PROVE DI CARICO

LOAD TESTS/LOAD TESTING

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| Il metodo  Verifica delle deformazioni dei solai sotto sollecitazione | The method  Assessment of slab deformation under stress  Group Z |
| The method  Check of the floor slab deformation under stress  Group E | Method  Verification of floor-slab deformations under load.  Group F |
| Method  Assessment of slab deformation under stress.  Group A | Method  Assessment of slab deformation under stress.  Group G |
| Methodology  Verifying any slab deformation when stressed  Group D |  |

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| Normativa di riferimento:  *NTC 2008 - CAP 9.2*  per quanto riguarda le competenze, recita: "*Il programma delle prove, stabilito dal Collaudatore, con l’indicazione delle procedure di carico e delle prestazioni attese deve essere sottoposto al Direttore dei lavori per l’attuazione e reso noto al Progettista ed al Costruttore. Le Prove di Carico si devono svolgere con le modalità indicate dal Collaudatore che se ne assume la piena responsabilità, mentre, per quanto riguarda la loro materiale attuazione, è responsabile il Direttore dei Lavori"* | Normative reference:  NTC 2008 – SECTION 9.2, regarding roles, states: *"The test program is established by the Inspector in order to indicate the loading procedures and expected performances. It must be submitted to the Testing Manager for implementation and made known to the Designer and the Building Contractor. The Load Testing must be carried out according to the procedures indicated by the Inspector who is fully liable. On the other hand, the Testing Director is responsible for their actual implementation"*  Group Z |
| Reference regulation  The Italian technical regulation of construction (*NTC 2008*) – *CHAP 9.2*, specifies the following roles: “*The testing programme is established by the Tester and includes load procedures and the expected performance. The programme must be submitted to the Site manager for implementation and communicated to the Designer and to the Constructor. Load tests must be conducted according to the procedures determined by the Tester, who assumes full responsibility for them, while the Site manager is responsible for their actual execution*.”  Group E | Regulations:  TheItalian law *NTC 2008 - CHAPTER 9.2,* with regard to responsibilities, states: "*The schedule of the tests, determined by the Tester and indicating the loading procedures and expected performance, shall be submitted to the Construction Manager for implementation and made known to the Designer and Constructor. The Load Tests shall be carried out in the manner specified by the Inspector, who assumes full responsibility for them, while the Construction Manager is responsible for the material implementation.”*  Group F |
| Regulatory standards:  *NTC 2008 – CAP 9.2 regarding responsibility, states: “The testing plan specifying the loading procedure and its required performance is determined by the load test inspector and must be submitted to the supervisor to be implemented and made known to the designer and the builder. The load testing must be carried out in accordance with the instructions of the inspector who is fully responsible for them. The supervisor is responsible for the practical execution of the load testing.*  Group A | Regulatory standards:  NTC 2008 – CAP 9.2, regarding responsibilities, states: ‘’*The testing plan specifying the loading procedures and its required performance is determined by the Inspector and must be submitted to the Supervisor to be implemented and made known to the Designer and the Builder. The load testing must be carried out in accordance with the instructions of the Inspector, who is fully responsible for them. The Supervisor is responsible for the actual implementation of the load testing."*  Group G |
| Relevant legislation:  Duties are regulated pursuant to Chapter 9.2- NTC 2008 dictating that *“The testing schedule, which is drafted by the Inspector, along with load procedure steps and expected performance, shall be submitted to the Work Supervisor/Site Manager for implementation and communicated to both the Architect Designer and the Contractor. The Tester takes full responsibility for the load testing, while the Work Supervisor oversees its material implementation”*  Group D |  |

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| Strumentazione utilizzata per eseguire la prova:  Aste telescopiche, trasduttori, pesi applicati in sacchi d'acqua, sacchi di sabbia. | Equipment used for the testing:  Adjustable rods, transducers, weights applied on water bags, sand bags.  Group Z |
| Equipment used for the tests:  Telescopic shafts, transducers, weights applied in waterbags, sandbags.  Group E | Instruments used to perform the test:  Telescopic poles, transducers, applied weights in water bags, sandbags.  Group F |
| Equipment used for testing:  Telescopic rods, transducers, weights such as water bags and sand bags.  Group A | Equipment used for testing:  Telescopic rods, transducers, weights, such as water bags and sandbags.  Group G |
| Equipment used while testing:  Telescopic beams, transducers, water-filled weight bags, sandbags.  Group D |  |

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| Applicazione:  Le prove di carico sono prove che vengono effettuate su elementi strutturali con lo scopo di verificarne sperimentalmente il loro comportamento sotto le azioni di esercizio: possono essere prove di collaudo, da effettuare prima di mettere o rimettere in esercizio le strutture, al fine di verificarne la rispondenza alle previsioni progettuali, o prove di analisi, al fine di verificare il comportamento di un elemento strutturale già in opera. La prova consiste nel caricare il solaio fino al raggiungimento del carico complessivo richiesto. Tramite trasduttori di spostamento vengono misurati il cedimento in fase di carico e il residuo allo scarico. | Procedures:  Load testing are tests carried out on structural elements to verify experimentally their behavior under stress in use. Load testing may be trial tests, which are carried out before putting or restoring structures in service, in order to verify their compliance with design predictions, or analysis tests, in order to verify the behavior of a structural element already in operation.  The testing consists of loading the slab until the total required load is reached. Displacement transducers measure the deflection during the loading phase and the residual displacement after the unloading phase.  Group Z |
| Execution:  Load tests are conducted on structural elements to experimentally verify their behaviour under operating actions. These tests can be either acceptance tests, performed before structures are put into or back into service to check their compliance with designed expectations, or analytical tests to assess the performance of already operational structures.  The test consists in loading the floor slab until the required total load is reached. Displacement transducers measure both the failure in the loading phase and the residual deformation in the unloading phase.  Group E | Application:  Load Tests are tests that are carried out on structural elements with the aim of experimentally verifying their behaviour under operational/operating conditions. They can by acceptance tests, to be carried out before opening or recommissioning structures in order to verify their compliance with design predictions, or analysis tests, with the aim to verify the behaviour of an already in-place structural element.  The test consists of loading the floor until the required total load is reached. Using displacement transducers, the deflection at loading and the residual displacement at unloading are measured.  Group F |
| Process:  Load testing is carried out to practically assess the performance of structural elements when in use. It can consist in preemptive tests, to be carried out before using the structures in order to assess if they fit to the project, or in maintenance tests to assess the performance of a structural element already in use.  The test consists in loading the slab with the prescribed load. Structural displacement during the loading phase and after unloading is measured by displacement transducers.  Group A | Process:  Load testing is carried out to practically assess the performance of structural elements when in use. Preemptive tests are carried out before putting the structures into service or reinstating them to verify their compliance with design expectations. Maintenance tests are conducted to assess the performance of an already installed structural element.  The test involves loading the slab until the required total load is reached. Displacement transducers measure the deflection during loading and the residual deformation after unloading.  Group G |
| Implementation:  Load testing includes tests carried out on structural elements to examine their behaviour under stress in use. They can involve acceptance testing, realized before the structures’ implementation or re-implementation to verify its correspondence to project forecasting, or functional testing to analyze and determine the behaviour of a structural element already in use.  The testing consists in loading the slab until the total required load is reached. Displacement transducers are used to measure deflection during loading and residual deflection after unloading.  Group D |  |

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| La Prova di Carico è eseguita su elementi orizzontali come solai, travi, mensole o elementi strutturali inclinati come coperture a falde, scale, etc. Le prove sono effettuate sia con carichi distribuiti, mediante serbatoi ad acqua o zavorre di vario tipo, sia con carichi concentrati, mediante cilindri oleodinamici o serbatoi pensili. La scelta di una particolare tipologia di prova, dipende (oltre che da eventuali richieste del Committente) da fattori come l’entità e la natura del carico di prova, la conformazione della struttura da esaminare, il numero di cicli da effettuare, etc.  Le Prove di Carico delle strutture sono utili per il controllo globale, nella realtà, della buona esecuzione delle opere costruite, e delle sollecitazioni prodotte dai carichi applicati. | The Load Testing is performed on horizontal elements such as slabs, beams, ledges or inclined structural elements such as tiled/pitched roofs, stairs, etc. Testing is carried out both with distributed loads, which use water tanks or various types of ballast, or with concentrated loads, which use oleodynamic cylinders or suspended tanks. The choice of a particular type of test depends both on any requests from the Client and on factors such as the entity and nature of the test load, the configuration of the structure to be examined, the number of cycles to be performed, etc.  Load Testing of structures is useful for the in-situ overall control of the performance of built works, and of the stress produced by applied loads.  Group Z |
| Load tests are performed on horizontal elements such as floor slabs, beams, cantilevers or inclined structural elements such as pitched roofs, stairs etc. The tests are conducted using both distributed loads, applied through water tanks or various types of ballast, and concentrated loads, applied through oleodynamic cylinders or suspended tanks. The choice of a particular type of test depends ( in addition to any possible Client requests) on various factors such as the magnitude and nature of the test load, the conformation of the structure under examination, the number of cycles to be performed, etc.  Load tests on structures are useful to assess in real-world conditions the overall quality of the constructed works and the stresses produced by the applied loads.  Group E | The Load Test is performed on horizontal elements like floors, beams, brackets or inclined structural elements like pitched roofs, stairs, etc. The tests are carried out both with distributed loads, using water tanks or various kinds of ballast, and with concentrated loads, using oleodynamic cylinders or hanging tanks. The choice of a specific type of test depends on factors such as the entity and the nature of the test load, the conformation of the structure to be examined and the number of cycles to be performed, as well as any requests by the Client.  Structural Load Tests are useful for the overall control, in practice, of the performance of the built works, and of the stresses produced by the applied loads.  Group F |
| Load tests are performed on horizontal (such as floor slabs, beams, cantilevers) or inclined structural elements (such as pitched roofs, staircases, etc.). Tests can be conducted with either distributed loads (using water tanks or various kinds of ballast), or concentrated loads (using hydraulic cylinders or suspended tanks).  Besides client requirements, the choice of test types is based on factors such as the magnitude and nature of the test load, the configuration of the structure being examined, the number of cycles to be performed, etc.  Load testing of structures is useful for real-world verification of proper construction (execution) and the stresses induced by applied loads.  Group A | The load testing is performed on horizontal elements such as slabs, beams, and cantilevers, or on inclined structural elements such as pitched roofs and staircases, etc. Tests can be carried out both using distributed loads, like water tanks or other types of weight, and using concentrated loads, such as oleodynamic cylinders or suspended tanks. The choice of a specific test type depends on several factors (including client requests), such as the magnitude and nature of the test load, the conformation of the structure under examination, the number of test cycles to be performed, etc.  Structural load testing is useful for a global assessment in real-world conditions, of the proper execution of the constructed works and the stresses caused by the applied loads.  Group G |
| The load testing is performed on horizontal elements, such as slabs, beams, shelves or inclined structural elements like gable roofs, stairs, etc.  The tests are run by using both distributed loads, through water tanks or weights of any kind, and concentrated loads, through hydraulic cylinders or suspended tanks.  Other than any requests made by the client, the implementation of a particular type of testing depends on the scale and nature of the load testing, the shape of structure, the number of testing cycles, etc.  Load testing is useful to ensure that, in practical situations, proper functioning of the structures and the stress caused by the applied loads are verified.  Group D |  |