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Que es una tridilosa

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The Tridilosa's advantages extend beyond just bridge construction. It can also be used for other structures such as muelles flotantes, pangas, hangars, department stores, office buildings, hotels, and more. In Mexico alone, nearly a million square meters have been constructed using this innovative system. Interestingly, there was once a proposal to use the Tridilosa for PEMEX's disputed tower in Mexico City, but the idea was ultimately scrapped due to concerns about promoting one of the company's critics. References: [1] "Tridilosa | ¿Qué es y para qué sirve este sistema?" (www.fenarq.com) Consultado el 27 de julio de 2024. The Tridilosa is a lightweight and mixed-plate system that combines the compressed concrete zone with the tractioned steel zone. It was invented in 1966 by Mexican engineer Heberto Castillo. In Peru, Tridilosas gained significant importance due to engineer Miguel Bozzo and his son, Dr. Luis Bozzo, who developed specific calculation methods using finite elements in 1986. The Tridilosa structure only uses 33% of the concrete for compression, with an efficiency of up to 90%, allowing for the construction of much lighter, more resistant, and cost-effective structures in a shorter time than conventional systems. It has been used in over 200 bridges in Mexico, including the World Trade Center, Torre Chapultepec, Centro Médico siglo XXI, Plaza Cuauhtémoc, and Hotel Morelia Misión. One of its most notable features is that it can save up to 66% of concrete and 40% of steel due to the fact that it does not need to be filled with concrete in the traction zone. The Tridilosa has been used for various projects, including bridges, domes, hangars, floating docks, and pangas. It is not only used for making ultralight roofs and bridges but also for special solutions such as aircraft hangars, department stores, office buildings, hotels, and more. In Mexico, almost a million square meters have been built using Castillo's invention. At one point, there was consideration to use Tridilosa to build the controversial PEMEX tower in D.F., but the idea was discarded not to publicize one of the critics of the state-owned oil monopoly. What is a Tridilosa in architecture? A Tridilosa is a three-dimensional structure made of concrete or steel, invented by Mexican engineer Heberto Castillo Martínez. It's an efficient and lightweight slab that combines the compressive zone of concrete with the tensile zone of steel. How does it work? A Tridilosa consists of a hybrid structure of concrete and steel formed by tubular elements that are welded or bolted to panels or nodes of union. This allows for building structures that are lighter, more durable, and economical in less time than conventional systems. One of the standout features of its structure with Tridilosa is that it can save 66% of concrete and up to 40% of steel because it's not necessary to fill the tension zone with concrete, but only the compressive superior zone. It's not just used for bridges and ultralight entarimados (in Nicaragua, Castillo built a bridge that two people could lift even with a truck passing overhead; also used in the construction of the first bridge in the world). But it's also used for floating piers and even pangas, like the 40 near Campeche that have been navigating for years. Nowadays, it's mainly used for making roofs with Tridilosa in underdeveloped countries and the third world. In Mexico, almost a million square meters of buildings were constructed using Castillo's invention. It's about Heberto Castillo Martínez (Ixhuatlán de Madero, Veracruz; from August 23, 1928 to April 5, 1997), who was an engineer and scientist, politician, thinker, social leader, and constructor of organizations in Mexico. He studied civil engineering at the National Faculty of Engineering of the University of the Nationally Autonomous of Mexico. The engineer developed in 1966 a three-dimensional structural system based on a mixed sandwich of reinforced concrete, which he called TRIDILOSA. The versatility of this structure allowed it to be used for buildings, vehicular bridges, pedestrian bridges, domes, industrial buildings, and even as a floating dock. Tridilosa, a system developed for building complex structures such as high-rise buildings, dams, and power plants, among others. Castillo liked to find solutions to complicated problems by first identifying the variables involved, their relationships, and the overall objective of the system. He then developed procedures that responded to criteria of equilibrium, economy, and ease of execution. The system is the result of years of research to optimize and rationalize the design and construction of concrete and steel structures. Taking Castillo's perspective, engineering can be seen as a discipline that creates solutions to human problems by balancing technical, economic, and social variables. Tridilosa's operating principle is simple: it considers flexion (compression and tension), torsion (secondary), and shear forces. Concrete is subjected to compression due to flexion, whether upward or downward if there is moment reversal; tensile forces due to flexion are carried out with reinforcement; torsion is achieved with transverse reinforcement; and shear is done with diagonal spatial reinforcements of different structural restraints. The fundamental difference between Tridilosa and conventional reinforced concrete slabs is that the former does not contain fill concrete, which allows for a constant tension in a rectangular cross-sectional section. This reduces the amount of concrete needed by 66%. For over twenty years, he taught Analysis and Structural Design at UNAM and the Polytechnic Institute, writing three didactic books. The Tridilosa system replaced traditional reinforced concrete beams and slabs, resulting in significant savings of concrete and steel. The system has been used in more than 200 bridges across Mexico, including the World Trade Center, Torre Chapultepec, Centro Médico Siglo 21, Plaza Cuauhtémoc, Plaza Tabasco 2000, Hotel Morelia Misión, and Biosfera 2 in Arizona, USA. The dome is an icosaedron, a shape formed by interlocking pentagons in a hexagonal grid. However, the clarity of this form is obscured by the fragmentation of its faces, which subdivide into equilateral triangles with slight distortions that create sections resembling shells. As a result, the overall composition of the dome is substantially more spherical than a simple icosaedron, and smaller units generate dazzling visual complexity through pure repetition. This celosía-like structure was created entirely from three-inch steel tubes, welded together at joints and gradually narrowing towards the top to optimize forces throughout the system. Advantages of Using Tridilosa Only 33% of the concrete is used for compression in the tridilosa system, which has a performance rate of up to 90%, allowing for the construction of lighter, corrosion-resistant, and more economical structures in less time than conventional systems. Additionally: It covers large skylights: horizontal, two-story, polygonal, or segmental. Several floors can be built, making better use of land, which is often expensive and scarce. High resistance to earthquake effects. Fewer beams, pillars, and footings compared to a conventional roof of the same size. Less concrete is used, resulting in a lower weight per square meter of surface area. Fast and clean execution, reducing construction time. The gap between the two panels provides a pleasant interior temperature. Playing with height and space in a large building. Large open spaces and clear zones allow for interesting visual communication. It facilitates the placement of machines or equipment and improves pedestrian flow and material transport. The adaptability and change of use without affecting normal structure function, even if it requires repositioning or adding partitions. Configuring volumes according to user needs and tastes without being tied to structural conditions. A conventional roof is enhanced by diagonal elements that distribute tensions in various directions, providing an inherent reserve of resistance against shocks like earthquakes. Seamlessly linked with beams and columns, this interconnected system boosts the overall security and stability of the structure. (Note: I used the "WRITE AS A NON-NATIVE ENGLISH SPEAKER (NNES)" method to rewrite the text.)