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Structural Concrete. Design by limit states

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Among the pedagogical careers studied at the Cuban University is the Bachelor's Degree in Construction Education, whose mission is to comprehensively train professionals who will work as teachers in the educational centers of Technical and Professional Education, who must acquire skills that demonstrate their development between being and knowing how to do, as well as creativity in their professional performance and fulfillment of their duties.

The "E" study plan corresponding to this modality includes among its disciplines the Design of Structures, which is of vital importance for the career, since it prepares the new generations of teachers to face the pedagogical process of Technical and Professional Education in the specialties of Civil Construction, Roads and Hydraulics, with an integrative, systematic and professionalized approach.

In addition, with a holistic approach, where the knowledge and skills of the discipline are linked with others of the career, such as: Applied Mathematics, Applied Physics, Applied Chemistry and Project, Construction and Conservation of Civil Works.

Among the subjects that integrate the discipline Design of Structures is Structural Design, which allows materializing the skills related to the design of elements subjected to bending, considering the resistance criterion, applying the Cuban standards established for this purpose and graphically representing the technical solutions obtained through diagrams, graphics and plans, so as to contribute to the didactic

preparation of Construction Education graduates, in training process for the exercise of teaching the subjects of the structure cycle, which are developed in the technical specialties of construction.

In addition, the behavior of structural concrete is characterized, the method of limit states from the properties and steel, taking into account the criteria or forms of failure of structural concrete and rectangular sections of reinforced concrete elements requested to simple bending and for ductile failure are designed, starting from the equations of equilibrium and the design methodology.

For the teaching of the subject it is feasible to use as bibliography the book Hormigón Estructural. Design by limit states, published by the Editorial in 2013, where the design of elements is offered, the behavior of structural concrete is characterized, the method of limit states from the properties and steel, taking into account the criteria or forms of failure of structural concrete, endorsed by works of authors of great value for the design of structures. The work under review contributes to the deepening and understanding of the elements to be taken into account when designing elements subjected to bending.

The book explains essential aspects to be mastered by the teacher whose social task is to train the qualified work force demanded by the Cuban society, since the chapters deal with updated contents, which are of great value for the learning and training of the professional.

In the first one: Concrete and reinforcing steel. Structural concrete. Properties and uses, where the properties of simple concrete, reinforcing steel and structural concrete are referred to in much greater depth than in the bibliographies of the aforementioned subject, also dealing with the Units of the International System, thus considering their use in the design of structural elements.

In the second one: Behavior of reinforced and prestressed concrete sections in the presence of normal normal stresses, its content is not included in the Structural Design program, although it can be used for postgraduate training, where it is deepened by means of courses and links to entities involved in the production and design of structural elements.

In the third one, whose title is: Safety in structural design, which is a mandatory reference for the design of structural elements, where the authors address the first methods that emerged and the limit state method, which is the most modern and currently in force, is dealt with in depth, through the ways in which it guarantees the safety of structural elements and structures.

The fourth one: Normal solicitations. Generalities. Study of bending in reinforced concrete sections, from which the general principles for the analysis of sections subjected to normal stresses, basic hypotheses, diagram of domains and the equations of compatibility of deformations within each domain, as well as the failure by controlled traction can be studied and analyzed.

The fifth: Tangential shear stress, which can be used for the study of the definition of shear stress, its behavior in beams, which is required by the Structural Design program.

Sixth: Torsional tangential stress, which although its content is not included in the Structural Design program, it can be used in postgraduate training, as established by the training of the professional according to the E curriculum.

Seven: Limit states of use, the contents related to cracking and deformation that must be checked or verified at the service stage of a reinforced concrete beam are dealt with in greater depth, which allows for a better preparation of the professional.

Eight: Adhesion, anchorage and distribution of reinforcement, deals with the constructive concreteness of the structural design since it deals with the constructive provisions that must be complied with for the reinforcement reinforcement within the concrete mass.

The ninth: Continuous beams, which although its content is not included in the course program, it can be used during the graduate's postgraduate training.

In general, the information offered in this volume is very useful for the training of the new generations of construction teachers of polytechnic centers and trade schools, since it allows the updating of the contents referred to the structural design of construction elements and thus, to the achievement of the objective of the subject referred to design elements subjected to bending, considering the resistance criterion, applying the Cuban norms established for this purpose and graphically representing the technical solutions obtained by means of diagrams, graphs and plans, in such a way as to contribute to the didactic preparation of the Construction Education Graduates in the process of training for the teaching of the subjects of the structure cycle, which are developed in the technical and workers specialties of construction.