

GENERAL DESIGN STANDARDS FRAMEWORK IN THE CZECH REPUBLIC

This note sets out the scope of architects' services in the design and construction phases of a construction project in the Czech Republic. It is based on the UK note by Roger Shrimplin and focused on the three "core" stages in the building project set out in ACE/ CEN TC395.

Selected project types are:

A) **Family Houses** – (gross floor area approximately 200m², cost approximately €250,000)

Only a small number of commissions are carried out by authorized architects. For this type of contract construction engineers are usually called upon by the general public. Only a small percentage of clients in any one city will directly employ the services of an architect. Exact statistics are not known, but according to unofficial information of the building authority the ratio in Prague is about 1:10.

B) **Apartments** (approximately 20 units of 70 m² each, cost approximately €1.5 m)

Apartment buildings are usually only built as a development project by a trading company. Only a few apartment building projects are financed by the state or a municipality, normally they finance only retirement homes or shelters. Cooperative development, common only a decade ago, has disappeared completely. The architect usually carries out the project design from beginning to end and is also the principal designer in the whole process. Choice of designer is based on references and tenders are not normally used. Larger developers will normally employ a small number of established offices so it will be a problem for other architects to win such a contract.

C) **School Buildings** (approximately 3000 - 6000m², cost approximately €4-6 m)

Commission of a project to this extent would be rare in the Czech Republic; the project would usually be a reconstruction or extension of an existing school. Any construction of a new school building would be on a smaller scale. As required by law, a designer should always be selected through a tender process, where the lowest project price is used as the major selection criteria; the design itself is not a substantial part of the decision process. That will be dealt with later with the particular designer once selected. If required by the building authority or a relevant investor, they may have a design competition prior to tender. The Czech Chamber of Architects is in this regard actively trying to raise investors' awareness of benefits of such design competitions. The design competition may also include the criteria for the tender. A separate option would be to provide more opportunities to involve young architects without the usual necessary background into the competition process; in the second case the investor can include in its requirements for the competition the studio's ability to implement the contract. The Chamber of Architects comment on each proposed design, provide a brief for tender inviter and recommend professional members for a jury. According to the Chamber's rules an authorized architect may only participate in tenders approved by the Chamber, otherwise sanctions can be imposed on the architect.

The design process in the CR is based on the Service Standards prepared by the Czech Chamber of Architects (ČKA) together with the Chamber of Certified Engineers and Technicians. Their

applicability shall apply to all types of buildings and the updated version is due to be released. The scope of designer's services for the client is defined on the basis of these standards according to which the contract is concluded. The contract itself has a prescribed general form based on the Commercial Code. If the simplified contract is used in case of small commissions (for instance a family house) these contracts always refer to this general contract. In case of commissions of a bigger extent, in our selected project types it means apartment buildings and school buildings, the contract is always concluded in full.

Service Standards include all actions necessary to implement the project. It is divided into five basic chapters:

a-urban planning

b-building design

c-landscape architecture

d-interior

e-special activities

Activity of an architect in case of the selected project types - family house, apartment building and school building – is included in part B - building design.

Building design is divided into phases that are then divided into individual services. Service within each phase is either standard or non-standard, both referred to as the designing service. Among other services are engineering, special professional activities and requirements for investor's cooperation.

Standard service (in all phases) – is valued on the basis of a fee scale and its scope is the minimum project documentation for the design, permission and specifications for making pricing structure. It also includes architecture and engineering services. The „minimum“ must be understood in terms of regulation of the Ministry that is burdened with information and that does not distinguish the size and type of the building. Potential reduction of the project for simple buildings (a family house) is subject to an agreement with the authorities responsible for authorizing the construction.

Additional service (in all phases) – is valued individually and include service that is not directly related to the given phase but describe non-standard possible services. (e.g. web presentation as an additional phase of building permit process).

Engineering – is not seen in the Czech context as engineering design professional activity but as all activities related to the authorization of construction and providing opinions of network administrators, neighbours etc.

Special professional activity – describe activities that arise as a specific feature for the given

project in terms of the site or requirement by the authority in the process. These are special studies (noise, geology) or surveys or the whole part of EIA project.

Investor's cooperation – defines requirements for initial information that are to be provided to the architect by the client for the given phase.

Compared to ACE, the main feature of the Czech Standards is its strong link to regulations of the Ministry of Regional Development. These regulations describe in detail the content of the project in terms of required drawings, written statements and engineering sub-section (transport, energy, technology etc.). Service Standards adopt this structure of the regulations and create “core” phase of the Service Standards. These are the stages of the building permit and land use (zoning) permitting process (two-stage permitting process is still obligatory in the CR). These core phases are subsequently mechanically condensed towards the design phase, and completed towards the background for the pricing. Project structure resulting from the regulations remains.

Position of the Chamber, licence for design: Construction design is not regulated by law, however, all design activities requiring permissions resulting from the regulation must be done by an authorised person. The authorized person is a designer architect or a civil engineer with a 5-year study of the field, two years experience in the field under the supervision of another authorized person and is a member of a professional chamber – The Chamber of Architects or The Chamber of Certified Engineers and Technicians. Only the construction on sites specifically listed in regional or local zoning plans or with other conditions (e.g. preservation of monuments) may be undertaken only by an architect. Membership in the Chamber provides an architect with the basic insurance policy for his service. For the construction of a family house it is sufficient, however for larger commissions additional insurance is at the discretion of the architect or at the request of an investor.

Position of the fee scale: It is contrary to the chamber's rules to work on a project for a different price than is set in the fee scale. However, it is not legally binding and dumping prices for the project are quite common in the market. Besides the chamber's fee scale there is a fee system for private entities called UNICA, which is widely used by engineers and is tolerated by architects. Both systems are based on the classification of buildings according to difficulty and gross investment costs. Fee scale is related to the project as a whole without distinguishing between the architectural and engineering activities.

Architects' service: authorised architects perform his/her profession as an employee of the design studio or as a freelancer.

Comparison of standards in the Czech Republic with ACE/CEN TC 395

PRELIMINARY STAGES:

INITIATIVE

1. market study
2. business case

In practice this phase is not normally carried out. The Official Service Standard does not describe it. Education does not allow an architect to carry out this phase, if an investor requires it, an architect finds a third party to do it.

INITIATION

1. project initiation – analysis of client's requirements
2. feasibility study – verifying project definition with the regulation, feasibility
3. project definition – finalizing project definition

In the Czech Standards the INITIATION phase is done within one phase called „project preparation“. This is the phase when the client comes into a contract with the architect. The scope of the project determines how detailed the project is. The family house would normally require consultations, site inspection, and verification of the basic data from the building authority or other authorities. These authorities' opinions are always unofficial; output for the client is more of an informal nature. The bigger commissions (apartment building, school building) would normally require a more detailed report summarizing findings and recommendations.

Project preparation includes:

- appraisal of the existing data and request to complement it if necessary
- assessing the suitability of the site for the construction
- setting the project scope
- estimating the overall project schedule

The fee scale values this part 1%

„feasibility study“ stage is not normally used, the term as such is known and described, but not included in official standards. This stage of the process is commissioned by investors for the bigger developers' projects or for the commissions on problematic sites to examine the approvability of the planning. A specific form of feasibility study is an architectural design competition for public, rarely private contracts, which focuses primarily on the ideological aspects of the proposal.

2. DESIGN

1. conceptual design
2. preliminary design
3. developed design
4. detailed design (en16310)
5. engineering design

Standard structure in the CR is different. To simplify it, the comparison can be done this way:

1. Conceptual design + preliminary design corresponds to the study phase „study of project“

This phase should be done only by the architect; however, it is not required by the legislation so the investor chooses who will design the building. The scope of this phase is usually a conceptual design of a project, selection of the desired concept and its completion to its final form at a scale of 1:200 or 1:100. The designer undertakes detailed consultations with the authorities to examine the approvability of the planning, taking into account all known norms and regulations for the project, approaches the design in terms of expected costs and standard. He defines all the factors and requirements for the next phase in terms of engineering professionals – heating, ventilation etc. This is the stage that can be prepared in common standard of a small project by the architect with the proper education and does not require specific engineering knowledge, it is consulted if necessary. For larger projects (apartment building, school building) other professionals are involved already in the study phase in order to revise the design.

In practice, however, the client tends to minimize the Preliminary Design Stage given the scale of the subsequent stages for building permit, to prepare only the conceptual design and to compile the other required materials in the land use (zone) permission project. The scope of the „study“ stage therefore often depends on the agreement between the client and the architect relating to the extent to which the architect will agree to move to the next stage. This is a common practice given the market pressure and lowering the prices for the project.

The fee scale values this part 13%

Official service guidelines of the Design phase result from the structure set by the regulation that condense it for the Design phase. This is the reason why we do not speak about conceptual factor of the design at this stage (the regulation does not use this term) so this stage is in the official Czech Standards missing.

"Land use (zone) permission project" – after obtaining the client's approval of the study, the architect will produce the land use (zone) permission project containing construction part and individual engineering professionals. This phase has no parallel in the ACE structure. This is a review of the project in terms of urban context, connecting to the infrastructure and other interests in the area. For smaller structures such as a family house is this phase carried out

together with building permit (however, formally still binding), for the larger structures it must always be carried out. The project then goes to individual authorities authorized to issue approvals concerning land use (zone) permission process. At this stage the designer deals with these authorities to revise the project according to the requirements. Individual authorities can have specific requirements on the documentation scope beyond the regulation that must be respected by the architect. When all approvals are issued, the building authority issues one joint approval necessary for granting the land use (zone) permission. In the case of small structure up to 10 approvals are normally required, for the bigger structure on a complicated site tens of approvals can be required. In practice there are only few approvals issued by the state authorities, municipalities (supervising environmental health and security issues) that may have a significant impact on the project. Other are rather formal approval of non-conflicting relation to existing installations. Since the above mentioned authorities do not issue approvals that are mutually coordinated, it is the architect's responsibility to deal with the contradictory interests. This can lead to increased number of necessary negotiations. That is why negotiations with authorities are a separate service called engineering and is additional service that does not fall within the fee scale. For larger structures this service is done by the third party commissioned by the architect or by the client.

Land use (zone) permission is the approval for the client to realize the construction on a given site; it is not a building permit. If another part of the project is required, e.g. the EIA study, it is carried out during the course of this stage.

The project documentation in the construction stage is done at 1:100 scale, which is not higher than in preliminary design. Together with the project additional materials must be presented such as reports on service connections, structural engineering, fire security and other specific parts resulting from the location of the building on the site and its relation to the surroundings.

The fee scale values the land use (zone) permitting phase 15%.

ad2. Developed design in the Czech context corresponds to the building permit project (building permitting, approval). This documentation includes additional materials such as land use (zone) permission and new investor's requirements which is quite common as the land use (zone) permitting process for larger structures may be long, so many factors on the site can change in the course of this process.

Construction documentation is at 1:50 scale; engineering part is completed in more detail providing definite data on the energy consumption etc. Energy label (PENB) is made in this stage. Structural analysis is presented. Documentation processing is similar to land use (zone) permitting process. The architect pre-negotiates requirements of individual authorities, then includes them and submits them to the authorities. When they are issued, the building permit application is handed to the building authority. In order to reduce delays and if agreed by the building authority, the architect can submit the project for building permit process even before obtaining these approvals, that will be presented within the set period. This method is however not officially acceptable in terms of the Building Act. A number of approvals are smaller than in

the zone permitting process; there is also an option that relevant authority may retire from repeated decision process in the building permit process.

For a small family house building permit documentation is considered also as land use (zone) permission documentation and the process is reduced to a one-stage construction approval despite the fact that formally it is still binding. For a larger commission the whole process is lengthy and schedule is therefore difficult to estimate.

Developed design phase – building permit is valued in a fee scale 22%

Ad3 Detailed design – This phase is for a small project of a family house usually carried out by an architect who also coordinates subcontracted engineering professionals. The procedure for larger buildings is depending on the office similar or the whole project is commissioned to the third party and keeps only the principal supervising authority. Other option would be that the whole phase including responsibility is taken over by an engineering design studio. Based on the agreement with the investor the architect may influence the project only through author's supervision or licence contract. However, these tools are not much effective.

Typical scale of the project is 1:50, detail also 1:1, all specifications, surface finish, facilities and technology is described. The scope and the use of this phase are subject to more interpretations depending on whether it is a public or private commission. Official definition is as follows: the project, according to which "should be possible to create the bill of quantities and documentation to be used for binding description of all structures for the supplier". Specific view on the detailed design is the view of the building authority that may require preparation of individual parts of the building in detail that would serve as materials for the building inspections. The bill of quantities itself is not regarded as the service of this phase.

For a small private commission e.g. a family house, the detailed design is also the engineering design, which means the construction documentation. This can be similar also in the case of selected apartment building with up to 50 units. For larger commissions such as a school building, the detailed design is seen only as a basis for cost assessment, where part of the building supply is also the detailed design produced by the supplier.

In the case of public commission the architect is limited by the description of individual structural elements only on general level which forbids more elaborate details description based on the element of the specific producer. This leads to documentation with less details and more description leaving an architect less certain of whether his ideas will finally be realized.

In the case of a private investor, the detailed design prepared by an architect is comprehensive and the supplier only completes manufacture design. Drawings and details descriptions include specific manufacturers of structural elements.

The fee scale values this service 28%

Ad 4 - Engineering design - This documentation is not normally prepared by the designer commissioned by the investor, but by the building contractor. He will prepare it or commission it from original designer as completion of engineering design. This phase is not described in the service standards as architect's service or engineer's project. The scope of the project depends on the supplier's requirements for more detailed information on the given structures, concerning the individual parts or only structural elements. The original architect usually requires examination of the detailed engineering in the detailed design; however, unless there is no support from the investor, disputes about changes in project are for the architect unsolvable. For smaller buildings the detailed design is regarded as the engineering design.

3.PROCUREMENT

The architect participates in the tender only as an advisor, this service is always additional.

Family house – the architect would advise on potential contractors, revising references and bids assessment. Involvement of the investor's technical controller in the process is not usual, only above standard commissions of this type.

Apartment building – a developer normally employs the services of the investor's technical controller who represents him during the whole process. Position of the investor's technical controller may also be delegated to the architect. For the following implementation of the construction, however, technical controller must be certified by the Chamber of Certified Engineers. In the event the architect is certified by it, it is seen as conflict of interests if the investor is represented for the implementation of the construction by the author of the documentation.

School building – public commission – the procedure is similar to the apartment building.

The procurement process is governed by two laws – the Building Act and the Act on Public Procurement. According to the Building Act the architect prepares bills of quantities, the cost assessment is additional service and may only be prepared by the certified technician. The cost assessment is based on selected price system. Under the new standards the intention is to systematically separate creation of bills of quantities from valuation based on the price system that does not allow control of the architect and the investor.

The fee scale values this part 8%

The building is tendered as a whole, the investor always seeks a principal supplier, and therefore also project design makes a whole. Potential suppliers then ask their own

subcontractors for price quotation for the individual parts.

The Act on Public Procurement defines the scope of specifications that are prepared for the investor by the potential supplier. By law this is the set of documents, data, requirements and technical specifications from the investor defining the object of the public contract in details required for preparing the bid. Specifically, it is the case of draft contract, terms of payment, insurance etc. The architect may participate in this phase only as a consultant to specify certain parts of the project. Assessment or evaluation of the tender documentation is completely the competence of the investor or through his representative, investor's technical controller.

Drawings for the purpose of procurement process are the detailed design. There is a new requirement that bills of quantities were clearly controllable from the drawings, so the architect will complete the drawings with the specifications and description that will allow this clear control. Documentation is submitted in the pdf format. The most common programmes used are autocad, archicad. BIM programmes are only beginning to be used and offices are resisting using them. In the new standards BIM method is considered as additional service.

It is common that during the course of the process the company preparing the bid contacts the architect for additional information or inquires about possible change of materials. With a large number of companies this means a lot of extra work for the architect.

4.CONSTRUCTION

4.1.preconstruction

4.2.construction

4.3.commissioning

Preconstruction – choice of supplier is based on the scoring system, where the lowest price is the most important criterion. In the event when none of the bids meet criteria, the investor does not have to choose any bid and may agree the project changes with the designer in order to achieve a more favourable price.

If the supplier is chosen, the investor, with the help of his project manager, concludes a contract with the supplier. Architect usually does not participate in this process.

Prior to the commencement of the construction works the investor should notify the building authority of the natural or legal person with liability for the construction and the health and safety co-ordinator.

The construction works formally commence when the building site is handed over, an architect may be invited to this process.

4.2. construction

Architect may undertake author's supervision during the construction works. This is regarded as standard service, but its efficiency is very low. The construction works are managed and controlled by the investor's technical controller. The architect may make comments in the site diary; they become binding for the contractor only when approved of by the technical controller.

The site is also inspected regularly by an official of the local municipality (the "Building Inspector" or "Building Control Officer") who announces the inspection in advance, or creates the inspection schedule at the beginning.

During the course of the construction works the investor's technical controller will organize regular inspections "site meetings" to which the architect is invited.

During the course of the work the architect, at the instigation of the technical controller, makes changes to the project resulting from the change of materials, structural design. In practice, the link between building contractor and the architect is quite direct and it is mainly up to the architect to what extent he would agree on this method with the risk that it may not be later recognized by the investor's technical controller as additional work. Modifications to the project are valued as additional service at an hourly rate.

The fee scale values this part 11%

If a large number of modifications is required during the course of the construction works, a so-called change of construction before completion is necessary, this is a process supervised by the building authority. It is the responsibility of the contractor to carry out the construction works in compliance with approved documentation and to consult amount of acceptable modifications with the building authority. It is usually carried out by the investor's representative, investor's technical controller; however, by law this is contractor's liability. The building authority will decide whether it is necessary to prepare new documentation, if such documentation must reassess any other authority or the change may only be approved through the site inspection and entry in the site diary.

In practice, the changes to the construction before its completion is from the architect's view problematic as it does not require the direct authorization by the principal designer, only by the person who carried out the change.

Payments to the building supplier are carried out in the arrears, according to the stages of finished parts based on handover and approval by the technical controller.

4.3. Commissioning

In the course of the building, revisions of individual technical equipment are carried out and a protocol is drawn up.

Tests of heating, gas and also chimney inspection are carried out. Investor's technical controller will verify that all inspections were correct.

The legal warranty of the building contractor is five years period by law, unless stated in the contract otherwise.

Preparation of the use instructions is not part of the standard architect's work. This is regarded to be contractor's responsibility.

For larger structures run in trial mode is set. This trial period may last up to a year.

4.4. Handover

At completion the construction works contractor will carry out the geodetic survey for the Land Registry and produces engineering design. Its scope is set by the regulation and is not a standard architect's service. The building contractor may commission it from the designer.

The investor's technical controller determines handover eligibility of the building; however, standard contract for work states that "building contractor will take over the work if it is suitable for use". It implies that in spite of small faults the building must be taken over. The investor's technical controller will produce a report on faults and unfinished works with proper deadlines for completion/removal. Only after the completion and final handover, starts a deadline for complaints relating to individual parts, which is governed by law. For larger structures longer guarantee periods are agreed in the contracts, in some cases up to ten years.

The building contractor hands over all revision documents to the investor's technical controller if not already done so and sends the geodetic survey to the land registry, subsequently applies for a regulatory approval at the building authority.

According to the normal contractual relationships the work is regarded as completed once the regulatory approval is granted, which is a standard contract condition.

4.5. Regulatory approval

The completion of the building and its commissioning is based on the regulatory approval; one

building may require more regulatory approvals according to dividing the whole building into individual building objects. These building objects may undergo regulatory approval process even in the course of the construction works, ahead of the other ones. The regulatory approval, according to the scale of the building, may include more inspection approving of implementation correctness e.g. fire safety, transport solution. If any faults are found, the protocol of faults that must be removed until the next inspection is produced.

All parties involved in the building permit process take part in the regulatory approval. Based on this regulation it is not legally binding for the architect to do so, but it is regarded as a standard service for the investor. If they both agreed on it.