DESIGN®

LAB / CONSTRUCTION

Aerodynamics laboratory, design and construction of steel and concrete structures.

www.instate.com.mx

Design Lab Construction

Design Lab Construction started more than 15 years ago, specializing in different fields of civil engineering, mechanics and electronics, such as the elaboration of executive projects, architectural, virtual reality, construction plans of workshop and assembly, work supervision, topography, soil mechanics, geotechnic, urban planning, assembly and conceptual design of metal and concrete structures.

Executing turnkey projects, analysis, design and construction with an innovative approach by means of simulation of scaled prototypes in laboratory tests.

	+133 Works executed **+ 1000** Engineering Projects and studies developed		**+40** Engineers and professionals.
	1° Wind Tunnel in the north of the country.		**+ 15 years** of experience .

– 21 Design and construction services:

I – Analysis and evaluation of investment projects.

II – Project and construction management.

III – Construction.

IV – Design and assembly of mining facilities.

V – Civil engineering studies.

VI – Soil mechanics, rocks and geotechnic.

VII – Projects and constructions of civil, mechanical and electronic engineering.

VIII – Experimental multi physics of field and/or laboratory and simulation of multi physics by computer.

IX – Bridge engineering.

X – Cost engineering.

XI – Modeling, animation and virtual reality services.

XII – Wind tunnel and structure laboratory.

XIII – Analysis, design and construction of tanks.

XIV – BIM (Building Information Modeling).

XV – Applied mathematics.

XVI – Pre-mixed concrete.

XVII – Precolados y Presforzados.

XVIII – Design, Production, and Commercialization of Products and Innovations. Startup.

XIX – 3D Modeling with FARO FOCUS PREMIUM Scanner

XX – Artificial Intelligence, IT, big data, cloud and devops e Instate Investments

XXI – Building Information Modeling: BIM

– 11 Market Sectors:

- Aviation and Transport
- Mining
- Commercial
- Cultural and Institutional
- Education
- Government
- Health
- Sports Sector
- Residential
- Special Structures
- Sports

More about us.

/ Our Idea.

The provision of a service to the industry making use of cutting edge technology equipment and tools for the simulation and measurement of resistance, stress and/or behaviors to which the conceived designs in steel and concrete construction projects will be submitted. Equipment such as aerodynamic subsonic wind tunnel, vibrating tables, axial load equipment, bending, torsion, etc.

/ Why?

Larger, more functional and complex buildings are required each day, buildings that must be supported by prior engineering studies as well as laboratory simulation tests with the use of equipment such as wind tunnel and others. As well as the increasing demand on the part of the authorities for the approval of these projects.

/ Nuestra Misión

Estructuras científica y tecnológicamente sustentadas, prestando servicios de ingeniería integral y de óptima calidad para el aseguramiento y eficacia de la inversión de los proyectos en nuestra región y en nuestro país.

/ Nuestro Objetivo

La prestación de servicios profesionales de calidad en el campo de la ingeniería que sean suficientes para mantener una planta laboral de profesionales y generar los ingresos para el crecimiento sustentado de la empresa y convertirla en líder y al mismo tiempo prestar un servicio el cual en este momento no está disponible en la región.

/ Our Vision.

Be a scientific company with the highest technology for structural analysis in laboratory. To be recognized as a leading, innovative and updated company in the mathematical and laboratory analysis of modern engineering.

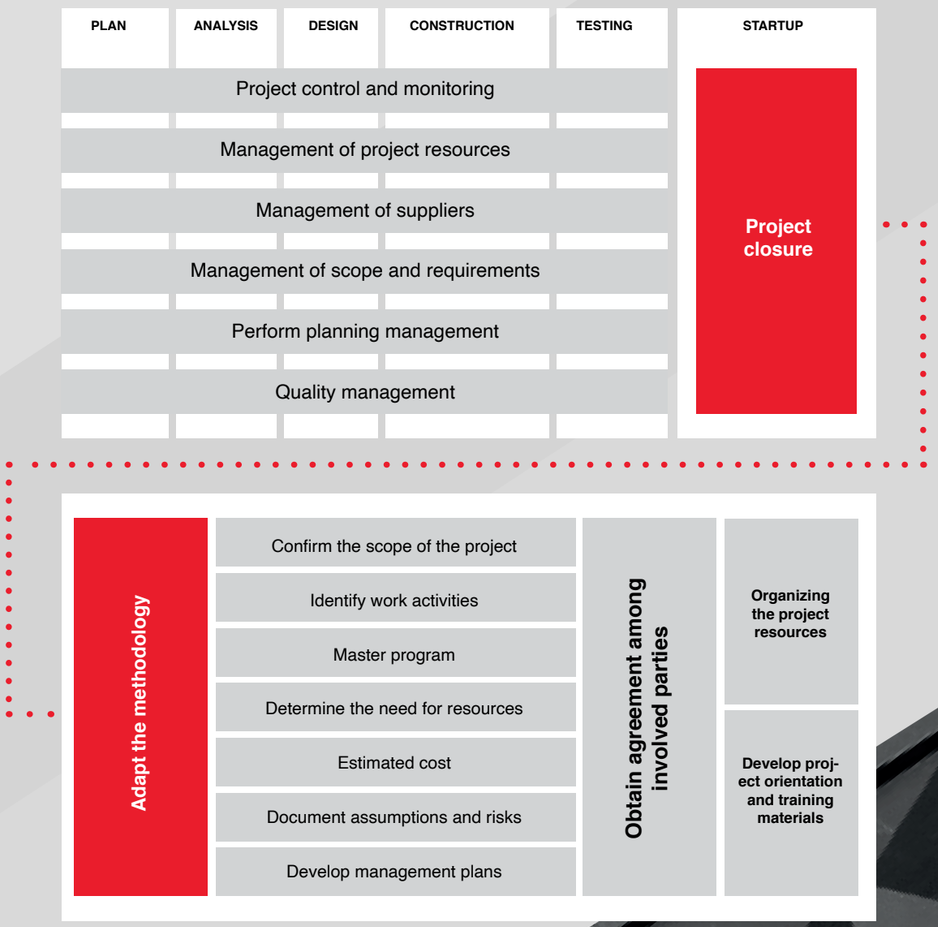
/ Analysis and evaluation of investment projects.

DESIGN LAB / CONSTRUCTION

Evaluating an investment project is to determine, through a **cost-benefit analysis**, whether it generates, or not, the desired performance in order to make the decision to **materialize it** or **reevaluate it.**

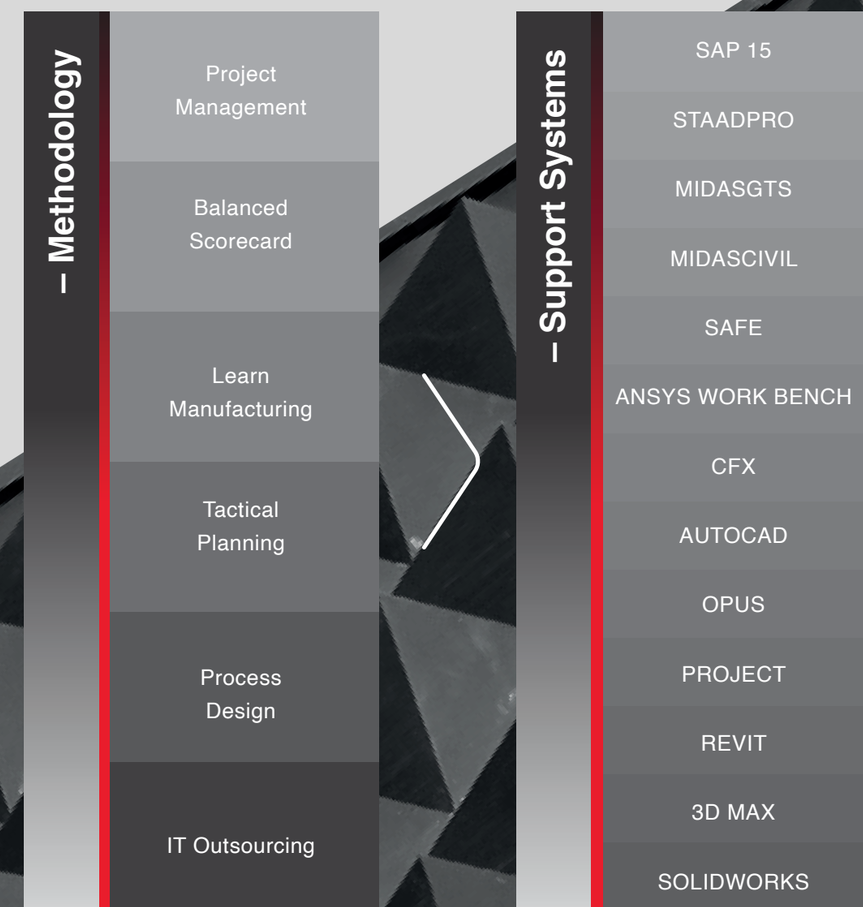
ITAM
INSTITUTO TECNOLÓGICO AUTÓNOMO DE MÉXICO

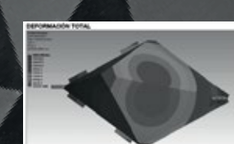
We have a set of methods, processes, tools and architectures that allow to deliver solutions in a structured and predictable way.



/ Methodology for project management

The methods are organized in a “library” in which each book focuses on a type of work. Each project uses the methods that are relevant to it, just as the books for reference are chosen in a section of a library.





Facade structural analysis: Municipal Presidency Torreón, Coahuila. Noas with zinc sheets.

DESIGN LAB / CONSTRUCTION

Our construction division has executed a great diversity of works highlighting mainly the sectors:

Infrastructure

Industrial Metallurgical

Agro industrial

Commercial

Residential

Industrial Miner

150 ≈ Works executed.

+ 225,000 m2 Built.

+ 1,500 ton of steel enabled.

+ 10,000 m3 of concrete casted.

+ 75,000 m2 of cover sheet installed.

We are part of:

DRO 624
Presidente del CICLAC

SMIE Sociedad Mexicana de Ingeniería Estructural, A.C.

CICLAC

American Welding Society®
Supporting Company Member

/ Design and assembly of mining facilities.

Design and construction of maintenance workshop/HPGR 100 tons.

Design and construction of tunnel reinforcement in stock pile 200 tons.

450 tons. Welding Workshop of screwed metal structure – 10.000 screws approx.

Construction main conveyor bridge.

a) Design and calculation of vertical and inclined mining castles.

b) Design and calculation of installations for hauling and boarding works.

c) Design and calculation of crushing stations, bases for dual or semidual hoppers, foundations for vibrating screens of light and extra heavy work, foundations for jaw crushers, foundations and structures for traveling cranes.

d) Design and calculation of cartridge stations, cartridge foundations, support structures for feeder belts, feeder vaults.

e) Design of rigid guides and cables for the extraction of mineral and buggy.

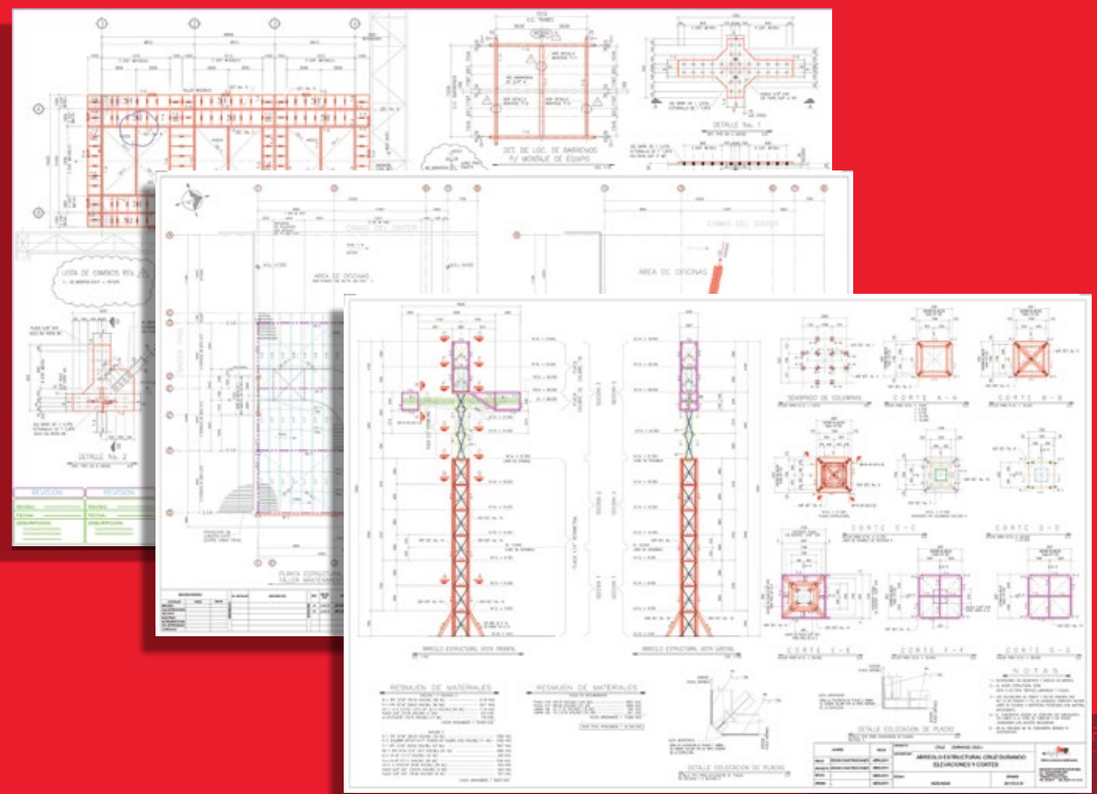
f) Design of foundations for friction and conventional winches.

g) Structural design of buildings for mining winches and pumping station designs.

h) Design of mining equipment such as skips, cartridges, gutters, clam chutes and discharge buckets.

i) Design of surface hoppers.

/ Civil Engineering Studies.



a) Foundation studies such as differential settlements, stability, pressure bulbs, consolidation, etc.

b) Vulnerability and design studies by seismic capacity of structures.

c) Design of special structures such as tall or slender buildings, silos, tanks, chimneys, bridges, deep foundations, etc.

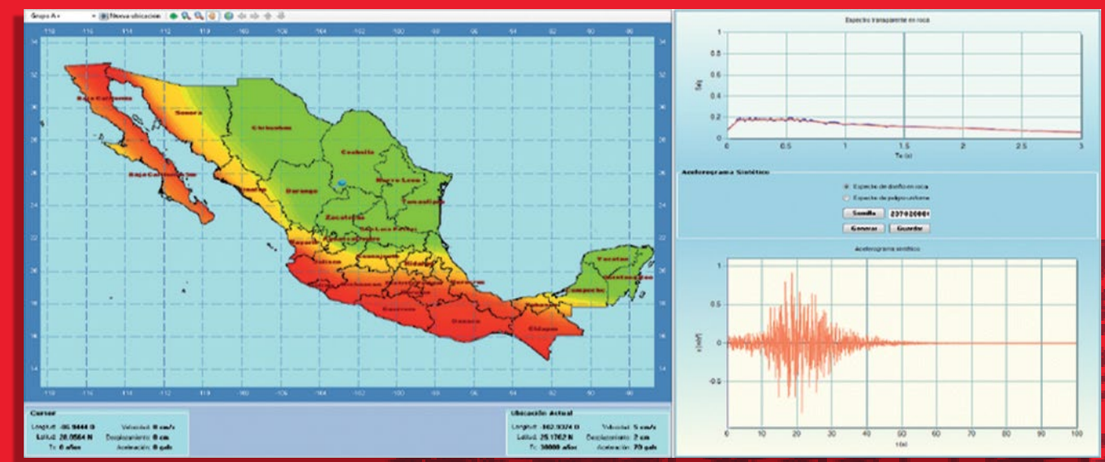
d) Structural behavior studies, failure mechanisms and structure failure simulations.

e) Dynamic structural analysis for earthquakes, wind, traffic, water, mechanical vibration, explosions and vibrations produced by walking, by regulation or simulations in elastic or plastic analysis by either mechanisms and modes of failure, modal analysis of structures, buckling analysis of elements.

f) Staged construction and lines of influence.

g) Curves and design of sections with any shape and/or material by moment-curvature diagrams, analysis of short and long-term reflections and ponding analysis.

Other Services.



a) Elaboration of complete executive projects.

b) Elaboration of architectural projects, 3d perspectives, animations, renderings, photo editing.

c) Engineering and drawing of constructive drawings of workshop and assembly.

d) Supervision of works, assembly, tracing, assembly and quality control of welding in metal structures.

e) Topographical surveys, soil mechanics, perforations up to 200mts depth in rock.

f) Remodeling projects, extensions, architectural plans, conceptual proposal and 3d design.

g) Urban design, laying out lots, landscaping, squares and gardens, interior design, plumbing projects, electrical, special, air, voice and data, drawings of constructive details.

h) Architecture and conceptual architectural design. Architectural design in metal, industrial, concrete and lattice structures. Design of soffits and durock in facades as well as aluminum panels.

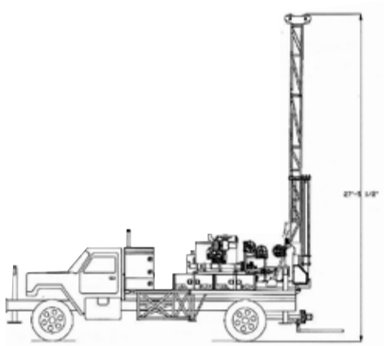
i) DRO Director responsible of works N°624 with municipal and state registration.

/ Soil Mechanics, rocks and geotechnic.

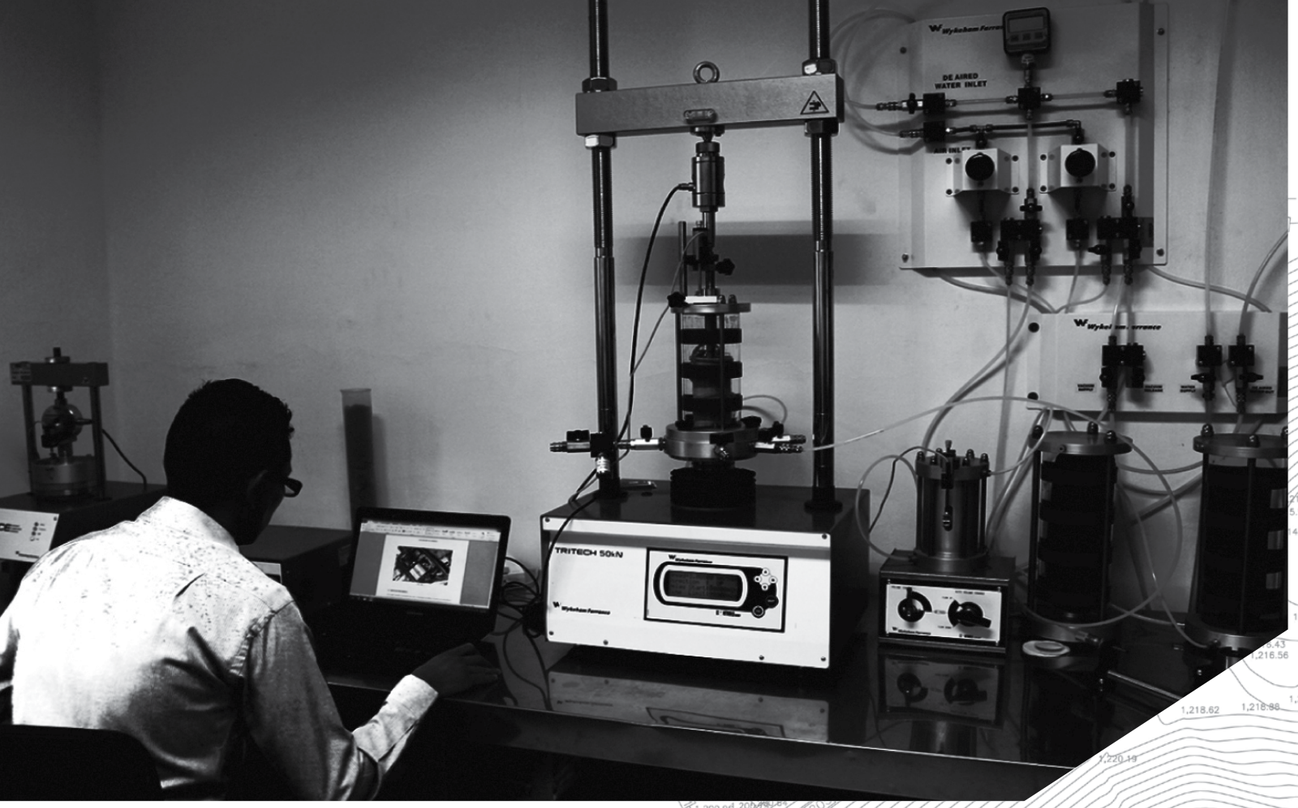
Field Work.

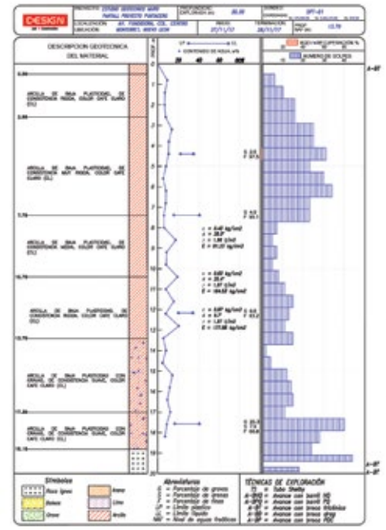
The soils where civil works are deplanted tend to be of a very varied nature, because they can consist of healthy rock solids with a high resistance, to clayey or granular soils with little resistance. The change in the mechanical properties or resistance obeys to the geological history, mineralogy, deposit of the soils, etc.

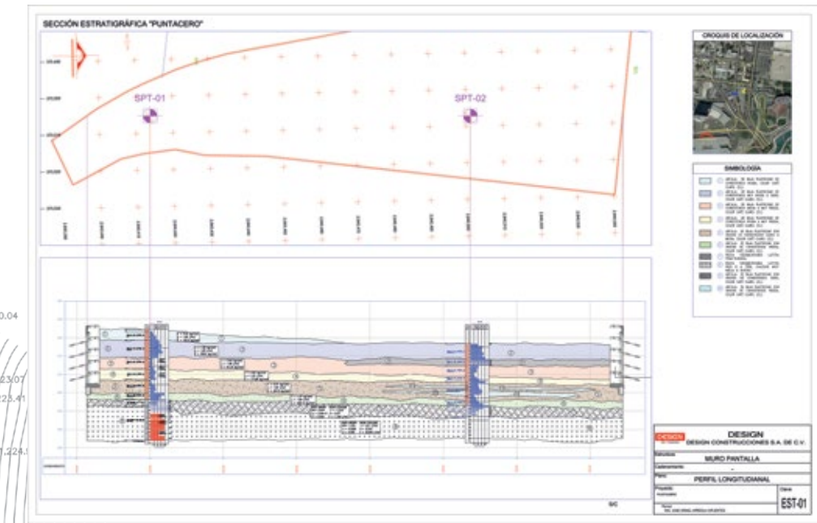
In **Desgin Constructions** we understand the changing nature of the soils so we are provided with the equipment and a highly trained personnel to determine the characteristics, indices and mechanics of the soils, as well as provide the most viable solutions for their projects. For the execution of the work in field we count with a drilling machine Mobile drill B-59 with a capacity for vertical exploration of up to 300 m depth, in the laboratory we have a triaxial camera and a Controls digital odometer, finally, in the office, finite element analyses are performed in 2d and 3d. All the above following the current regulations.

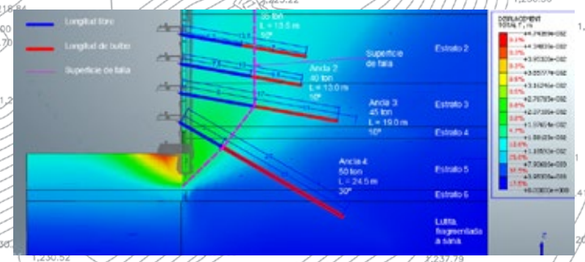


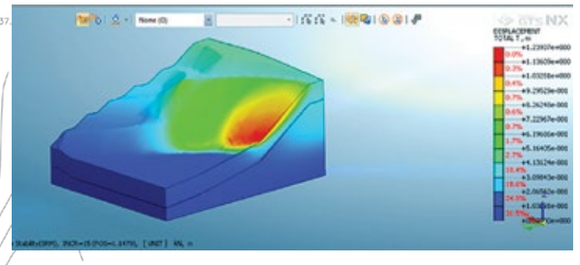
- Open pit up to 3.5 m deep.
- Mixed ground and rock probes with standard penetrometer (ASTM D1586), Shelby Tube (ASTM D1587) and HQ barrel.
- Geotechnical instrumentation.

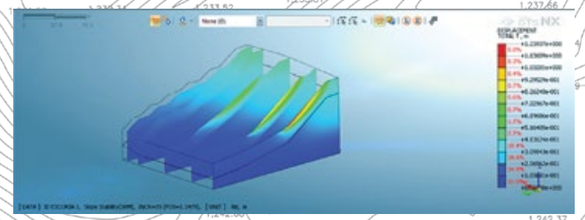


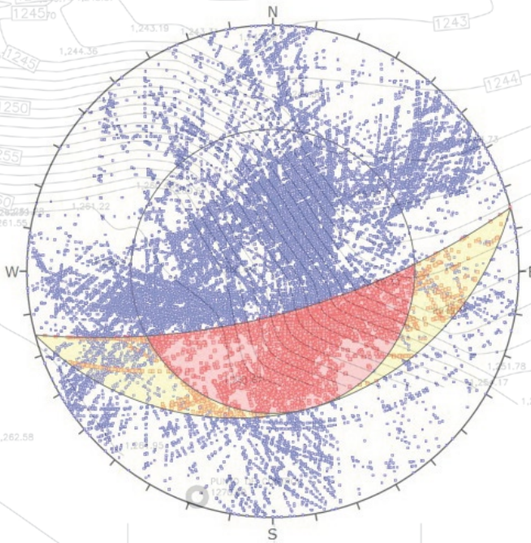


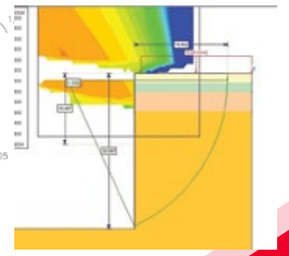






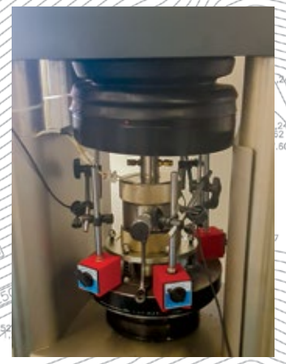


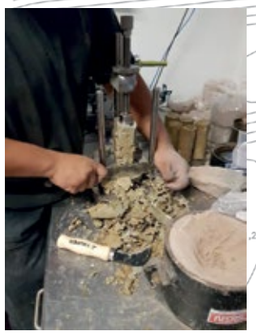


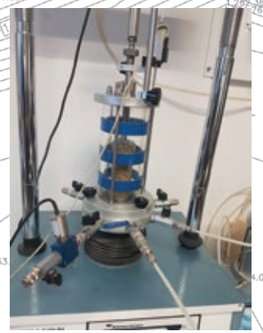


Work in Laboratory.

- Soil moisture content (ASTM-D2216)
- Atterberg limits (ASTM D4318)
- Shrinkage limit (ASTM D427)
- Granulometric analysis (ASTM D1140/ ASTM D422)
- Solid density (ASTM D854)
- Organic matter content (ASTM D2974)
- CBR index.
- Expansion potential
  – Soil collapse (ASTM D4546)
  – Expansion index (ASTM D4829)
- Consolidation of soft soils (ASTM D2435)
- Resistance to simple compression (ASTM D2166)
- Resistance to triaxial compression (UU, CU and CD)
- Standard and modified Proctor test.







Office Work.

- Load capacity analysis and settling of superficial and deep foundations.
- Stability analysis for retaining walls, cantilever, screen, trench sheeting, etc.
- Slope stability analysis.
- Difficult foundations in expansive soils, collapse, etc.
- Geotechnical analyses by means of the finite element method.

/ Civil engineering, architecture and electrical projects and constructions..

a) Design and/or construction of metal structures, framework, rigid frames, variable section, alveolar beams, suspended structures and structures under integral tension, cable-stut systems, chimneys, vertical and horizontal tanks, composite members (industrial warehouses and multilevel buildings), IMCA method (ASD-design of permissible stress) and LRFD method (design by load factor and resistance).

b) Design and/or construction of concrete structures, slabs, columns (corbels), beams (short and long-term deflection analysis), foundations, retaining walls, piles, pools, ACI method.

c) Steel Works: Tanks, hoppers, piping systems, all in carbon steel or stainless steel.

d) Solutions in design and/or construction of dairy stables, ranches for fattening and for agriculture.

e) Industrial dismantling.

f) Sand-Blast service.

g) Construction and design of residential properties, of medium interest and social interest.

h) Installation of galvanized sheet, pintro, pintro curve zintro, metal decking, multipanel, KR-18, wall and ceiling panels and soffits, durok, panel-W, etc.

/ Field and/or laboratory experimental multi physics and computer multi physics simulation.

ANSYS®

Diagonal compression test in masonry wall of 1849. Colima, Colima.

1000 ton ammonia tank scale experiment.

Residual stress analysis standard ASTM.

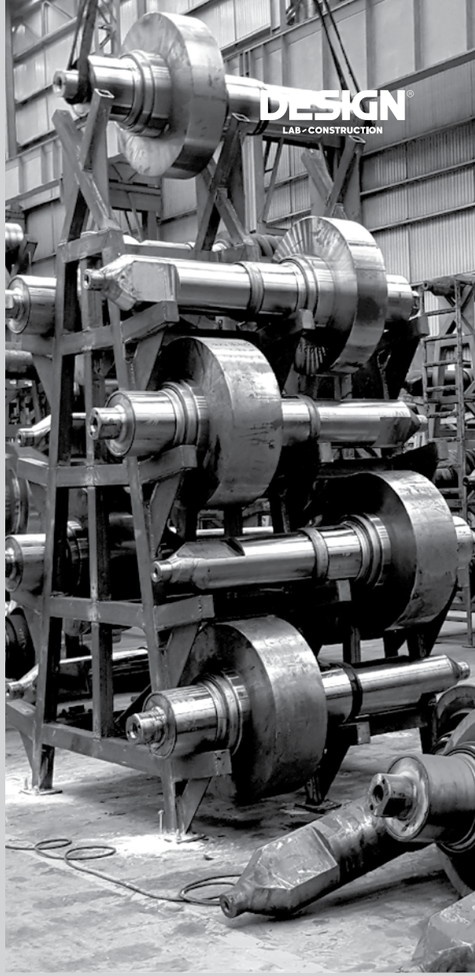
The physical simulation consists of the structural analysis of stress, computational fluid dynamics (CFD), with or without transfer of heat or flotation, and thermodynamics of any solid or fluid object such as air or water, and mixtures, through finite element analysis, compressible or incompressible. For the verification of the computer simulation experimentation with the parts or fluids is required in field or laboratory. Extensometer, acceleration and displacement sensors, and air pressure and velocity equipment, are used by our company for the experimental testing of the simulation in any type of part or material even if it were to be composed.

Extensometers are used to obtain deformations and real-time stress on the elements even at impact speeds (deformations at 1000 m/s) or remotely through telemetry or radio waves in moving parts so to be compared to the permissible stress of the same.

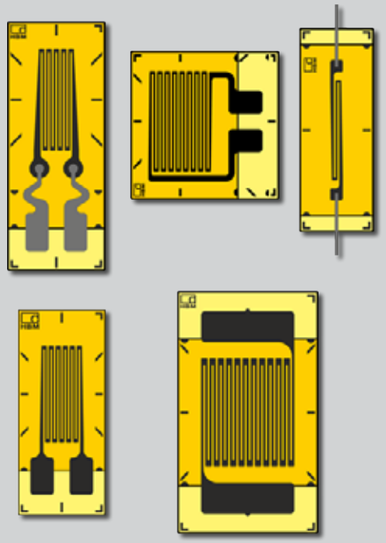
Building Code Compliant Seismic Monitoring System

Three accelerographs are deployed at the base, middle, and top of structure.

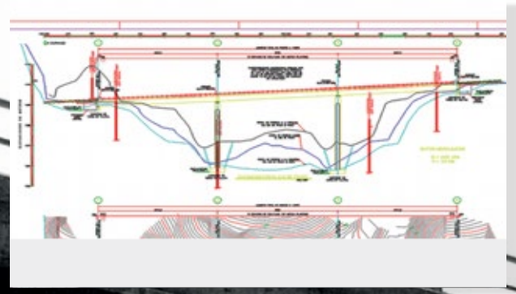
Sistemas de monitoreo de comportamiento y salud estructural de edificaciones.

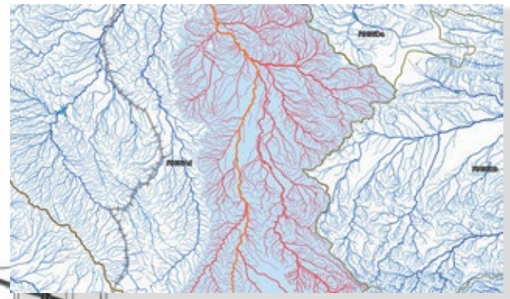


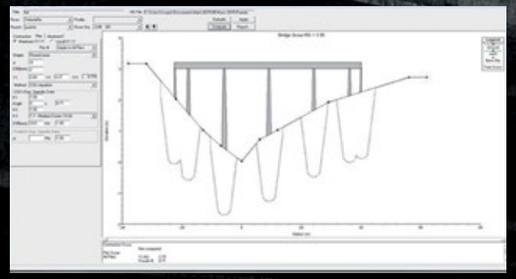
Racks Deacero, Ramoz Arizpe.

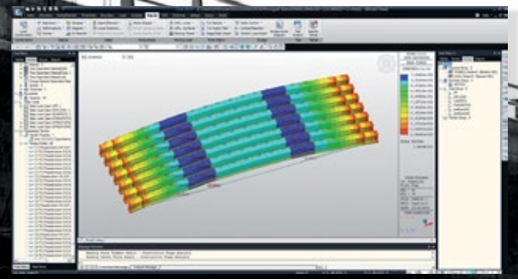


/ Bridge engineering.









Hydraulic HEC-RAS analysis and undermining analysis. IIII

Hydraulic-Topographic analysis.

Bridge design with or without computer aided simulation of reinforced elements, prestressed, post-tensioned and steel (double t beam, i beams, asshto, s tt beams, type nebraska, caisson), design and analysis of piles, trestles and stirrups, and foundations, experimental tests in laboratory and field of bridge elements and their connections (obtaining the natural frequencies, accelerations and displacements, extensometers and/or stress), pressure coefficient analysis, drag and von Karman vorticity, gallop and other air-elastic instability, in addition to slope and/or armed soil stability analysis.

Carrizo II Bridge, Durango-Mazatlan freeway.

/ Cost Engineering.

Given our experience in analysis and design, as well as the execution of projects, we are confident to offer the service of elaboration of economic proposals according to the expectations of the client and the scope of the project from the pre-design, the development of the design and engineering, and during the execution and construction of the project.

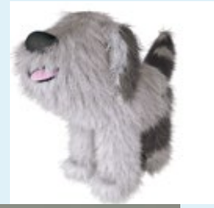
This integration of services allows to simplify the execution process of construction projects and to ensure their termination in time, cost and quality.

This we achieved by strengthening and developing our human capital and with the support of several specialists with extensive experience who collaborate with the company according to the specific needs of each project, adapting to the requirements of our customers.

Through the evaluation of the technical project we offer the elaboration of:

- Contest for public or private works.
- Catalog of concepts and quantification.
- Unit Price Cards.
- Work estimates.
- Work generators.
- Escalators.
- Executive projects.
- Work programs.

/ 3d CAD modeling services, animation and rendering.



– Legacy of 3d Data conversion:

We perform the conversion of physical models into solid/surface models.

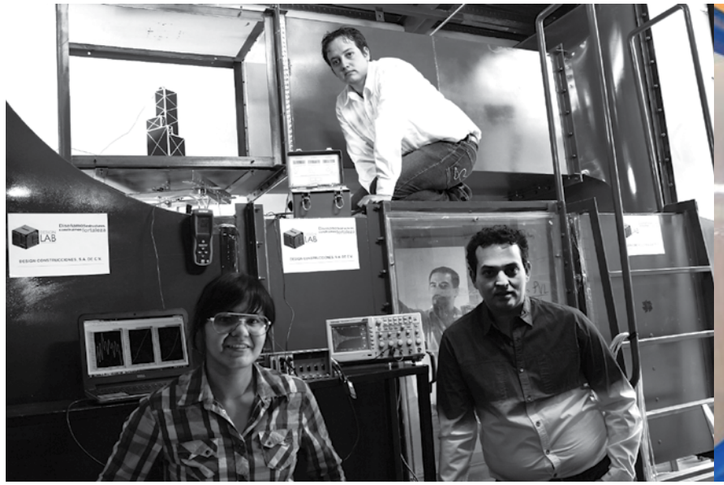
– 2D a 3D :

We transform drawings made from paper, AutoCAD 2d file, sketch by hand to solid 3d models using various engineering CAD platforms (Pro-engineer, Inventor, AutoCAD 3d & Solidworks).

/ We offer the most innovative 3d CAD modeling services, from concept drawings to photorealistic images and animation (virtual tour), for architectural and engineering projects using specialized software (3d Max & Vray).

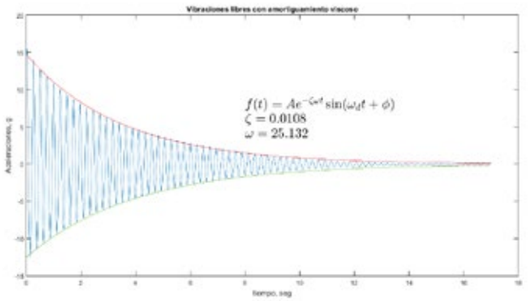
/ Wind tunnel and structure laboratory.

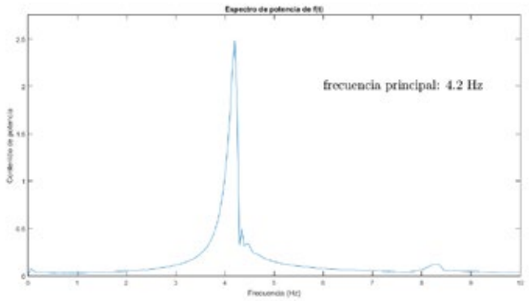
– Calculation of pressure coefficients, wind loads over structures, resonant and dynamic responses, improvement of reliability and cost effectiveness in design, safety against aerodynamic instabilities, increased human comfort, building deflection, acceleration at the top of constructions, calculation of moments throughout the structure, study of the parameters of variation of the dynamic properties such as natural frequency, mass and damping, measurement of instantaneous pressure, dispersion of gases and pollution particles, monitoring wind response of structures already built, aerodynamic efficiency, foundation dynamics and structures, fatigue and evaluation of the load cycle.



Doctoral thesis of the UAQ (Universidad Autonoma de Queretaro). Air-elastic balance model.

– Wind Engineering.





/ Analysis, design and construction of tanks.

– DESIGN

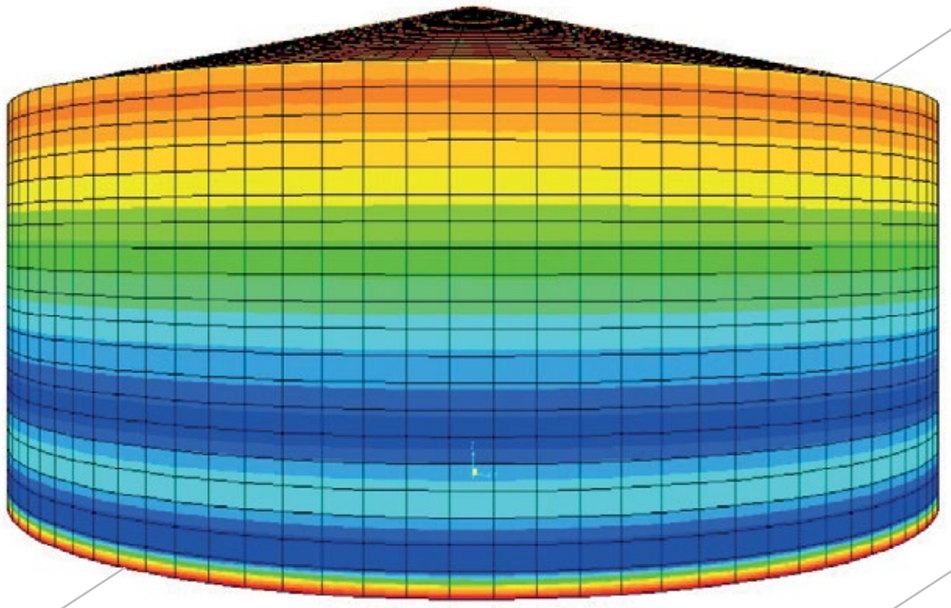
Our experience allows us to guide our customers through their operational and storage needs, available space, as well as the cargo capacity of land, and thus design tanks specifically for each one of our customers. The designs are governed by current international standards such as:

- American Petroleum Institute (API)
- America Society of Mechanical Engineers (ASME)
- American Welding Society (AWS)
- American Institute of Steel Construction (AISC)
- American Concrete Institute (ACI)

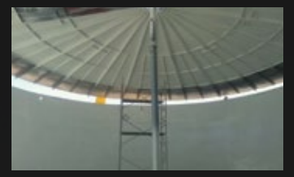
- SUPERVISION

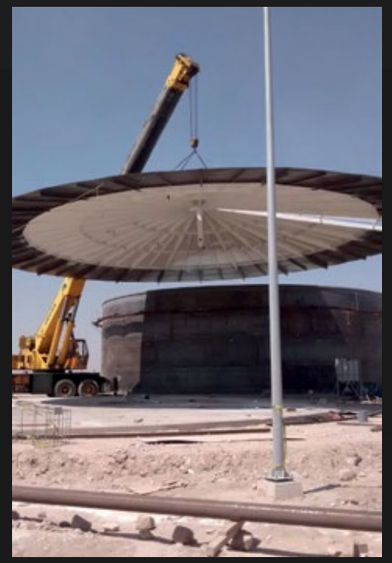
Some of our main clients request that we carry out in-field supervision of the engineering construction work developed by ourselves, this in order to verify that these works are carried out under the standards established in detail engineering, in addition to quality control tests along the civil works, as well as the quality control of the compaction of dirt roads and the quality in the supply and placement of concrete for the foundation. Also, on the other hand, the verification of the welding work by means of field tests, and the verticality and roundness of the tank.

In Design Constructions we have extensive experience in the design, supervision and construction of storage tanks, in carbon steel as well as stainless steel.



/ Design, construction and evaluation of storage tanks.





- Construction

We are provided with the equipment and qualified personnel (AWS certification) for the execution of the manufacturing work, enabling and assembling, which allows us to offer three working modalities for our clients:

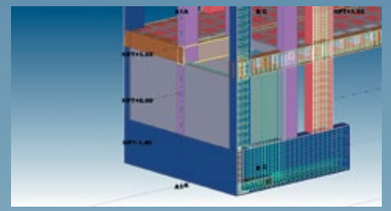
1. Turnkey project in which the customer prefers to be delivered a finished product by us, this through a comprehensive package, which goes from the development of engineering, implementation of quality controls, construction, to Start-up. This allows us to maintain a direct and close communication with our client and reduce delivery times.

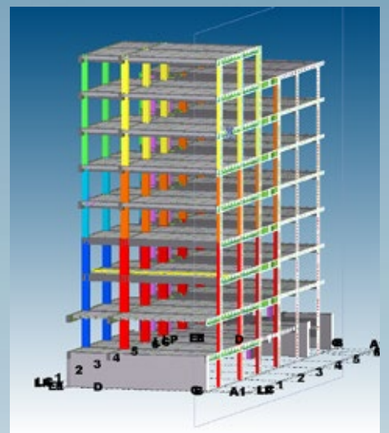
2. The construction of a tank from an existing design, in this modality we put at service our experience for the application of the quality controls, as well as our human and material resources, to lead to the start up.

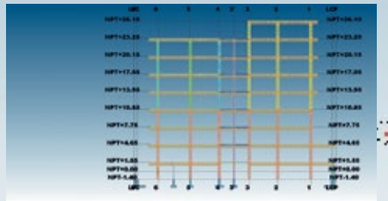
3. Analysis of verticality and roundness to evaluate residual efforts that add to tangential efforts.

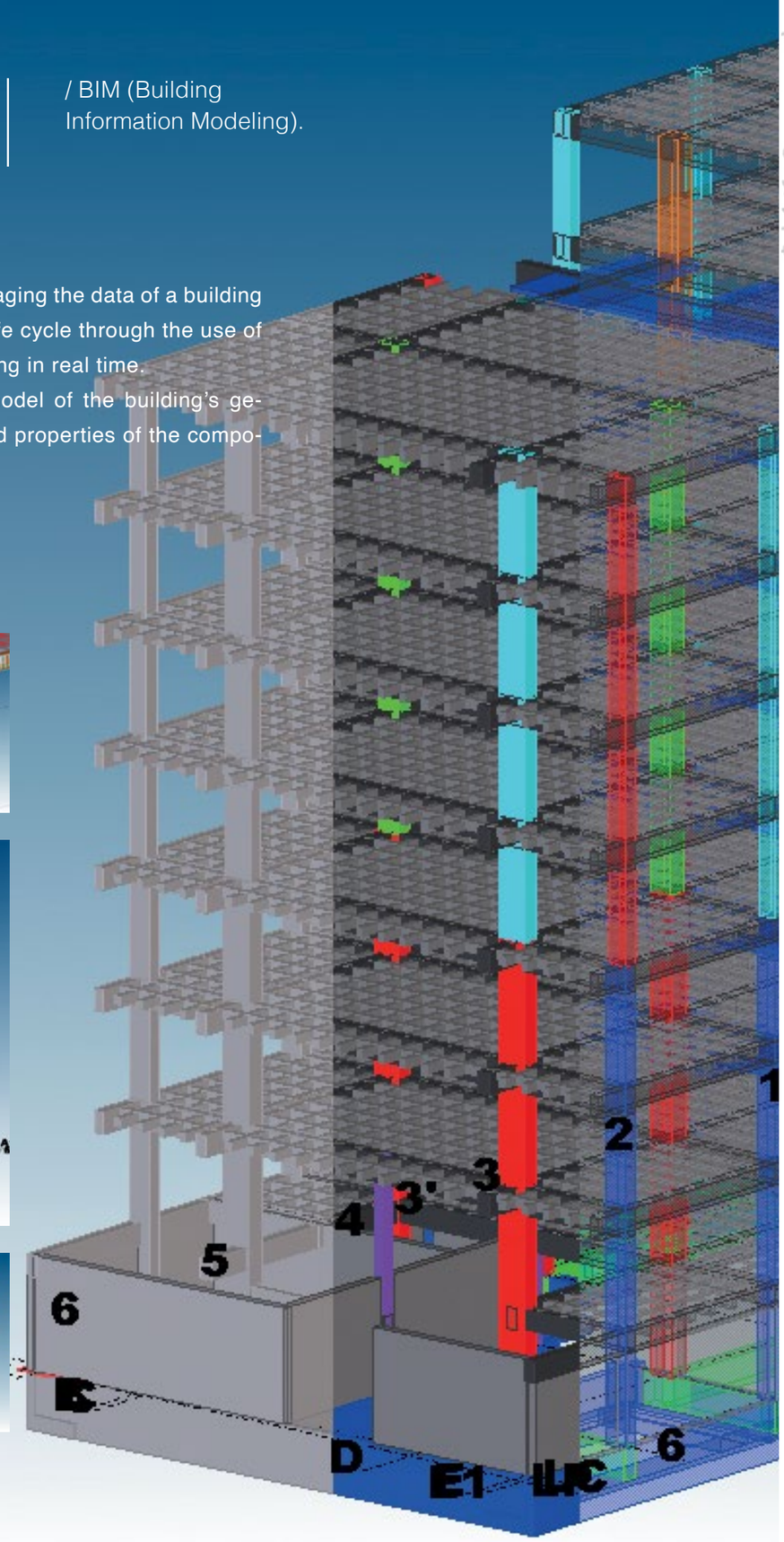
/ BIM (Building Information Modeling).

Process of generating and managing the data of a building during its construction and its life cycle through the use of dynamic software for 3d modeling in real time.
This process produces a 3d model of the building's geometry, spatial relationships and properties of the components of the entire building.









/ Applied Mathematics.

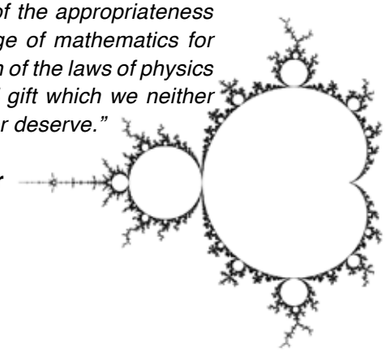
$$(a+b)^n = \sum_{k=0}^{n} \binom{n}{k} a^{n-k} b^k$$

$$\frac{1}{\pi} = \frac{2\sqrt{2}}{9801} \sum_{k=0}^{\infty} \frac{(4k)!(1103+26390k)}{(k!)^4 396^{4k}}$$

Since its origin, mathematics has been the most abstract tool and in turn the most applied to satisfy the needs of the human being, it is so that great mathematical geniuses have been developing more and more sophisticated mathematical techniques that improve our wellbeing and life quality.

"The miracle of the appropriateness of the language of mathematics for the formulation of the laws of physics is a wonderful gift which we neither understand nor deserve."

– Paul Wigner



Knowing the magnificent mathematical legacy of which we are heirs today, in Design Construcciones we offer the following services in the area of Applied Mathematics:

- Optimization of properties, geometry and structure topology.
- Variational geometry and parametric modeling.
- Mathematical modeling of industrial products.
- Variation modeling of the mechanical and thermal properties of the materials.
- Development of algorithms for structural design.
- Frequency spectrum analysis.

/ Pre-Mixed concrete.

The pre-mixed concrete is a mixture of stone aggregates, Portland cement, water and additives. It is designed as a compression-resistant material at 28 days. Complying with the standard NMX-C-155 “hydraulic Concrete-Specifications” we guarantee the quality of the product.
The properties and uniformity of the pre-mixed concrete make it ideal for any type of construction element in general.

Uses and applications.

Due to its versatility, it is the best option for the construction of different elements and concrete structures. Some applications of the pre-mixed concrete are:

- Slabs and covers
- Foundations and footing
- Columns and beams
- Foundation slabs
- Structural walls
- Prefabricated elements
- Industrial floors
- Parking lots
- Trails
- Massive castings

Physical properties.

Supplied by volume in cubic meters inside mixing trucks, available in different resistance to compression at 28 days, available supply to direct or pumped shot, depending on what element is desired to construct. Line concrete manufactured with maximum aggregate sizes of ¾ “(19 mm), for special mixes we have available the maximum aggregate sizes of 1-½” (40 mm) and minimum aggregate size of 3/8 “(10 mm). The concrete remains in plastic state for several hours depending on the type of mixture, usually forges or hardens between 2 and 12 hours after mixing and continues to increase its resistance until the 28th day.

Properties	Value
– Available slump (cm)	4 a 18
– Volumetric weight (kg/m3)	2,320
– Compression resistance 28 days (kgf/cm2)	100, 150, 180, 210, 250 300, 350, 400, 450, 500

Concrete on site:

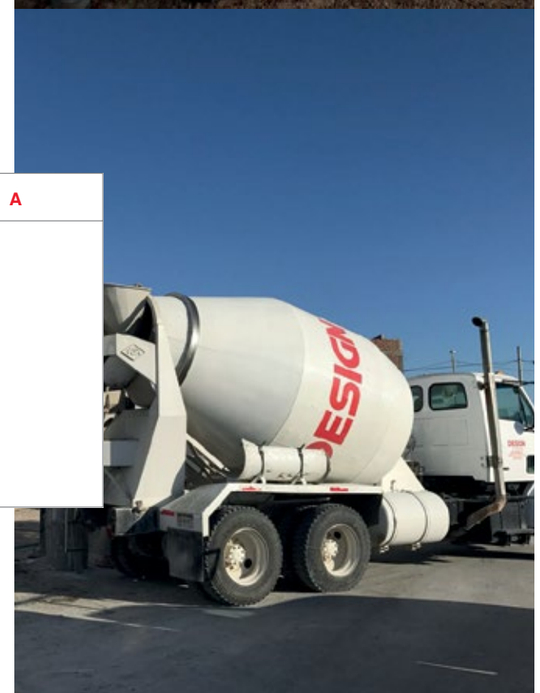
We are provided with a portable, or modular, plant with a production capacity of up to 70 m3 per hour, providing the ability to temporarily install the plant within the construction site to facilitate and accelerate the supply of concrete within the work.

Automation = Quality and speed

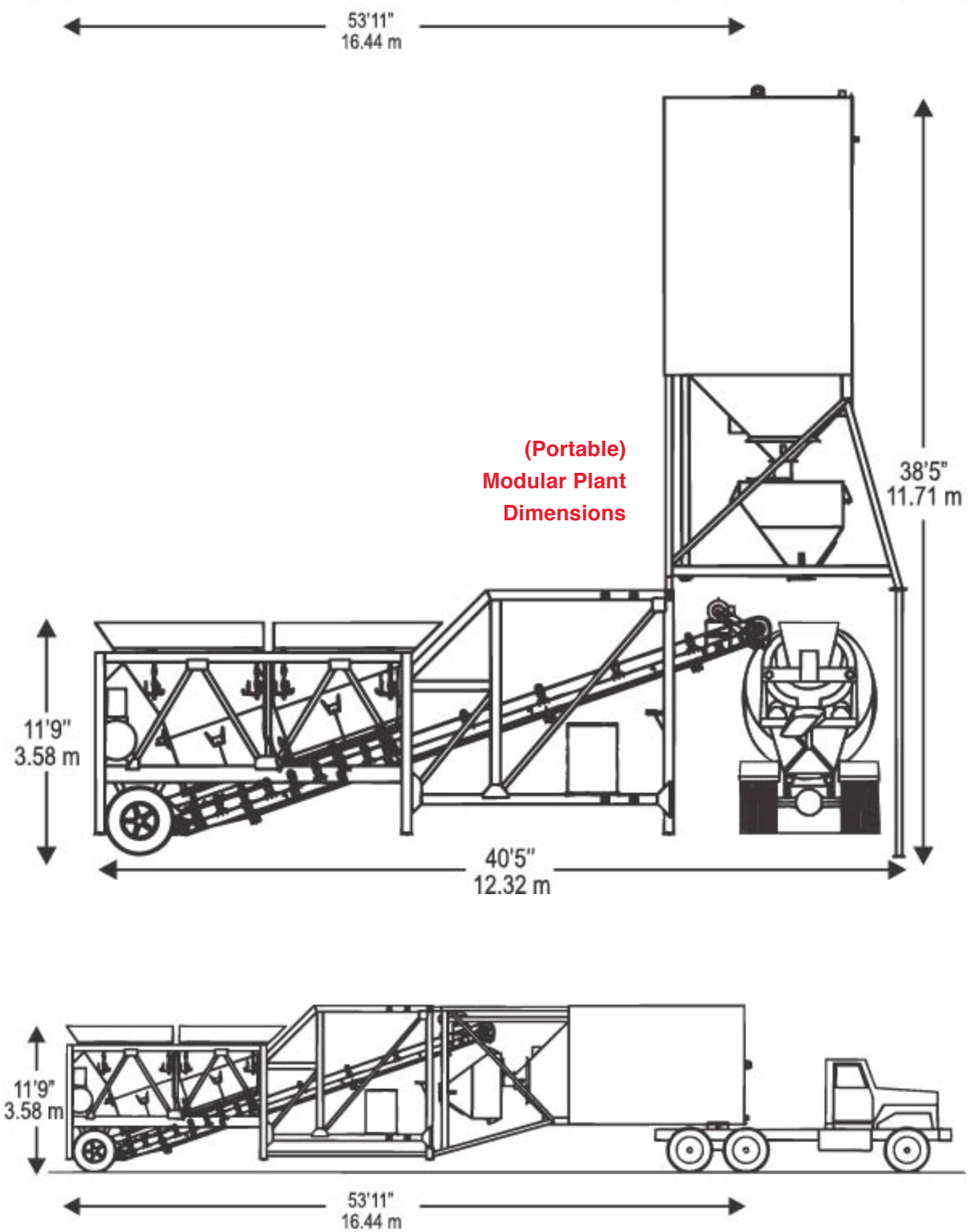
A command batch system operates the modular plant automatically, achieving homogenization and guaranteeing the necessary properties in different mixes, regardless of the required volume.

Available additives:

- Accelerator
- Retardant
- Flux
- Water reducer
- Air entrainment
- Reinforcement fiber



Normas y especificaciones aplicables:	CONCEP TO	NORM A MEXICAN A
	Cemento Portland	NMX-C-414
	Agregados	NMX-C-111
	Agua	NMX-C-122
	Aditivos	NMX-C-255
	Resistencia a la Compresión	NMX-C-83
	Revenimiento	NMX-C-156



Not all concrete elements are manufactured on the project site. Some elements are casted, cured and stored in production factories.

These elements are known as precast. The casting process is the same as in the field and the specifications for prefabricated elements are the same or similar to those used for casted elements in the project, optimizing the production conditions making it possible to shorten the deadlines for execution, lowering costs and reducing risks in material deterioration.

When the pieces are built in series and mass repetition they are easy to assemble and assembly.

Solid precast:

Solid concrete panels with grade 6.000 steel rod-based assembly. They are usually specified as 10 cm thick, with an average weight of 23 kg/m².

Ribbed precast:

Solid concrete pieces armed with 6.000 grade steel and lightened with ribs, giving a total thickness of 15 cm and thickness of 6 cm in the web plate.

Lightweight precast:

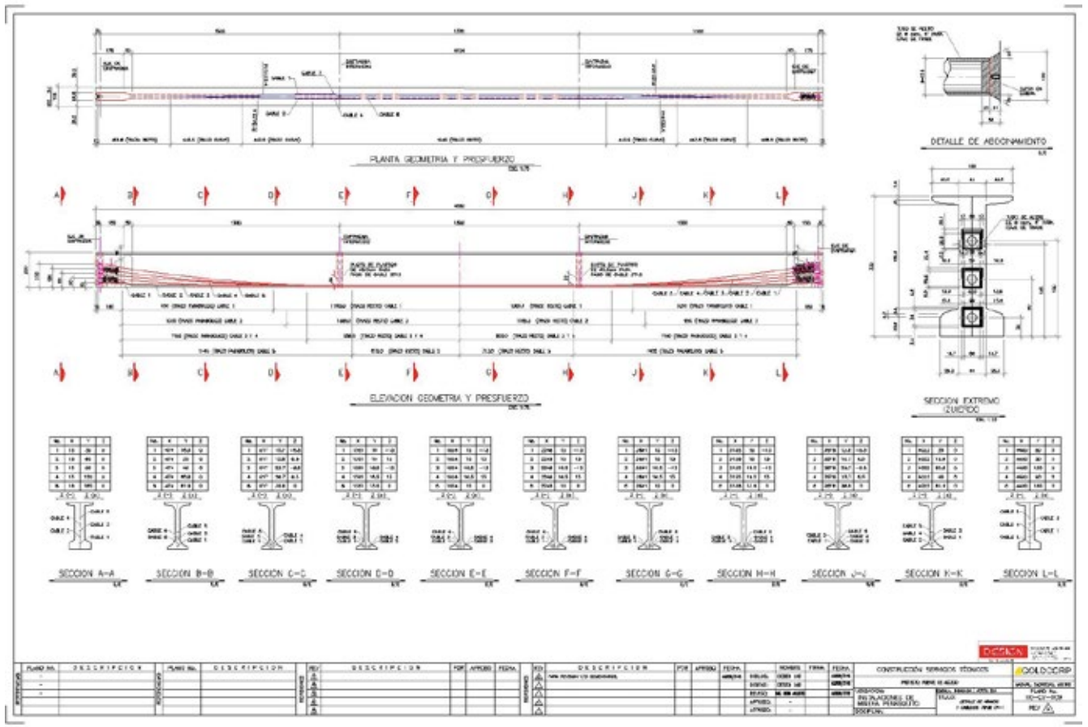
Lightweight concrete parts with polystyrene panels and 14-caliber steel wire structure. Its thickness is 12 cm with an average weight of 190 kg/m².

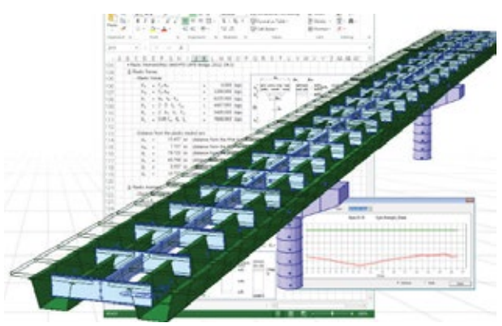
Tilt up walls:

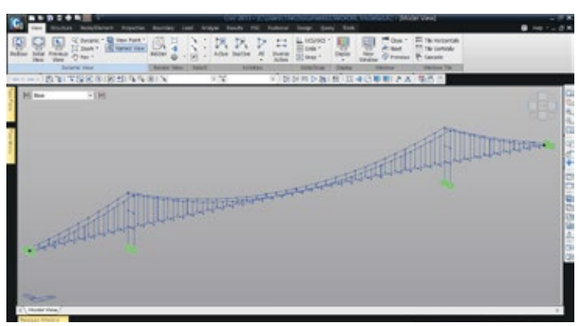
This are large concrete walls or panels that function as structural elements, the steel columns are removed where there is a wall and the framework and rails are connected directly to the tilt up walls.

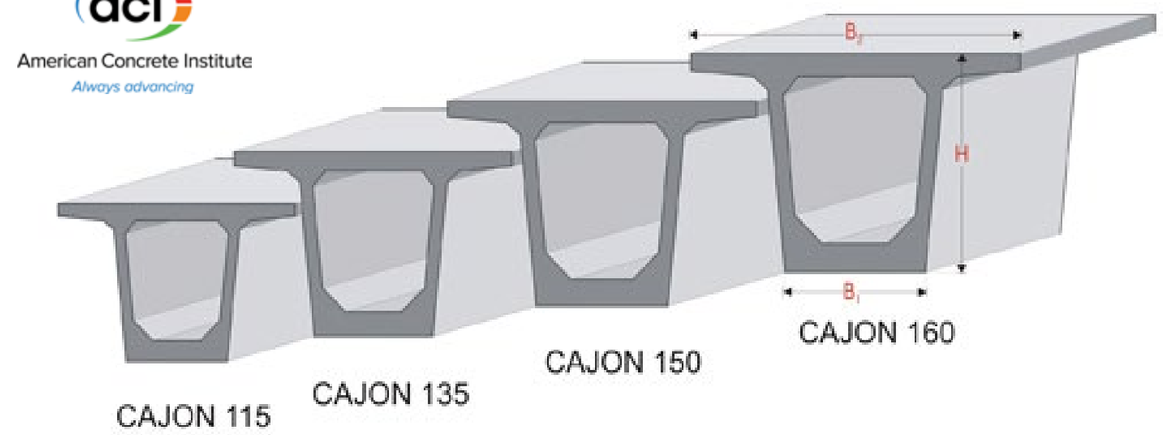
Laboratory:

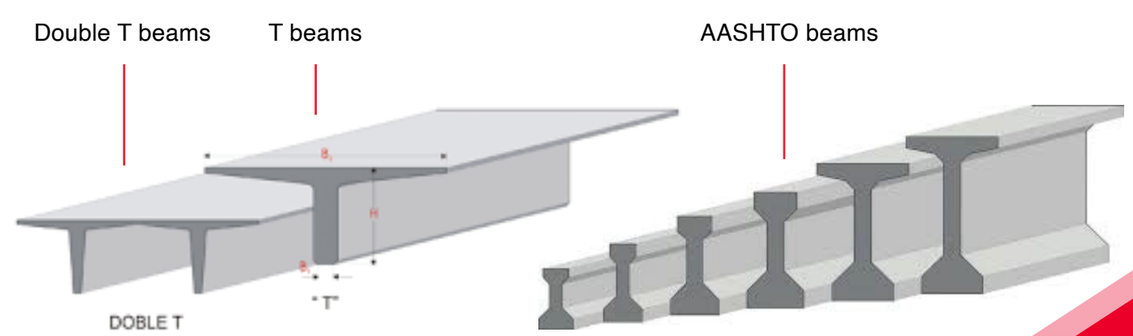
On precast we are provided with a quality control laboratory to assure that the hydraulic concrete that is produced in our plant complies with the specifications of our customers and with the technical regulations. We are committed to the quality of the hydraulic concrete and the delivery service, meeting the expectations, the legal requirements and regulations that result for any application.





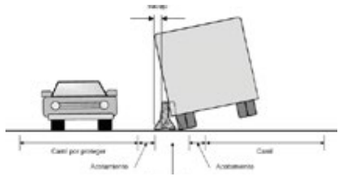


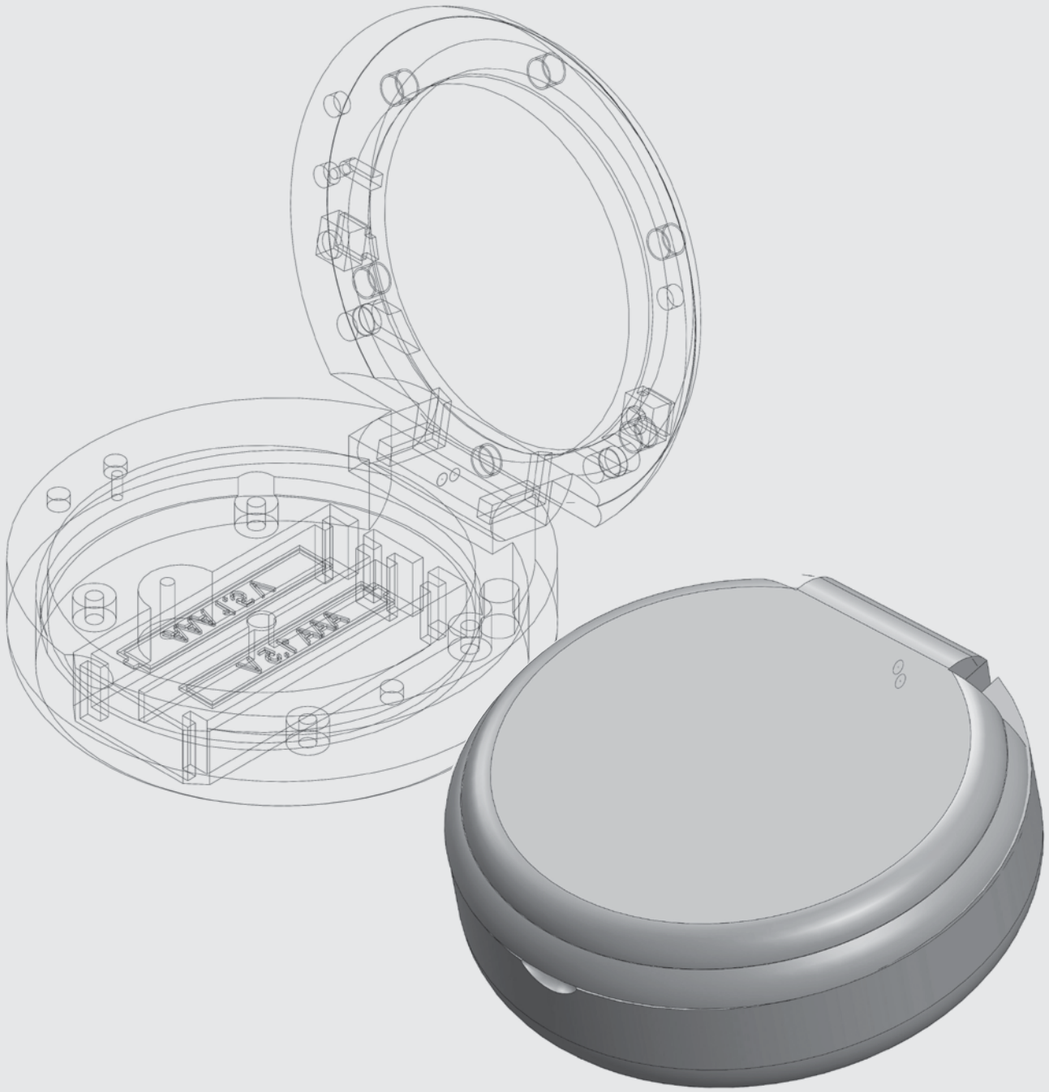


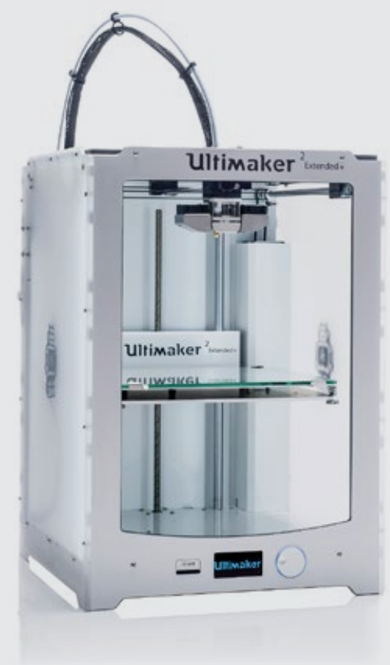


Concrete barriers:

Modular, made of concrete and steel. Used to separate traffic lanes in avenues and highways in order to avoid damage to motorists and human lives. Manufactured according to the regulations of Government, SCT and CAPUFE.







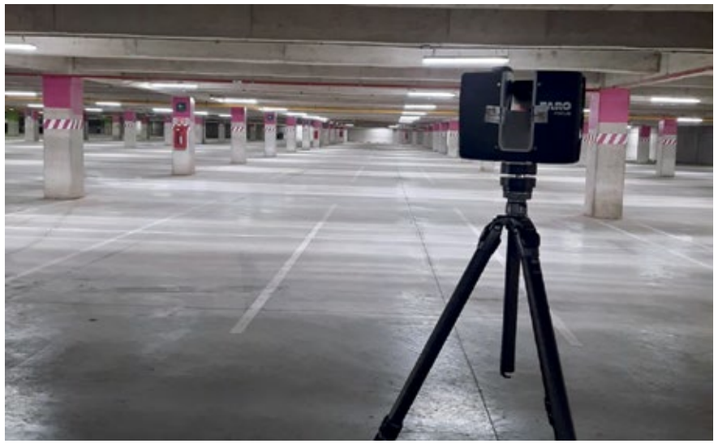
Services

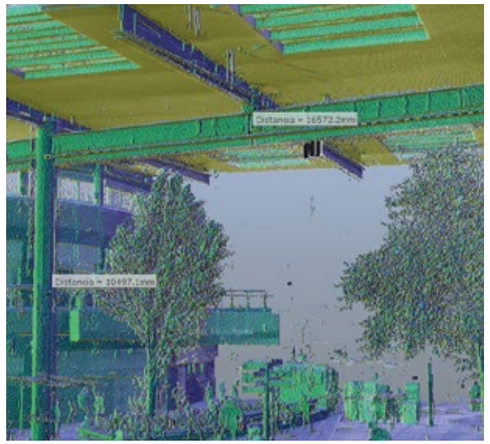
- Patent Documentation
- Production line
- Logistics

- Elaboration of sketches from an idea.

- Prototype creation (real or scaled) in 3d printer.

- Product Development
- Packaging design



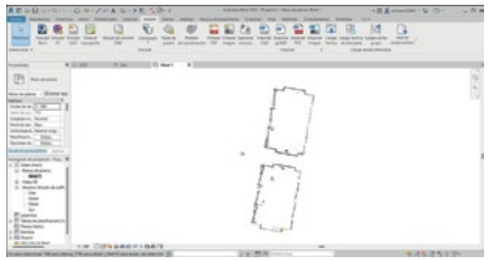


We bet on new technologies and cutting-edge innovative operations. Laser scanning allows us to collect essential information from a space through a point cloud, which provides quick and precise knowledge of the topography, colors, measurements, heights, and angles of a particular location. The laser is capable of capturing up to one million points per second with an error margin of +/- 1 mm and a range of up to 150 meters, regardless of the ambient and lighting conditions.

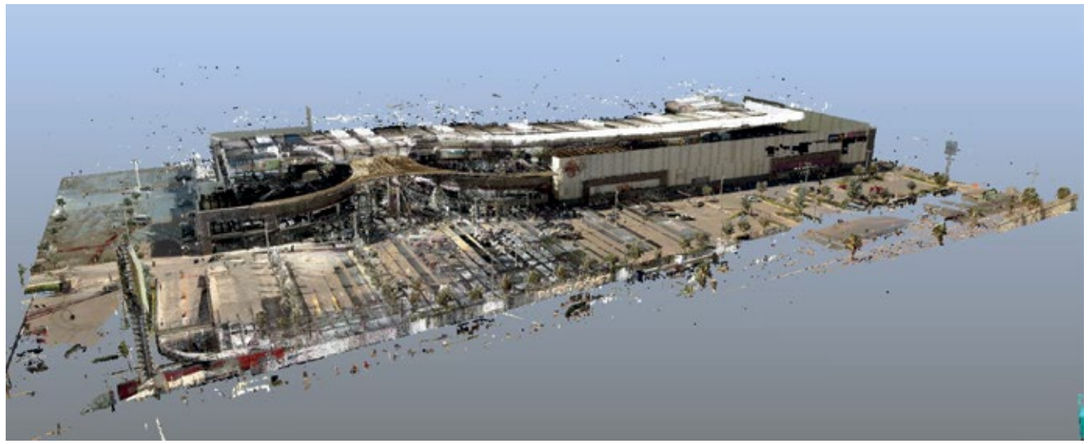
The point cloud is digitized using various software, such as Scene, where data processing and scanner records are generated. This software allows us to create annotations, measurements, and diagrams, and even provides a virtual tour of the scanned area. Clients can effortlessly observe the survey and areas or objects of interest. Another service we offer is point cloud modeling in Autodesk Revit, which provides a three-dimensional model of the current state of the location. This model can be reviewed repeatedly from different perspectives, including plans, sections, elevations, isometrics, and perspectives. Its applications range from analyzing facades or isolated elements to complete buildings, whether under construction or already completed.

By incorporating Building Information Modeling (BIM) and Lidar scanning, we can monitor construction for quality control, assess current details for rehabilitation or restoration projects, and identify potential clashes between installations or structures to streamline processes and prevent errors.

Currently, this system is not limited to the architecture and construction industry; it is also applied in industrial, aerospace, mining, archaeological, law enforcement, naval, and technological sectors. It reduces time and costs while providing quality and certainty.



Gallery of 3D Models



Mall outdoor

Mall section

This is a state-of-the-art equipment capable of capturing more than 100 million points per scan. The time required to perform such a scan is only 5 minutes. Once the millions of points are processed, a three-dimensional model (point cloud) of the structure and surroundings is obtained.

Artificial Intelligence Lab

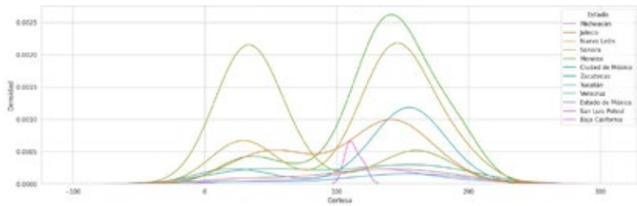
Analysis of variables and Development of Machine Learning Models.

In the current era of technology and data processing, the analysis of variables and machine learning models play a fundamental role in data-driven decision-making. These powerful tools allow us to extract knowledge and hidden patterns from vast datasets, enabling informed decision-making in various fields such as e-commerce, medicine, finance, and many others.

Variable analysis is a crucial process in data preparation and exploration before applying machine learning techniques. It involves identifying and selecting the most relevant variables for the problem at hand. By understanding which variables have a significant impact on the desired outcome, we can optimize the performance and efficiency of machine learning models.

Once the variable analysis is completed, we move on to the construction and training phase of machine learning models. These models are mathematical algorithms that can learn and improve automatically from data without being explicitly programmed. There are different types of machine learning models, and the choice of the appropriate model depends on the problem being addressed and the type of data available.

Some of the most common machine learning models include:



Linear Regression: Used to predict continuous numerical values based on the linear relationship between input variables and the target variable.

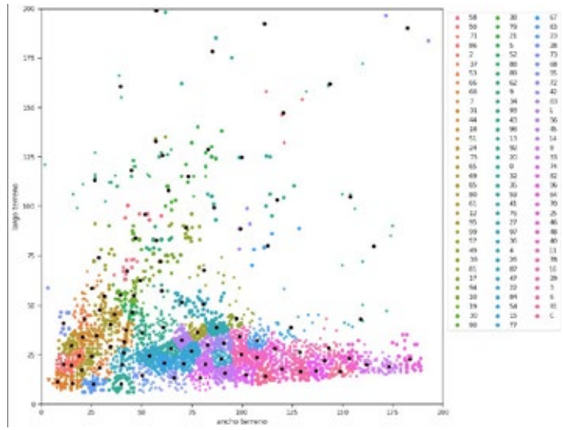
Decision Trees: Hierarchical decision structures constructed from data. They allow classification or prediction of an outcome by applying a series of decision rules based on data characteristics.

Support Vector Machines (SVM): Models used for classification and regression problems. They seek to find the best possible separation between different data categories.

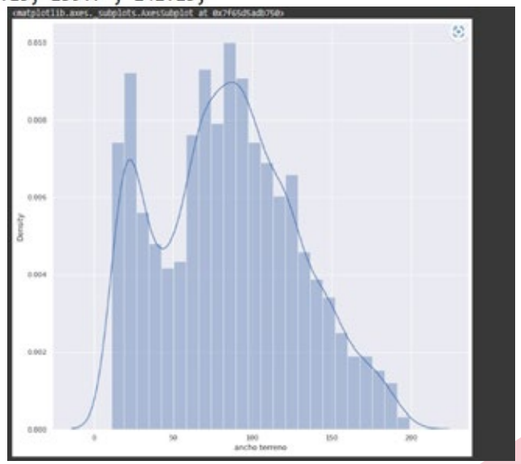
Neural Networks: Inspired by the functioning of the human brain, these networks consist of interconnected layers of nodes (neurons) that process and transmit information. They are particularly effective for complex pattern recognition tasks.

Random Forests: Sets of decision trees combined to achieve more robust and accurate predictions. Each tree in the forest votes for a classification or prediction, and the class with the most votes is chosen as the final result.

These are just some examples, and there are many other machine learning models available, each with its own strengths and specific applications.



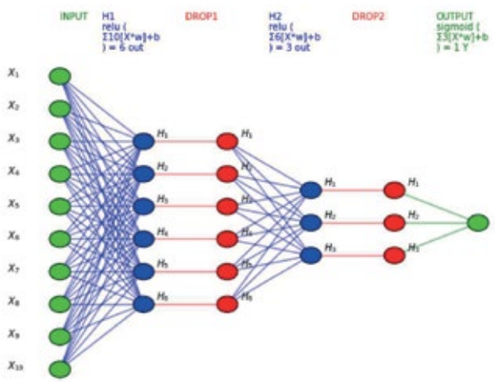
```
 81.6 ,  84.15,  86.7 ,  89.25,  91.8 ,  94.35,  96.9 ,  99.45,
102.  , 104.55, 107.1 , 109.65, 112.2 , 114.75, 117.3 , 119.85,
122.4 , 124.95, 127.5 , 130.05, 132.6 , 135.15, 137.7 , 140.25,
142.8 , 145.35, 147.9 , 150.45, 153.  , 155.55, 158.1 , 160.65,
163.2 , 165.75, 168.3 , 170.85, 173.4 , 175.95, 178.5 , 181.05,
183.6 , 186.15, 188.7 , 191.25, 193.8 , 196.35, 198.9 , 201.45,
204.  , 206.55, 209.1 , 211.65, 214.2 , 216.75, 219.3 , 221.85,
224.4 , 226.95, 229.5 , 232.05, 234.6 , 237.15, 239.7 , 242.25,
```



Machine Learning focused on real estate development.

We use machine learning techniques to develop predictive models that analyze a wide variety of variables, such as location, project features, construction material prices, market conditions, and historical data from similar projects. These models learn from patterns and trends present in the data to generate more accurate and reliable cost predictions.

Our approach includes the following key steps:



Data collection and preparation: We gather relevant data from previous real estate projects, market sources, and other pertinent datasets. Then, we undergo a rigorous process of cleaning and transforming the data to ensure it is consistent and ready for analysis.

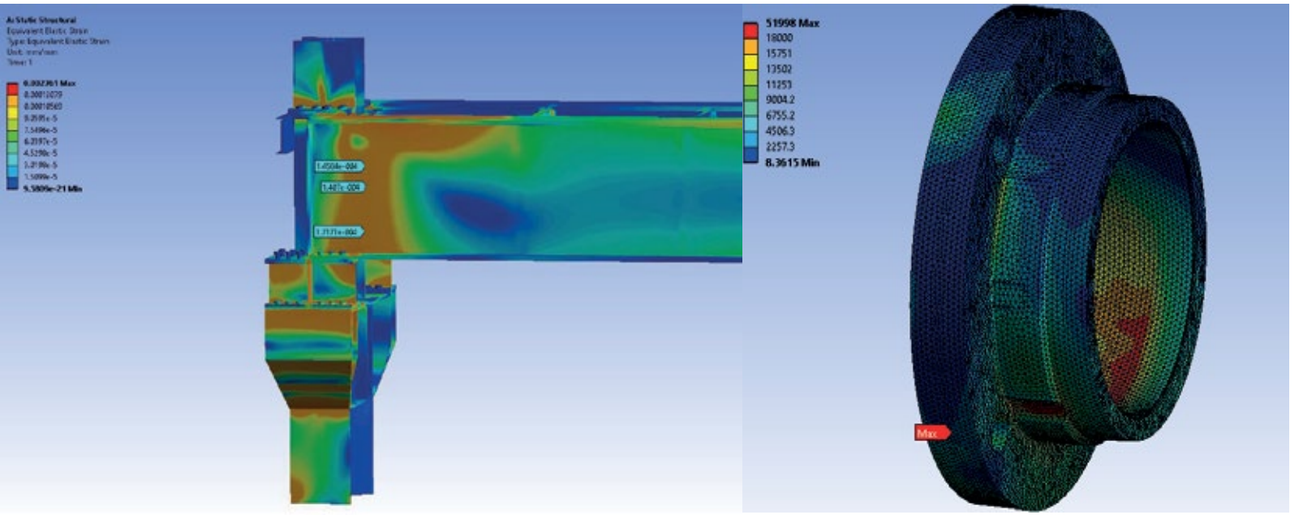
Feature selection and extraction: We identify key variables that may influence real estate development costs, such as geographic location, project size, and market conditions. We use exploratory data analysis techniques to understand the relationship between these variables and costs.

Construction and training of machine learning models: We apply different machine learning algorithms, such as linear regression, random forests, or neural networks, to develop models that can predict real estate development costs. These models are trained using historical datasets and adjusted for maximum accuracy and performance.

Evaluation and validation of models: We assess the accuracy and robustness of the models using cross-validation techniques and appropriate evaluation metrics for regression problems. We compare the models' predictions with real data to ensure they are reliable and useful for decision-making.

Deployment and monitoring: Once we have developed a reliable cost prediction model, we integrate it into your business workflow. We also provide ongoing monitoring to adjust and improve the model as new data becomes available.

Our machine learning-based cost prediction solution for real estate development gives you a strategic advantage by enabling informed decision-making and reducing risks associated with investing in real estate projects.



Cloud Computing

In Instate, we utilize cloud computing for conducting structural simulations, and for this purpose, we use AWS along with Ansys.

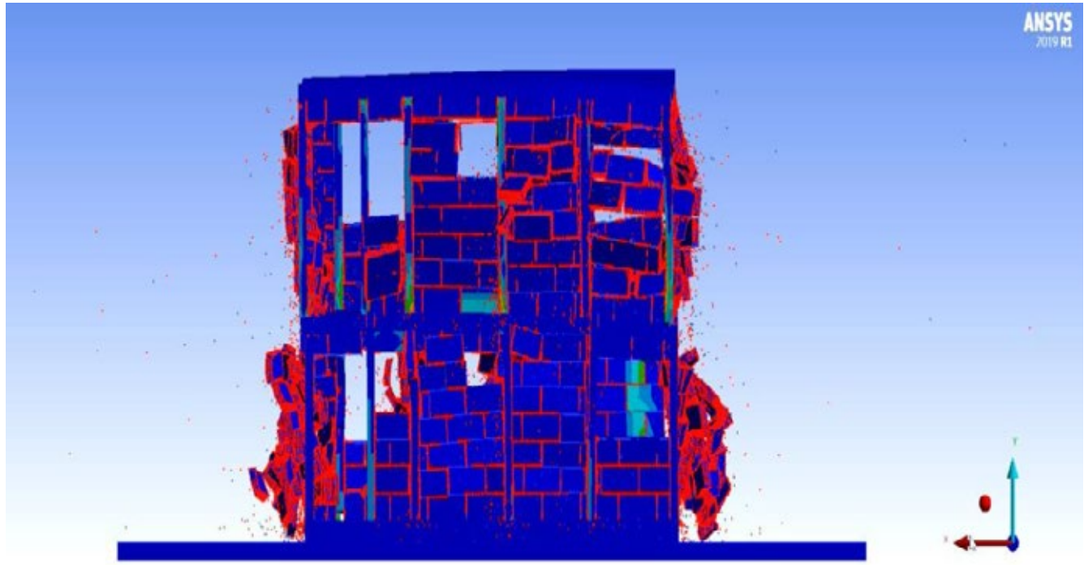
In recent years, cloud computing has revolutionized the way companies store, process, and access their data. One of the leading cloud platforms is Amazon Web Services (AWS), which has played a crucial role in the widespread adoption of this technology. In this article, we will explore what cloud computing is and how AWS has contributed to its growth and success.

Cloud computing is a model that enables organizations to access computing resources over the Internet in a flexible and scalable manner. Instead of maintaining local servers, companies can leverage cloud services to store data, run applications, and perform analytics, among other functionalities. This eliminates the need to invest in expensive infrastructure and allows companies to focus on their core business.

AWS has demonstrated its versatility and scalability by serving clients from various industries and sizes, ranging from emerging startups to large enterprises. Organizations can take advantage of AWS services to host websites, deploy mobile applications, store and analyze vast volumes of data, and build complex enterprise solutions. Additionally, AWS offers a variety of management and monitoring tools that facilitate resource management and optimization in the cloud.

The adoption of AWS and cloud computing, in general, has generated numerous benefits for companies. Firstly, it enables quick and secure access to data anytime and from anywhere, enhancing collaboration and productivity. Moreover, the scalability of cloud services allows companies to swiftly adjust their resources according to changing needs, resulting in greater efficiency and agility.

Security is also a key concern in cloud computing, and AWS has invested significantly in ensuring the protection of its customers' data. The platform provides a wide range of security services, such as firewalls, data encryption, and constant monitoring, which provide peace of mind to companies relying on its services.

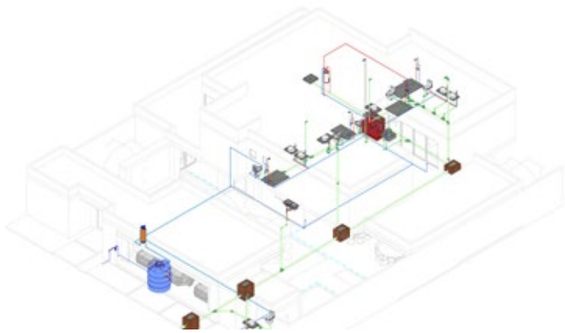


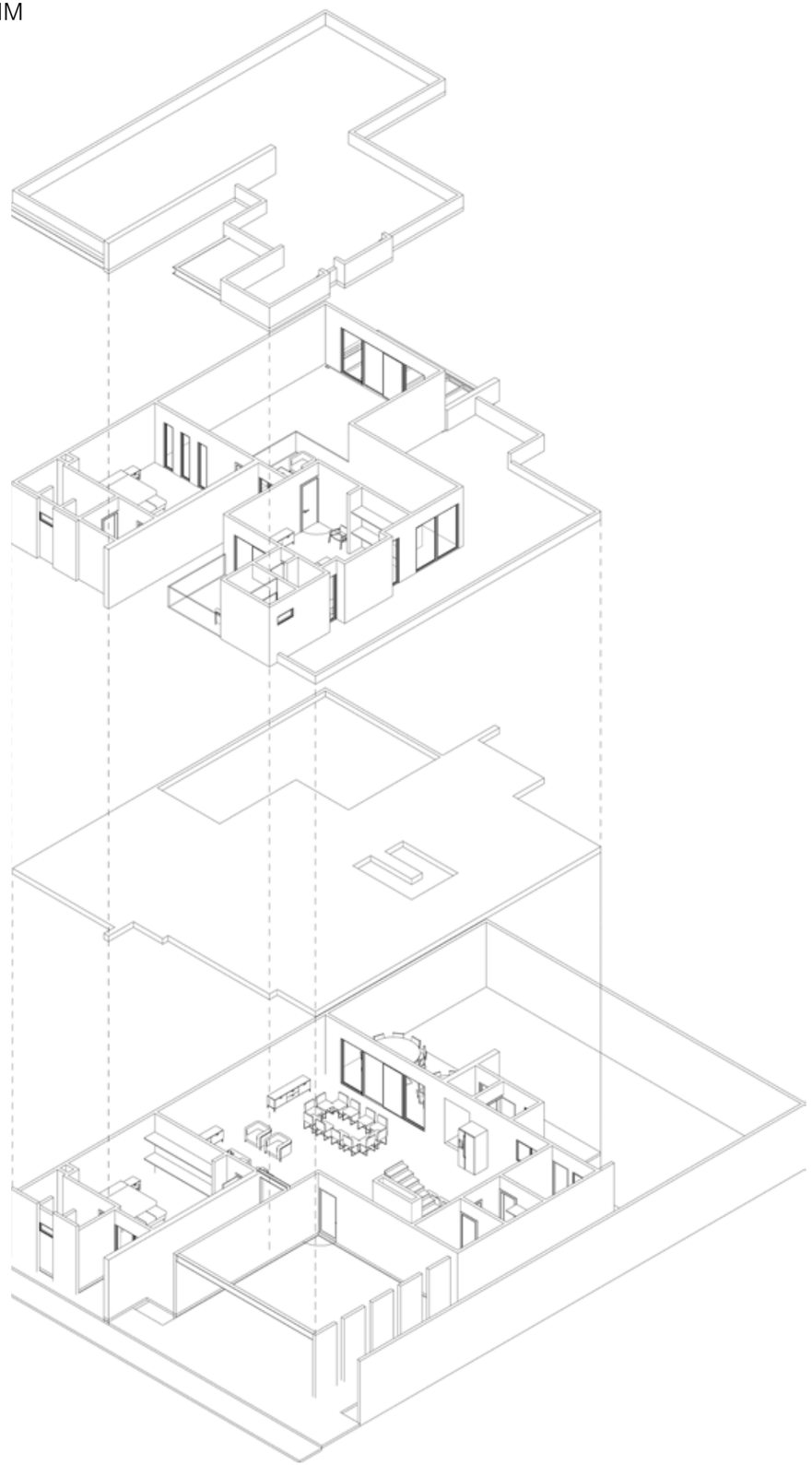
/ Building Information Modeling: BIM

BIM, acronym for “Building Information Modeling,” is a working methodology and technology used in the construction and architecture industries. BIM refers to a digital process that allows for the creation, visualization, sharing, and management of detailed and accurate information about a construction project in all its stages.

The BIM approach uses 3D digital models that contain geometric, material, cost, time, and other relevant aspects of the project. These models are collaborative and enable the integration of information from multiple disciplines, such as architecture, structural engineering, mechanical, electrical, hydraulic, among others.

BIM is a crucial technology in construction projects because it enhances coordination, efficiency, and communication among teams, reduces costs, facilitates visualization and decision-making, and provides a valuable database for asset management. This leads to higher quality projects and a more efficient and cost-effective construction process.





/ Some of our customers.

AHMSA

PEÑOLES

UNIVERSIDAD NACIONAL AUTÓNOMA DE MÉXICO

COLIMA

PROTECCIÓN CIVIL TORREÓN

LALA

TRADECO Grupo

Torreón

MONTIAC, S.A DE C.V.
TORREON PLANT
MEXICO

JOHN DEERE

Ferromex

GRUPO MODELO MEXICO

GAMHERSA S.A. DE C.V.

GRUPO SIMSA

GOLDCORP

SIEMENS

CROCSA
Contratistas Generales

alora
Casas con valor

INDUSTRIALIZACIONES GUMEX

DEACERO

SuKarne

Instituto Nacional de Antropología e Historia

ICA FLUOR

GRUPO MATERIAS PRIMAS

MADERO/CO

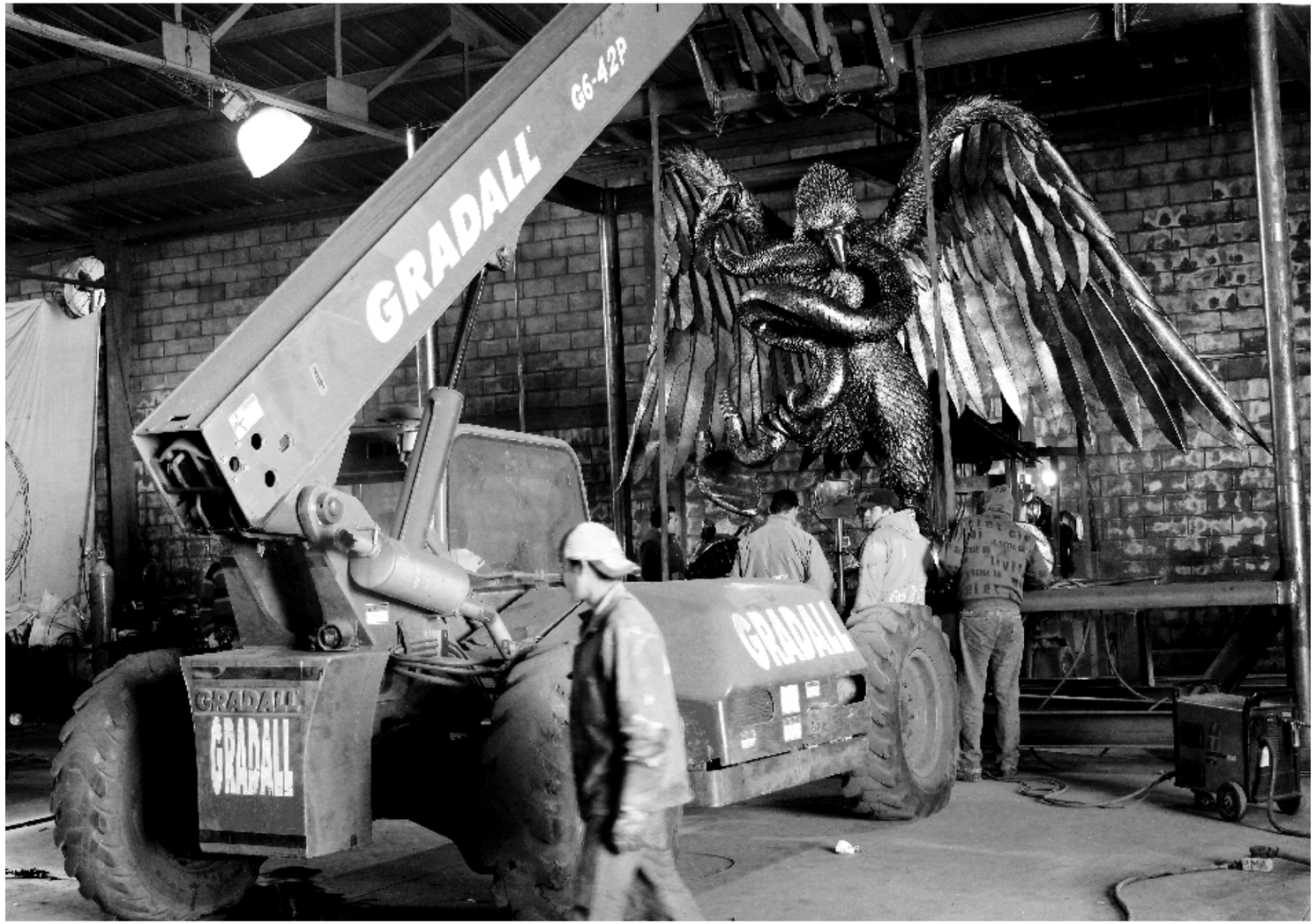
axioma

DIRYGE

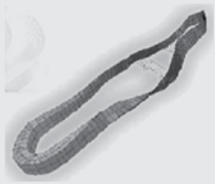
LINAMAR
Power to Perform

HERCULES
GRUPO CONSTRUCTOR

– Aerodynamics laboratory, design and construction of steel and concrete structures.



– Structural design "Águila Monumental" for the official presidency Los Pinos.



– Aerodynamic study insculpture
“El Manto de la Vírgen”

40 m. Height

/ Tel. +52 [871] 7.20.90.37
/ **Torreón, Coah.**

admin@designconstrucciones.com
Info@designconstrucciones.com
www.designconstrucciones.com