It must be guaranteed that the glass rebates are open to the outside for pressure equalization.

**Vapour Diffusion of Wood-Aluminium Mullion-Transom Façade**

Vapour diffusion must be taken into account in respect of all covers for internalwood-bearing profiles with plastic, rubber, or **a**luminium profiles. Vapour diffusion grooves are essential.

**Frames or Transom-Mullion Connections**

Surface treatments of the wood shall be carried out in conformity with the norms for varnishes and finishes DIN EN 927-1. Wood dampness may be 13±2 %. Surface treatment of the wood frame must be undertaken in accordance with the selected type of wood and finishing system. As a rule, a minimum dry layer thickness of 30 µm shall be guaranteed. For the execution with other bonding agents, the load introduction from crossbar to posts must be proven. Protection of the end-wood in the connection areas of the posts must be guaranteed.

Dowelled joints shall be in conformity with DIN 68121. All frame connections with a wood thickness over 45 mm must be with double joints at least. The suitability of other frame connections must be proven by certification of a recognized test institute.

**Connections between Aluminium and Wood Profiles**

The aluminium and wood parts shall be connected such that there are no non-permissible tensions or deformations through material-specific changes of length. The maximum wind load must be taken up with the required security of the glazing system with due account taken of forces exerted. Systems must conform to the minimum requirements of DIN EN 14351 and DIN EN 13830.

**Wood-Aluminium Windows**

In the case of wood-aluminium windows, in addition to EN14351 and DIN EN 13830, the following must be observed: the distance apart between outer wood surfaces and the back of the external surfaces of the aluminium part must be at least 7 mm – with the exception of design-related supports. The direct support surface between wood and aluminium must be smaller than 20 mm in each support surface. The openings for the compensation of vapour pressure and drainage must have the following minimum cross sections: slots 5 mm x 20 mm or drill holes of diameter 8 mm. Distance apart must not exceed 600 mm. They must be arranged such that no rainwater or cleaning water can penetrate.

**Wood Protection**

With a special agreement, then according to DIN 68800 Part 3 subsection 11.1, chemical wood protection is waived. The preventive chemical wood protection must have a suitable valid test certificate in respect of the purpose of use. Chemical wood protection is not required in the field of risk class 3, if woods of resistance class 1 or 2 according to DIN 68364 are used.

Wood protection treatment, insofar as the size of the window elements permits, shall be immersion or flow-coating procedure or other coating finish. This also applies to the batten materials.

**Coating**

If the visible surfaces are provided with a foundation coating, the top coat must be undertaken at the earliest. The layer thickness of the finished coating on the visible parts must have an average of 60 μm varnish and final coatings 100 μm dry film thickness. In order to protect the wood from wood-destructive UV rays, UV permissibility for the finished coating film shall not be greater than 2.4 %.

**Sash Seals**

All seal profiles must be attached such that they meet the requirements of the stress group for window construction on a long term basis. Seals must be interchangeable. For all constructions the seals as set forth in the appropriate manufacturing documents of the system manufacturer are to be used.

A centre seal system shall be provided for turn, tilt and turn and casement windows.

**Drainage and Design**

Rebates and profile slots in which rain or condensation could gather must be provided with drainage to the outside. Visible drainage slots are to be covered with a cap. According to DIN 18055, it must be ensured that any water which penetrates the framework construction must immediately be drained off under controlled drainage in order to avoid any damages to windows or building. The drainage openings to the outside should have a minimum cross section of 5x20 mm. The distance apart of the openings at this minimum cross section should not be greater than 600 mm. In the installation of wood-aluminium transom-mullion constructions, care must be taken that drainage is via the transom profile to the mullion elements in the region of the junction of elements. Drainage in post drainage areas is carried out at the respective foot point of the façade constructions or in accordance with the respective system manufacturer instructions and taking into account the technical heat protection requirements.

In the case of sashes (windows, window bands, added elemen­ts etc.) and also in the case of fixed glazing (windows, window bands, elements used, transom-mullion con­structions, element façades) the frame in the glass rebate area shall be carried out with openings for the compensation of vapour pressure as set forth in the insulation glass manufacturer’s instructions or in accordance with the system description. For panelling work it must be ensured that the pressure equalizing openings are installed in correct numbers and sizes. Otherwise, when using standard systems, the system manufacturer’s instructions must be observed.

**Glazing, Infill**

Glass delivery and glazing are described separately for each item in the tender specification. The glass is oriented to the respective heat and sound insulation, fire protection, and safety glass requirements. Glazing shall be carried out by means of EPDM or TPE seal profiles. Please refer here to the "Technical Specifications". In particular, attention is drawn to the observance of the glazing guidelines of the insulation glass manufacturer.

Delivery and installation of infills for the respective items is described separately in the specification.

**Tolerances**

DIN 18201 and DIN 18202 apply to this range of services. Tolerances are assessed according to DIN 18202 as follows:

Limiting sizes: Table 1

Angle tolerances: Table 2

Flatness tolerances: Table 3

If during the execution of works the Contractor discovers deviating tolerances, the Principal must be immediately informed of this in writing, together with possible resulting consequences (e.g. modification of design structures, different costs etc.).

**Installation of the Elements**

Anchoring of elements shall be carried out such that all occurring forces and loads, from both vertical and horizontal directions, are transferred to the construction body with stability and with the prescribed safety reserves. Movements of the construction body and expansion of elements must be taken up without loads on the construction. Assembly of wood-aluminium building elements must be perpendicular and according to alignment. The horizontal levels of installation shall be measured against the cutting checks to be provided by the Contractor on each floor. All fixing devices required for installation must be included under the unit prices. If stated in the specification of performance, for specific connection then anchoring tracks will be provided on site free of charge and let into the building shell sections.

Fixing and connecting devices such as screws, bolts, and dowels must correspond to the respective purpose of use and be selected according to requirements. For the selection procedure, the valid norm standards and the current state of technology are to be taken into account and acted on accordingly. Only site management approved dowels are permitted. All fixing parts which are exposed to weather conditions or which are located in areas with back ventilated areas are to be made of stainless steel. All connections and seals on adjoining building parts shall be included under the calculation of unit prices. Connections must conform to building structure requirements. This means that requirements in respect of heat protection, dampness, sound insulation, and joint movement must be taken into account.

**Sealing with the Building**

The required sealing profiles to be used are in EPDM or TPE. They must accord in their properties, dimensions, and form with the planned purpose of use. Their elastic characteristics must meet the requirements for the range of temperatures at the location.

Sealants on a silicone-polysulfide basis which remain elastic are to be used for sealing. Sealing works take account of the building‘s structural characteristics and adhere to the adjoining building parts within the expected range of temperatures, thus when taking into consideration the permitted expansion movements of building elements, these do not tear away from the adhered surfaces. PVC profiles must not come into contact with substances which contain bitumen. For the sealing of connection joints with elastic sealants, DIN 18540 and the instructions for use of the manufacturer must be observed.

For sealing building parts to the body of the building with building sealing foils, the choice shall be made according to their properties of lesser or greater permeability and according to the appropriate requirements. If the building sealing foil is glued, the glued surfaces must be free of impurities and foreign bodies. The manufacturer’s instructions must be observed.

**Moisture Protection**

In respect of heat insulation for a building segment it must always be ensured that the diffusion-resistant materials are attached to the warm side and the permeable ones on the cold side. Connections to the body of the building must be professionally sealed. Sealing of window, door, and façade ele­ments to the building must be carried out with building seal foils or with bevelled sheet metal profiles including suitable, permanently elasticated seals incl. pre-filling of adjoining building parts. Location and arrangement of vapour barriers and foils must conform to technical heat and moisture requirements. All surfaces of the façade must be decoupled, insulated and sealed such that there is no non-permitted melting or condensation water occurring at any place (surfaces, corners, edges, cover areas, or foot points etc.). In order to avoid the formation of melting water or mildew of building parts surfaces on the room side, the room surface temperature of 12.6°C as set forth in DIN 4108 in relation to 20°C internal room temperature and -5°C external temperature must not be exceeded.

The minimum requirements for the avoidance of mildew in the area of thermal bridges shall be observed as prescribed in DIN 4108. Insofar as the connection structures are carried out as set forth in supplement 2 of DIN 4108, then no further evidence is required. For all deviating constructions, evidence must be provided of minimum requirements.

**Mobile Sun Protection**

Insofar as sun protection constructions are a component of the tender, the performance of the Contractor shall include the production, supply, and installation of such. The tender is based on the construction features of one system manufacturer. The Bidder can use products of another system manufacturer which are of equal value­. Only such systems may be offered in which all the components are available uniformly from the system manufacturer. The choice of profiles and accessories must accord with the valid documents of the system manufacturer.

**Lightning Protection**

The task of the Contractor also includes connecting all façade elements with one another in conformity with the guidelines, especially of DIN VDE 0185, DIN 18384, DIN 57185, and VdS guidelines 2006. The connections are undertaken by means of drill holes with screw fittings and conductor lines with the required transverse section. Before carrying out works, the Contractor shall reach agreement with the lightning protection company of the Principal in respect of the design of the connections and the type and number of connecting points at the transfer points. The transfer points are also deemed as task on the part of the Contractor under the scope of performance and shall be included in the price calculation. Further, the quality and test regulations for the erection of lightning protection devices RAL-GZ 642 must be observed. The connection to the lightning conductor is undertaken on site. The measures are generally listed as a separate item.

**Anodizing**

Anodic oxidation of aluminium profiles and sheet metals must conform to DIN 17611. The quality standard for anodized aluminium (EURAS/EWAA), issued by the “Verband für die Oberflächenveredelung e.V.” (VOA) [*Association for Surface Treatments*], Laufertormauer 6, 90403 Nuremberg, must be observed. Surface treatment and execution of procedure shall be in accordance with data in the specification of performance. The pre-treatment stages incl. their possibilities and limitations are listed in DIN 17611 in respect of surface quality. The assessment recommendations for the surface finishes of the system provider must be observed.

**Colour Coating / Powder-Coating / Wet Coating**

Coating of aluminium profiles and sheets must be undertaken with GSB International and/or QUALICOAT standard powder on polyester basis in a layer thickness of at least 50 µm or according to the instructions of the wet coating manufacturer. The coating procedure to be carried out must possess the quality approval seal of the GSB International ("Quality Association for piece coating of building parts in aluminium", Franziskanergasse 6, D-73525 Schwäbisch Gmünd) or the quality approval seal of QUALICOAT (Verband für die Oberflächenveredelung e.V. (VOA), Laufertormauer 6, 90403 Nuremberg). Unless otherwise described in the item descriptions, the surface treatment and colour are to be carried out as follows:

Profiles and metal surfaces, colour coating (powder), exterior colour: RAL or DB at the choice of the Principal

**Service and Maintenance**

The Contractor shall provide the Principal with user information for all the products he supplies which require regular maintenance in order to ensure long-term functioning and long-life and comprising product information, user manuals, and servicing instructions. In particular, the user information must contain the following:

- Product information

- Operating instructions (details of proper use or incorrect use)

- Servicing instructions

- Cleaning and care

- Maintenance

User information shall be given to the Principal in written form after conclusion of contractual performance.