

LAND MEASUREMENTS IN RESIDENTIAL CONSTRUCTION ENGINEERING IN THE CONTEXT OF CHANGING THE LAW 10/1995 ON CONSTRUCTION QUALITY

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Abstract: *Track changes imposed by amending Law 10 on construction quality by Law 177/2015, residential buildings with reduced height ($P + 1$) are subject to the general rules on quality assurance in construction. This requires the preparation of the technical design verified by law, the execution is mandatory supervised by the technical manager and project supervisor certified by categories of skills.*

Sensitive execution stages: teaching and landmarks site levelling, excavation for foundations, marking and redrawing, check the verticality and horizontality as the case of structural elements; slopes for sewers and surface platforms can be addressed with great fidelity by using high technology in the field of terrestrial measurements while the specification contains details in this regard.

Keywords: residential construction, topo- geodetic activities

1. The Current State of Design and Execution of Works

The extension of the law on execution works living in rural-urban and rural areas with height $P + E$ requires: developing technical design verified by certified reviewers for each category of works in hand and hence the plan for monitoring the quality of work performed, hiring by the investor (landlord) specialist RTE and the project supervisor duly authorized.

Potential investors were warned timely provision to the media following the legislative changes to comply. The situation differs, however, from the ideal ground mentioned in the law.

Examples:

- Completely missing the technical project by working it in many cases only after surfboards summary of the draft needed to obtain the building permit and certificate of urbanism, which in turn is inconsistent (missing: plug drilling, documentation unchecked by the expert technician for each category of works);

- Failing the site and not mentioning the item (landmark) levelling;

- Failing vertical systematization of the site;

- Specialized designer recipient does not respond to requests to draft technical project and then not providing technical assistance;

- Investor systematically refusing employment according to law: expert RTE, project supervisors authorized categories of works and geodetic engineers, attendance imperative to take over the site, systematization vertical location, drawing the main axes of the building,

subsequent verification of allowances and how execution of works and preparation of the Minutes default for works that are hidden.

2. Upgrading Works on Construction of the Existing Building Stock

If modernization works (including stacking the) construction of the existing building stock, technical project is developed only after completion of technical expertise; execution of works being supervised by specialists authorized by law.

Technical expertise is performed in the following situations:

- The intention to change the intended beneficiary of the whole or of rooms, with implications for the payload,
- Change default functionality and abolishing the need for structural interior walls,
- Stacking the intention,
- Observation of defects in service of the supporting structure caused by a faulty execution, uneven terrain subsidence of the foundation, the unfavourable effects of previous seismic actions.

Uneven terrain subsidence of foundation and structural damage caused by repeated seismic actions or other natural disasters on structural elements of a building to be modernized, as the case may require follow topo-geodetic conducted using specific methods. The results give useful information on decision authorized expert intervention on the building analysed: demolition / partial demolition or where appropriate, strengthen and modernize valuable construction.

3. Conditions and Quality Checks on Individual Construction within the Competence of the Surveyor Engineer

The main terms of quality and checks provided norm for quality and reception of construction works and installations, indicative C56-85 are:

- a. Vertical works for systematization of the site
 - Levelling deviations: accidental bumps furnished 0.05 of the quota ;
- b. Pipelines
 - Deviations from tilting slopes for unlined canals : 0.05 versus absolute inclination provided in the project;
- c. Allowable tolerances and errors in drawing horizontal construction lengths (STAS 9824/1-75) are shown in Table 1

Table 1

Lenghts [m]	25	50	100	150	200	250
Tolerances for rectangular coordinates	± 2	± 2	± 3	± 4	± 5	± 5

Tolerances for angles $\pm 1^0$

Tolerance admitted to plotting landmark share ± 0.00 is ± 1 cm

d . Direct foundations

Deviations of accuracy level site and share

- Horizontal position foundations axes 10 mm ;

- Vertical position share level 10 mm ;

e. Form-works made for different types of structural concrete elements

- Limit inclination from the horizontal edges and surfaces : 2% / m ; for floors, the whole surface of the floor 1% ;

f. Structures in confined masonry walls and reinforced concrete frames requires redrawing every level,

The accuracy achieved in a program tracing the field of construction is a decisive factor to fulfil quality requirements mentioned above. Mapping refers to materialize the projected construction field and also points to ways and means of marking. Imposing instrument envisages provisions on required accuracy and plotting expressly stated in the specifications accompanying technical project.

From modern measuring devices (total station) and related methods to the traditional technique (ruler, square, level site, plumb) is found in practical terms a decrease of measurement accuracy and thus an accuracy much lower than the standard.

Additionally, the construction of the structure frameworks, lack of plottings methods of engineering that involves: there is a support network, a network tracing, verification positioning foundations, tracing and verifying axes pillars and beams, verifying the form-work, leading to possible cumulation errors and thus to a lower level of quality of the overall quality of work performed.

4. Conclusions

Recent amendments to Law 10 on quality construction creates an institutional framework for cooperation extended to works carried surveyor - builder, namely consolidation, modernization of buildings reduced height destined for residential construction across Romania .

As a result , the building will comprise technical book with the technical documentation and records reception quality made according to plan and takeover processes for specific works that are hidden topographical and engineering activities that will certify the final product quality.

5. References

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