STRUCTURAL

PORTFOLIO EDITION

CONSUCONSTRUCT

PORTFOLIO

BEST SELECTED WORK

Ing. David Chinchilla

STRUCTURAL ENGINEER · CICH 8222

EDUCATION

CICH 8222
Colegio de Ingenieros Civiles de Honduras — active license. Engineer of record; signs and stamps structural drawings.

Ingeniero Civil
Universidad Tecnológica Centroamericana (UNITEC), Honduras — degree in Civil Engineering.

UNDP Registered Supplier
Honduras — active registration for institutional / donor-funded works.

TOTAL EXPERIENCE

12+ years on site · 6 years as Founder / Technical Director

ABOUT ME

Licensed civil/structural engineer (CICH 8222), engineer of record on 14 design-calculation engagements out of 135 clients, with 12 years on site and 6 years running ConsuConstruct S. de R.L. in Honduras. Structural engines for ACI 318-19, AISC 360-16 LRFD §D–H+J and CHOC-08 Honduras seismic design coded from scratch — 22/22 unit tests — plus an ETABS 22 MCP bridge of my own for 3D modal / P-Delta verification. Chain delivered every time: soil study → ETABS model → signed design-calculation report → drawings with reinforcement → built work.

The same license runs the estimating and BIM pipeline behind every project I sign: EstimaStruct, a construction ERP I authored (1,145 partidas / 7,344 insumos / 367 unit-rate resources / 90 CSI chapters), and Brain, a LangGraph orchestrator (299-entry tool registry, cosine retrieval) — tools built to keep the site → Revit model → structural analysis → automated estimate → bank budget chain in one hand, not the other way around.

SOFTWARE EXPERIENCE

Structural codes ACI / AISC / CHOC-08	●●●●●●●●●●●	22/22 unit tests
ETABS 22 (own MCP bridge)	●●●●●●●●●●○	C# stdio connector
Revit — structural author / developer	●●●●●●●●●●○	2,000+ hrs · 1,147 models
PostgreSQL + pgvector (estimating engine)	●●●●●●●●●●○	68 tables · 7 schemas
FastAPI / Python (EstimaStruct backend)	●●●●●●●●●●○	23 routers · 79 modules

VERIFIED TRACK RECORD

135

REAL CLIENTS — VERIFIED ENGAGEMENTS 2019–2026

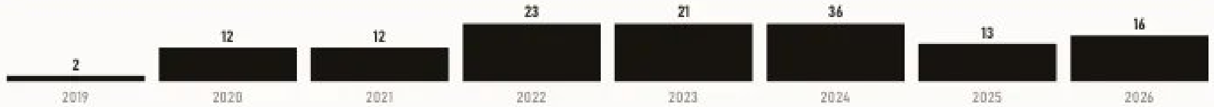
6,317 FILES DELIVERED	**26.34 GB** OF WORK DELIVERED	**7 YEARS** OF CONTINUOUS OPERATION	**24** WITH FORMAL CC CODE

99 closed / historical · **21** independent · **12** active now

SERVICE MIX

Administration / contracts / document support	100 cl · 74%
Renders / visualization / 3D assets	81 cl · 60%
Budgets / quantity take-off	72 cl · 53%
Drawings / technical documentation	69 cl · 51%
Site photos / site visits / progress	42 cl · 31%
BIM / Revit / 3D models	36 cl · 27%
Permits / municipal / bank	16 cl · 12%
Structural calculations / design reports	14 cl · 10%

NEW CLIENTS PER YEAR



LARGEST ENGAGEMENTS BY VOLUME

629	600 MB	commercial engagement **CC-142**	2026
586	182 MB	commercial engagement	2025
321	164 MB	extended commercial engagement	2021–2024
318	1.93 GB	single-family residence — structural calculation + BIM + budget **CC130**	2024–2026
303	4.37 GB	single-family residence — design + technical documentation **CC-135**	2024–2026
299	843 MB	independent professional engagement	2020–2023
284	1.00 GB	extended residential engagement	2019–2025
227	1.04 GB	**Fittacori** — structural calculation **CC135**	2024–2026
165	2.44 GB	residential engagement	2023–2025
153	727 MB	**Gasolinera Puma Otoro**	2023–2025

STRUCTURAL CALCULATION — 14 VERIFIED ENGAGEMENTS

01	single-family residence — structural calculation + BIM	CC130	02	Fittacori — structural calculation	CC135
03	single-family residence — structural calculation	CC-135	04	commercial project — structural calculation	CC137
05	structural calculation — private commission		06	design calculation report — independent client	
07	structural design — confidential commission		08	structural calculation — independent client	
09	design calculation report — private commission		10	structural design — independent client	
11	Foundation Drawings		12	structural calculation — confidential commission	
13	design calculation report — independent client		14	Proposals — design calculation report	CC-2024

SELECTED PROJECTS — VIEW LIVE

Villareal 250 m²
(https://consuconstruct.com/es/projects/villareal)

Gasolinera Puma Otoro 6118 m²
(https://consuconstruct.com/es/projects/gasolinera-puma-otoro)

Project Domes 200 m²
(https://consuconstruct.com/es/projects/project-domes)

PROFESSIONAL CAREER

TRACK RECORD — 12 YEARS

05 PROFESSIONAL CAREER (12 YEARS)

2013–2014

Purchasing and Administration — Constructora Briceño

Vendor negotiation and administrative control. Learned the Honduran supply chain: cement, reinforcing steel, aggregates, formwork.

2014–2016

Resident Engineer's Assistant — Hyatt Hotel

Large-scale hotel construction: reinforced concrete structure, MEP rough-in, finishes. RFIs, submittals, change orders.

2016–2018

General Services Coordinator — Corporación MCC

Multi-site maintenance and minor capex. Quotes, purchase orders, supervision. Coordination across trades.

2019

Senior Estimator (remote) — Backmanage HN

Quantity take-offs and budgets for U.S. general contractors. First contact with CSI MasterFormat and unit-price catalogs.

2020–present

Founder and Technical Director — ConsuConstruct S. de R.L.

135 clients end to end. Engineer of record: signs and seals structural drawings.

06 STRUCTURAL ENGINEERING

CICH 8222 — Colegio de Ingenieros Civiles de Honduras, active license. Engineer of record.
14 engagements with a design calculation report out of 135 clients.
Codes coded in-house in Python: **ACI 318-19 · AISC 360-16 LRFD §D–H + §J · CHOC-08 Honduras**
22/22 unit tests in the concrete engine.
ETABS 22 with a purpose-built MCP bridge in C# — 3D modal, P-Delta, seismic.

Chain delivered: soil study → ETABS model → signed design calculation report → drawings with reinforcement → built work.

01 TRACK RECORD (HEADLINE FIGURE)

135 real clients · 6,317 files delivered · 26.34 GB · 2019–2026
7 years of continuous operation · 24 with a formal CC code
99 closed · 21 independent · 12 active now

Verified against the client file index, not estimated.

03 GROWTH

New clients per year: 2019 · 2 — 2020 · 12 — 2021 · 12 — 2022 · 23 — 2023 · 21 — **2024 · 36** — 2025 · 13 — 2026 · 16

02 SERVICE MIX (ACROSS 135 CLIENTS)

SERVICE	CLIENTS	%
Administration / contracts / document support	100	74%
Renders / visualization / 3D assets	81	60%
Budgets / quantity take-off	72	53%
Drawings / technical documentation	69	51%
Site photos / site visits / progress	42	31%
BIM / Revit / 3D models	36	27%
Permits / municipal / bank	16	12%
Structural calculations / design reports	**14**	**10%**

SERVICES

01

Reinforced Concrete ACI 318-19

Design of beams, columns, slabs and footings under ACI 318-19.

02

Structural Steel AISC 360-16 LRFD

Steel members and connections: tension, compression, lateral-torsional buckling, bolts and welding.

03

CHOC-08 Honduras Seismic Design

Seismic classification, response spectra and storey drift control per CHOC-08.

04

3D Analysis in ETABS

3D modal modeling, P-Delta and seismic verification via a purpose-built MCP bridge in ETABS 22.

05

Foundations

Design of isolated footings, strip footings and foundation slabs.

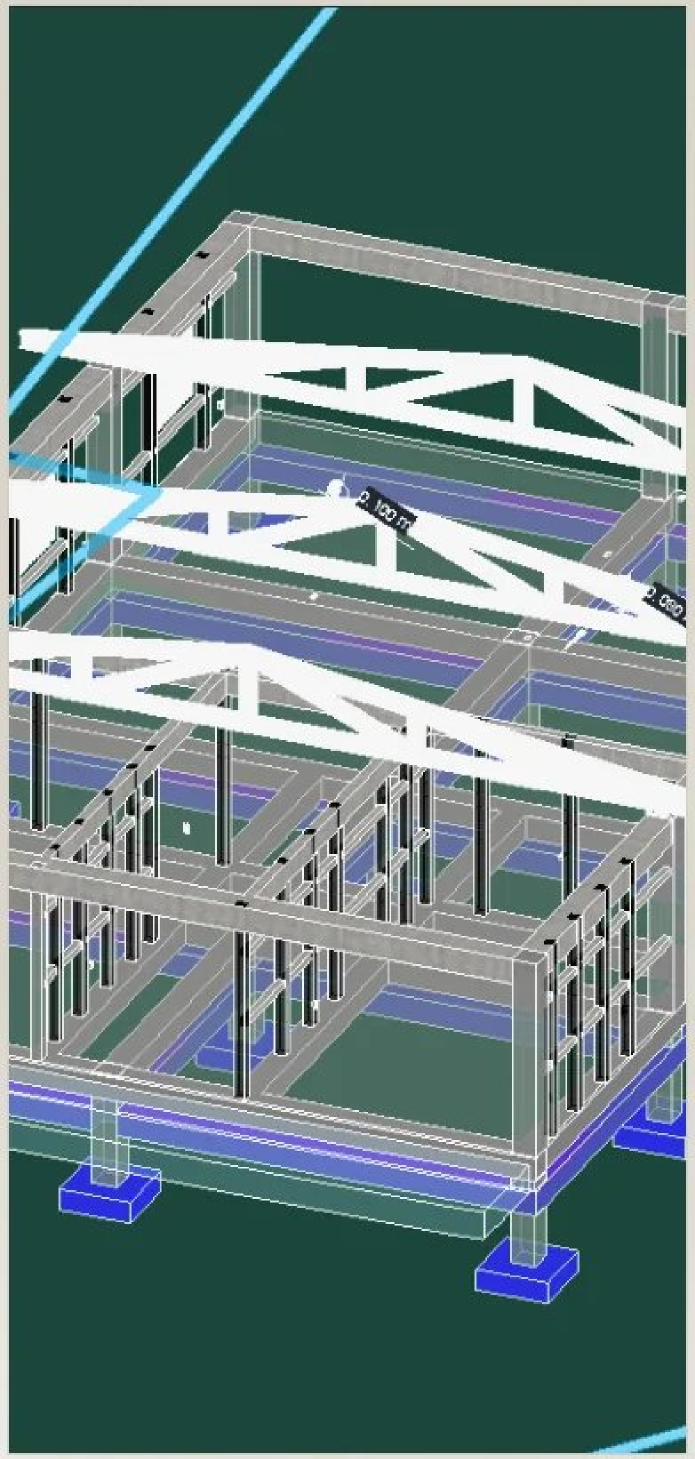
CONTENT

01

CC-135 FITTACORI

TRAINING HALL

BUILT VIEW



STRUCTURAL 3D MODEL

PROJECT DETAILS

Location: Estación Experimental Playitas, Cascabeles, Comayagua, Honduras.
Year: 2025–2026.
Designed by: Ing. David A. Chinchilla — CICH 8222.
Services:

PROJECT INTRODUCTION

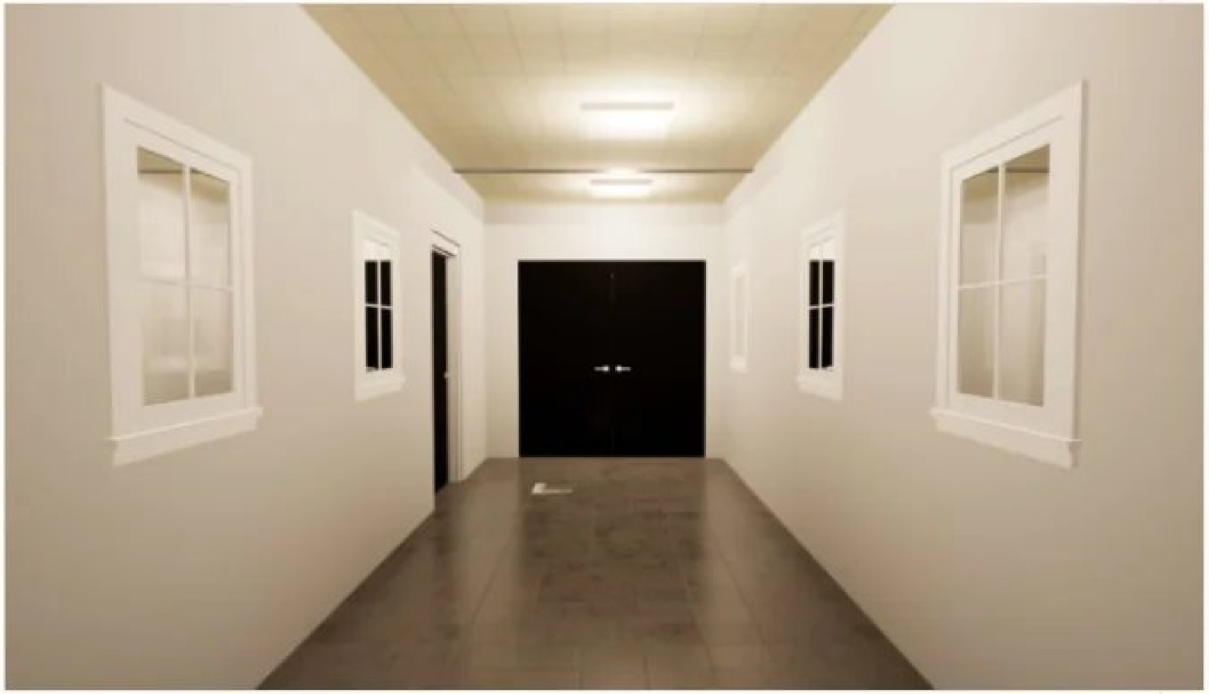
Reinforced concrete frame with 8" reinforced masonry and a steel Pratt truss. Footprint 18.16 × 12.08 m, bays at 4.50 m. Z2 footings 1000×1000×300 mm (9 #6 @ 0.10 o.c.), R5 columns 35×35 cm in 4000 psi concrete, S1 tie beam 35×35, S2/S3 load-bearing bond beams 35×35 with 8 #6 and #4 stirrups @ 0.175. Roof structure in a 6-panel steel Pratt truss with L 3×3×1/4" angles, ASTM F1554 Gr. 36 Ø3/4" J-bolt anchors and E7018 fillet welding. Modeled and verified in ETABS 22 under ACI 318-19; maximum drift 1/969. Built and delivered.

STRUCTURAL DATA

STRUCTURAL SYSTEM	**Concrete frame + 8" reinforced masonry + steel Pratt truss**
CODES APPLIED	**ACI 318-19 · CHOC-08 Honduras**
MAX. STOREY DRIFT	**1/969 (Comb1, X, L2 Bond-beam Level)**
ANALYSIS	**ETABS 22 — 3D model, purpose-built MCP bridge**

CC-135 FITTACORI — DESIGN VS. DELIVERED

RENDER / BUILT — 1/2

	RENDER	BUILT
FACADE		
ENTRANCE HALLWAY		

PORTFOLIO CONSUCONSTRUCT

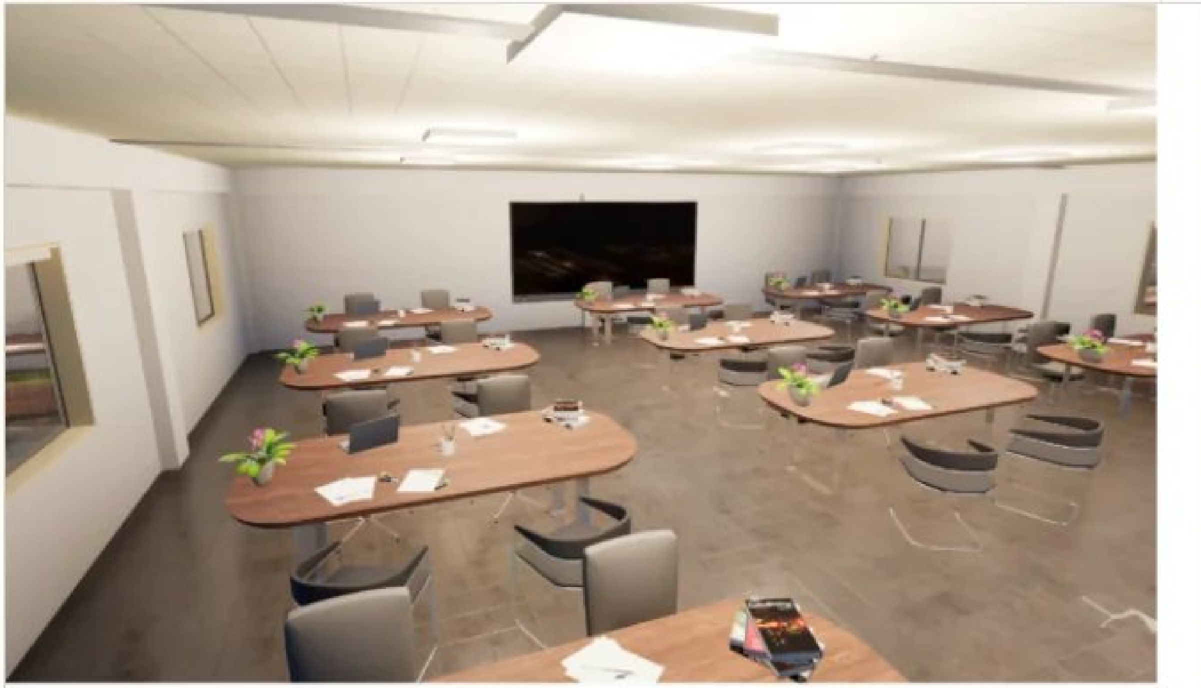
CC-135 FITTACORI — DESIGN VS. DELIVERED

RENDER / BUILT — 2/2

RENDER

BUILT

WORKSHOP CLASSROOM



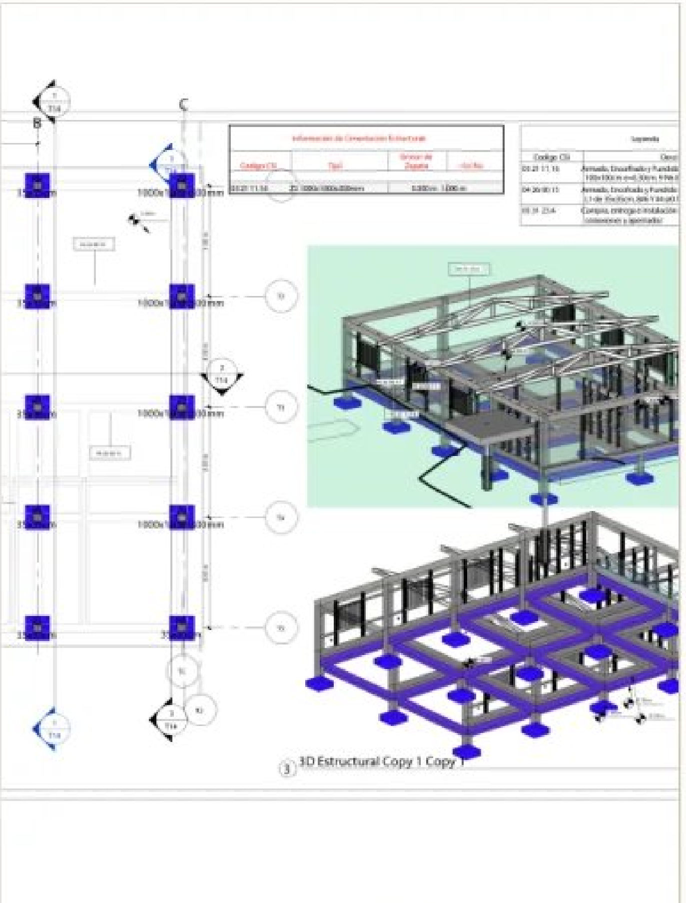
EXTERIOR VIEW

The structural frame spans a footprint of 18.16 × 12.08 m with bays at 4.50 m, in 4000 psi reinforced concrete. The Z2 footings, 1000×1000×300 mm (9 #6 @ 0.10 o.c.), transfer load to 35×35 cm R5 columns.

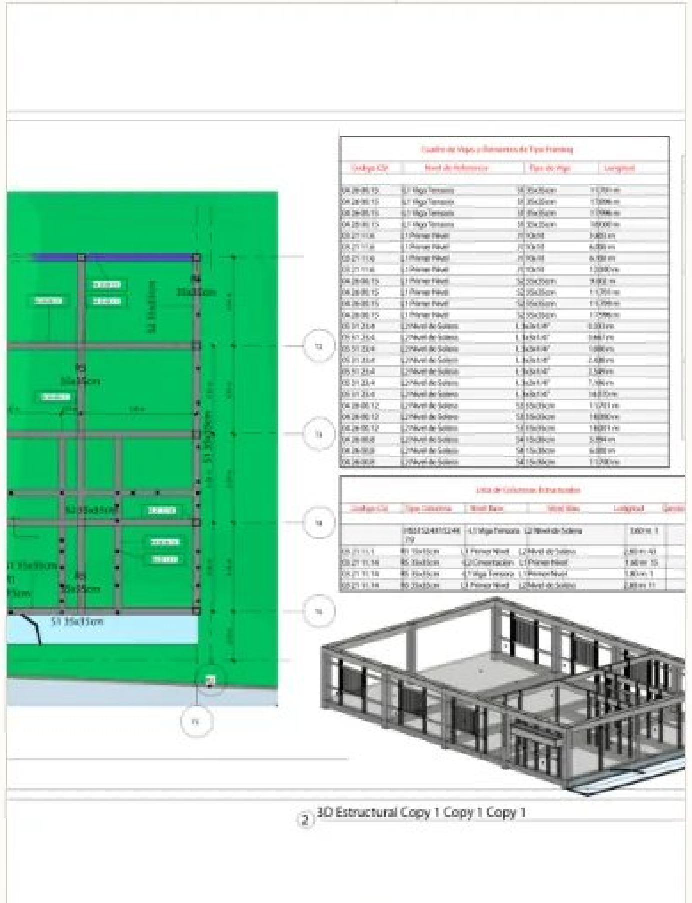
The S1 tie beam (35×35 cm) and the S2/S3 load-bearing bond beams (35×35 cm, 8 #6 and #4 stirrups @ 0.175) close the tie ring at the bond-beam level, the point where ETABS reports the model's most demanding storey drift.

The roof is resolved with a 6-panel steel Pratt truss in L 3×3×1/4" angles, bearing on the concrete frame and anchored with 3/4" diameter ASTM F1554 Gr. 36 J-bolts; the joints are fillet-welded with E7018 electrode.

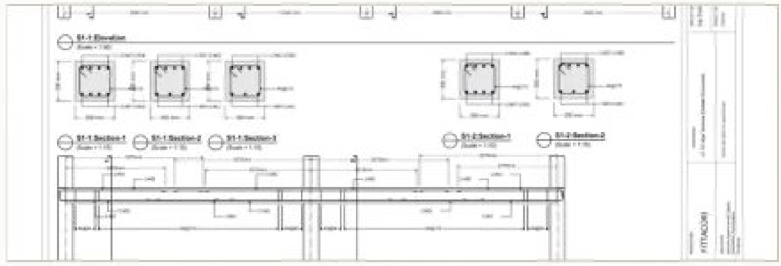
The 3D model in ETABS 22 verifies the assembly under ACI 318-19 and CHOC-08: the maximum storey drift came out at 1/969, well below the code limit. The training hall is built and delivered.



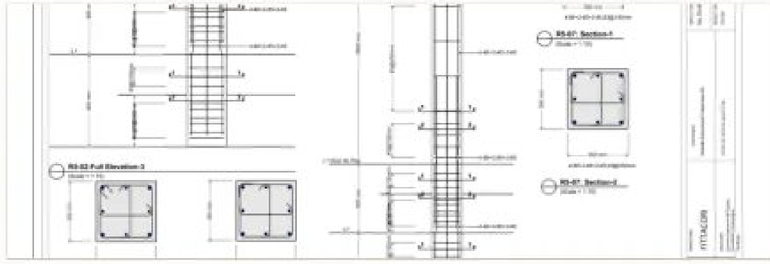
FOUNDATION PLAN



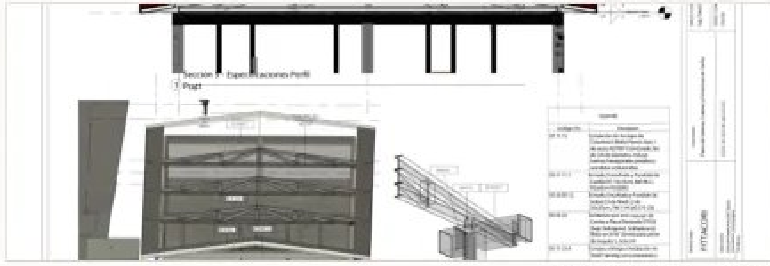
FRAMING PLAN



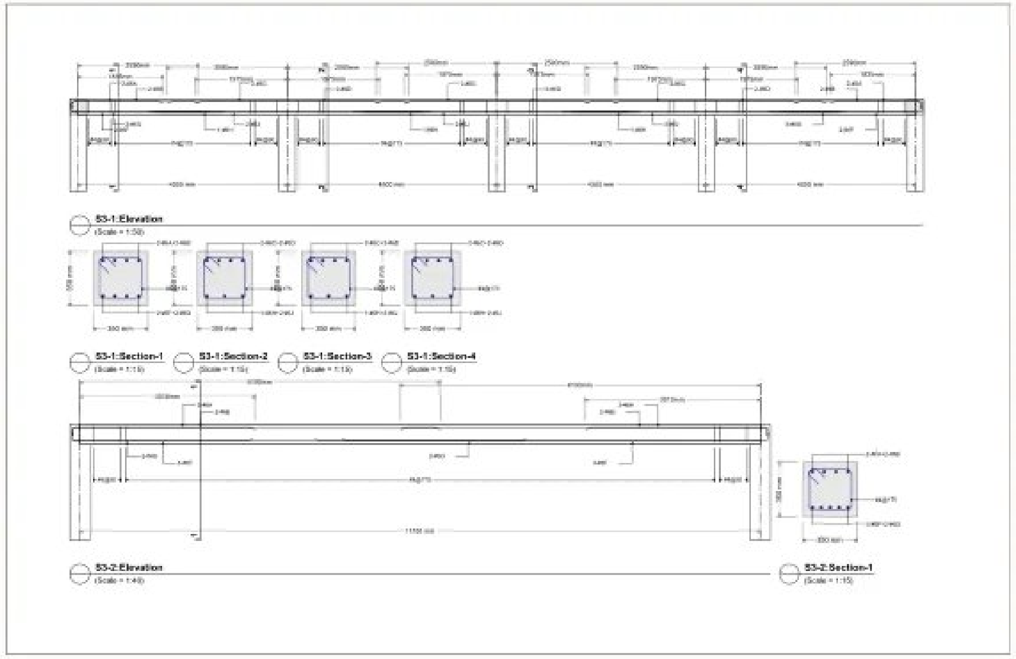
REBAR DETAIL

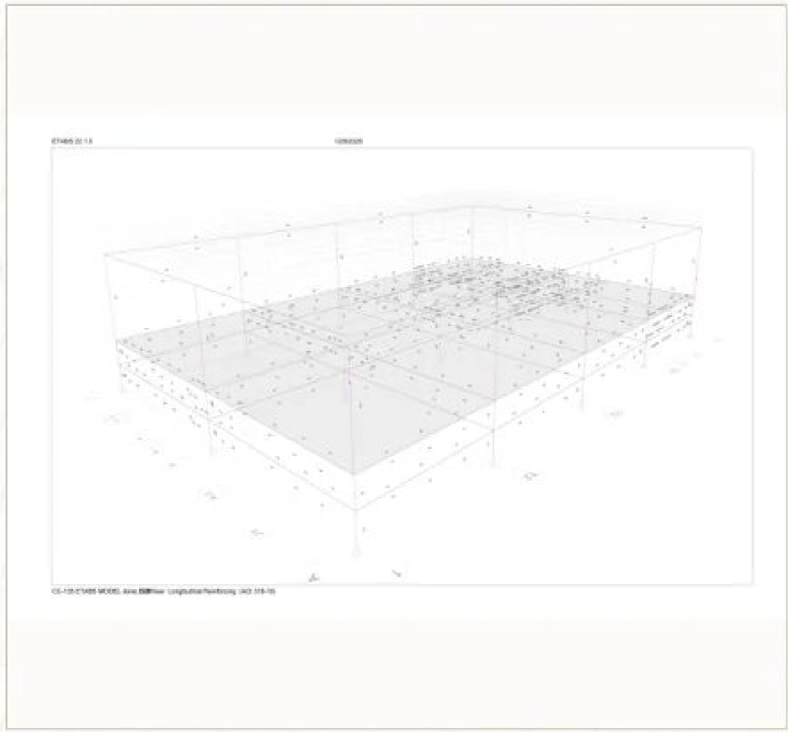


COLUMN DETAIL

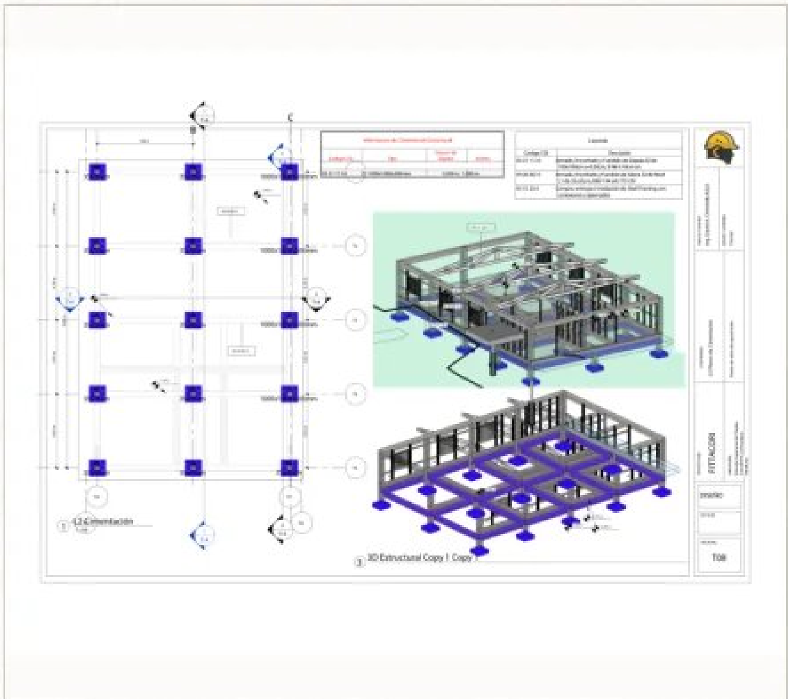


ROOF FRAMING — STEEL



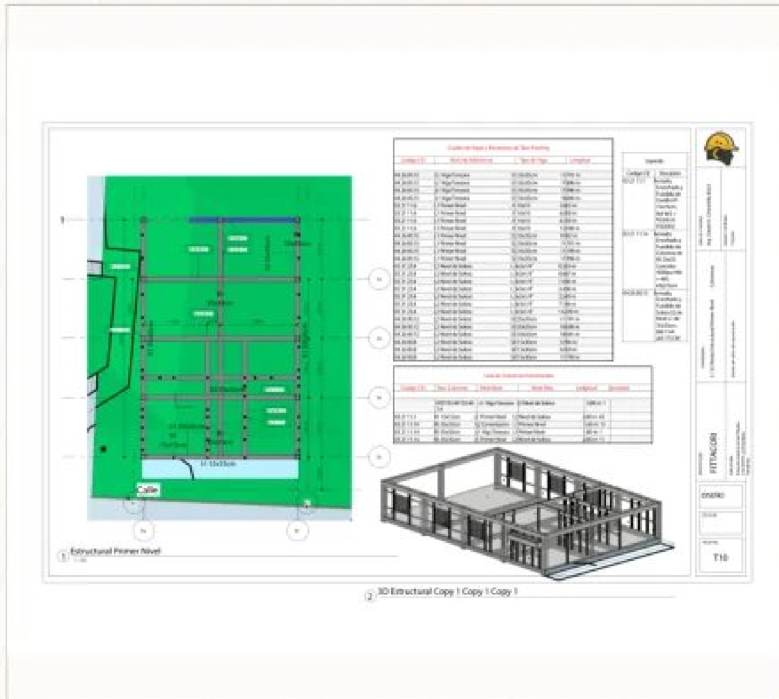


1 — ETABS 3D — LONGITUDINAL REINFORCING



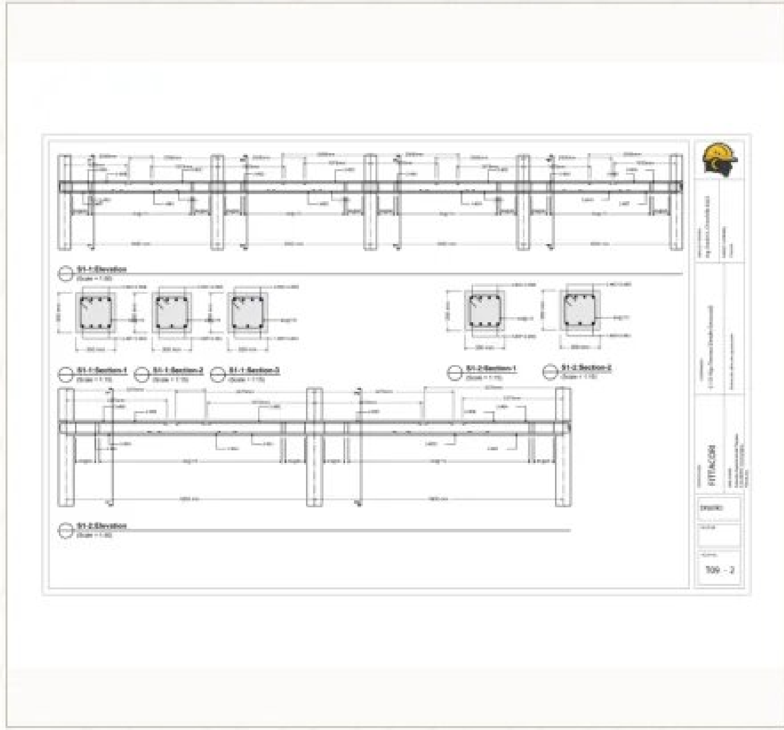
2 — FOUNDATION PLAN

T08

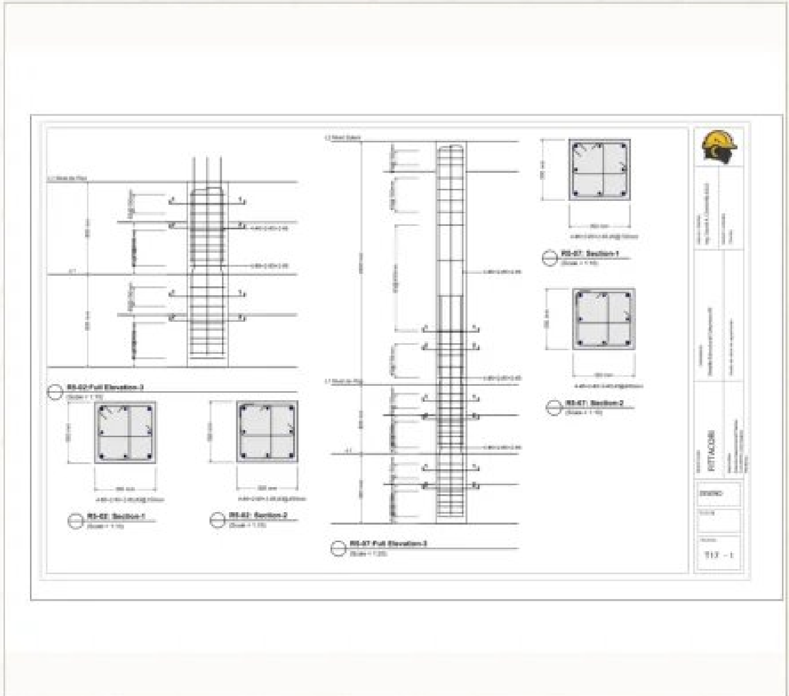


3 — FRAMING PLAN

T10

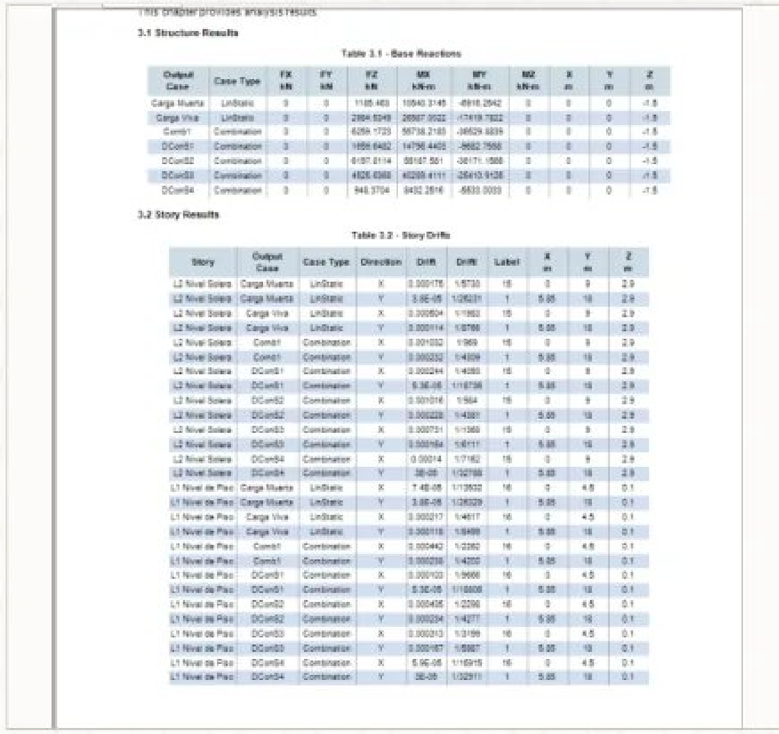


4 — REBAR DETAIL



5 — COLUMN DETAIL

T17-1



This chapter provides analysis results

3.1 Structure Results

Table 3.1 - Base Reactions

Output Case	Case Type	FX kN	FY kN	FZ kN	MX kN-m	MY kN-m	MZ kN-m	X m	Y m	Z m
Carga Muerta	LinStatic	0	0	1185.463	10540.3145	-6916.2642	0	0	0	-1.5
Carga Viva	LinStatic	0	0	2994.5049	26567.0522	-17419.7822	0	0	0	-1.5
Comb1	Combination	0	0	6259.1723	55738.2183	-36529.6839	0	0	0	-1.5
DConS1	Combination	0	0	1656.6482	14756.4403	-9682.7566	0	0	0	-1.5
DConS2	Combination	0	0	6197.2114	55187.561	-36171.1566	0	0	0	-1.5
DConS3	Combination	0	0	4525.6368	40299.4111	-26410.9126	0	0	0	-1.5
DConS4	Combination	0	0	946.3704	8432.2516	-5533.0033	0	0	0	-1.5

3.2 Story Results

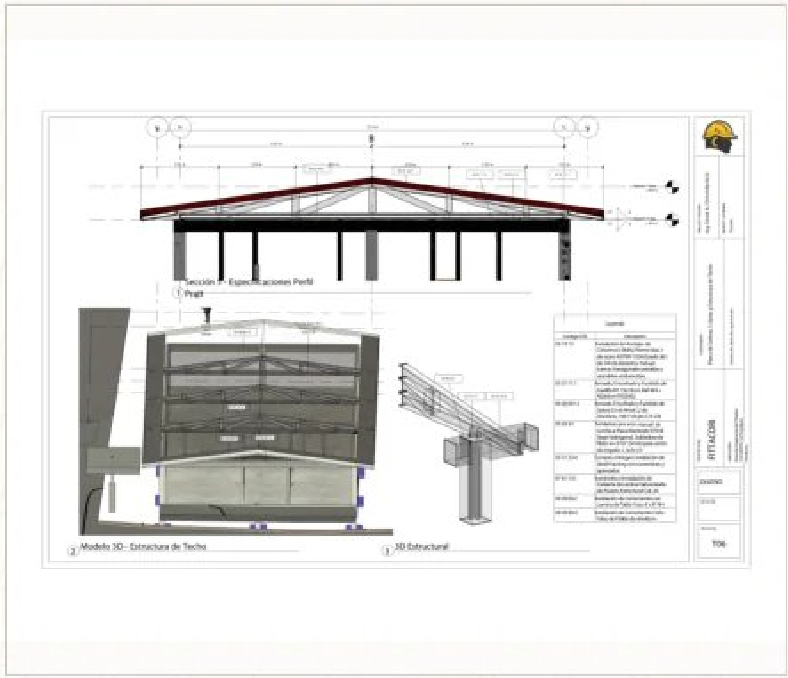
Table 3.2 - Story Drifts

Story	Output Case	Case Type	Direction	Drift	Drift	Label	X m	Y m	Z m
L2 Nivel Solera	Carga Muerta	LinStatic	X	0.000175	1/5730	15	0	9	2.9
L2 Nivel Solera	Carga Muerta	LinStatic	Y	3.8E-05	1/26231	1	5.85	18	2.9
L2 Nivel Solera	Carga Viva	LinStatic	X	0.000504	1/1982	15	0	9	2.9
L2 Nivel Solera	Carga Viva	LinStatic	Y	0.000114	1/8766	1	5.85	18	2.9
L2 Nivel Solera	Comb1	Combination	X	0.001032	1/969	15	0	9	2.9
L2 Nivel Solera	Comb1	Combination	Y	0.000232	1/4309	1	5.85	18	2.9
L2 Nivel Solera	DConS1	Combination	X	0.000244	1/4095	15	0	9	2.9
L2 Nivel Solera	DConS1	Combination	Y	5.3E-05	1/18736	1	5.85	18	2.9
L2 Nivel Solera	DConS2	Combination	X	0.001016	1/984	15	0	9	2.9
L2 Nivel Solera	DConS2	Combination	Y	0.000228	1/4381	1	5.85	18	2.9
L2 Nivel Solera	DConS3	Combination	X	0.000731	1/1368	15	0	9	2.9
L2 Nivel Solera	DConS3	Combination	Y	0.000164	1/6111	1	5.85	18	2.9
L2 Nivel Solera	DConS4	Combination	X	0.00014	1/7162	15	0	9	2.9
L2 Nivel Solera	DConS4	Combination	Y	3E-05	1/32788	1	5.85	18	2.9
L1 Nivel de Piso	Carga Muerta	LinStatic	X	7.4E-05	1/13502	16	0	4.5	0.1
L1 Nivel de Piso	Carga Muerta	LinStatic	Y	3.8E-05	1/26029	1	5.85	18	0.1
L1 Nivel de Piso	Carga Viva	LinStatic	X	0.000217	1/4617	16	0	4.5	0.1
L1 Nivel de Piso	Carga Viva	LinStatic	Y	0.000118	1/8499	1	5.85	18	0.1
L1 Nivel de Piso	Comb1	Combination	X	0.000442	1/2262	16	0	4.5	0.1
L1 Nivel de Piso	Comb1	Combination	Y	0.000238	1/4200	1	5.85	18	0.1
L1 Nivel de Piso	DConS1	Combination	X	0.000103	1/9666	16	0	4.5	0.1
L1 Nivel de Piso	DConS1	Combination	Y	5.3E-05	1/18808	1	5.85	18	0.1
L1 Nivel de Piso	DConS2	Combination	X	0.000435	1/2298	16	0	4.5	0.1
L1 Nivel de Piso	DConS2	Combination	Y	0.000234	1/4277	1	5.85	18	0.1
L1 Nivel de Piso	DConS3	Combination	X	0.000313	1/3199	16	0	4.5	0.1
L1 Nivel de Piso	DConS3	Combination	Y	0.000167	1/5987	1	5.85	18	0.1
L1 Nivel de Piso	DConS4	Combination	X	5.9E-05	1/16915	16	0	4.5	0.1
L1 Nivel de Piso	DConS4	Combination	Y	3E-05	1/32911	1	5.85	18	0.1

6 — ANALYSIS RESULTS — DRIFT 1/969

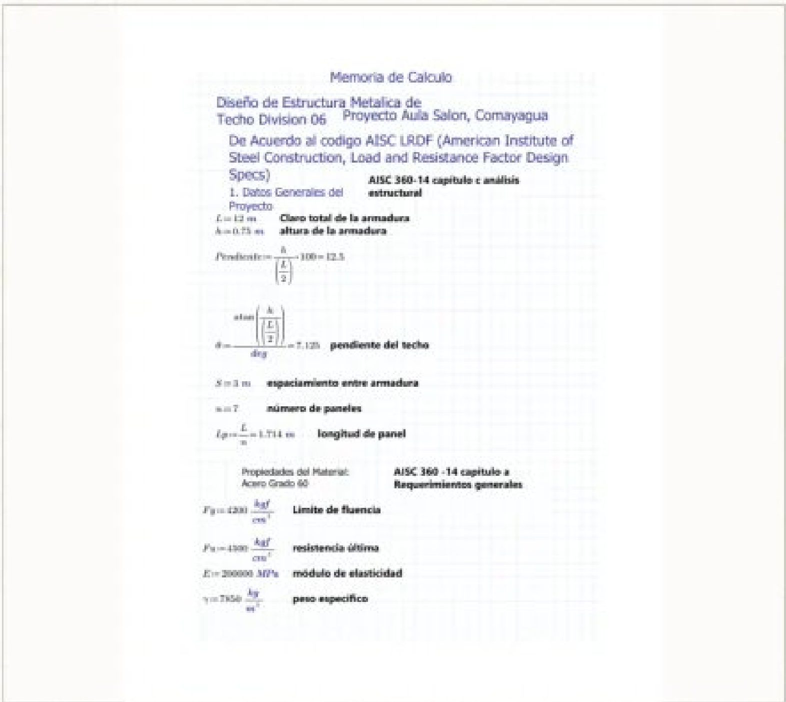
TECHNICAL NOTE — MODEL

Modeled and verified in ETABS 22 under ACI 318-19. Maximum storey drift 1/969 (combination Comb1, X direction, bond-beam level), well below the code limit.



7 — ROOF FRAMING — STEEL

T06



Memoria de Calculo

Diseño de Estructura Metalica de Techo Division 06 Proyecto Aula Salon, Comayagua

De Acuerdo al codigo AISC LRDF (American Institute of Steel Construction, Load and Resistance Factor Design Specs)

1. Datos Generales del Proyecto — **AISC 360-14 capitulo c análisis estructural**

$L := 12\ m$ **Claro total de la armadura**

$h := 0.75\ m$ **altura de la armadura**

$$Pendiente := \frac{h}{\left(\frac{L}{2}\right)} \cdot 100 = 12.5$$

$$\theta := \frac{\operatorname{atan}\left(\frac{h}{\left(\frac{L}{2}\right)}\right)}{deg} = 7.125$$ **pendiente del techo**

$S := 3\ m$ **espaciamiento entre armadura**

$n := 7$ **número de paneles**

$Lp := \frac{L}{n} = 1.714\ m$ **longitud de panel**

Propiedades del Material: Acero Grado 60 — **AISC 360 -14 capitulo a Requerimientos generales**

$Fy := 4200\ \frac{kgf}{cm^2}$ **Limite de fluencia**

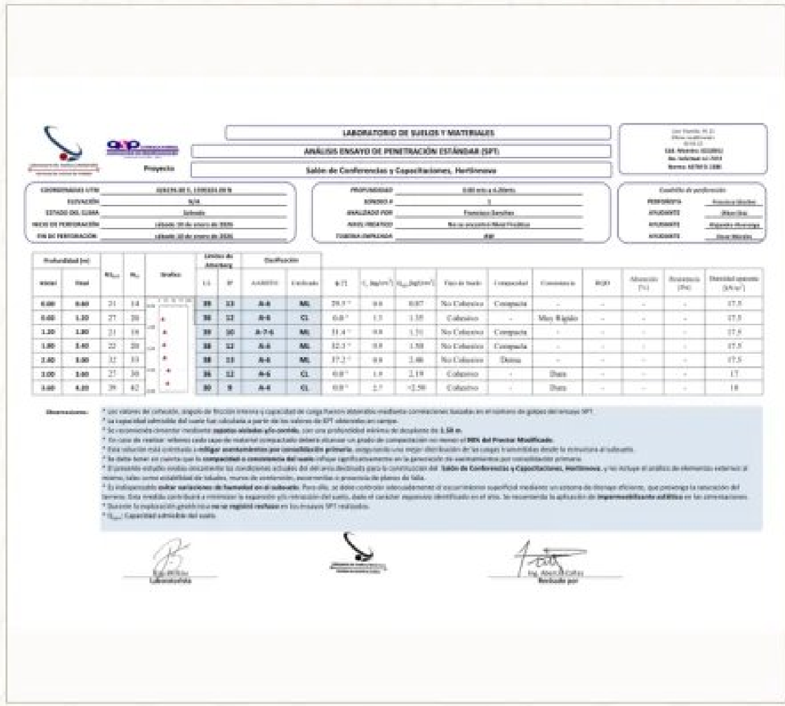
$Fu := 4300\ \frac{kgf}{cm^2}$ **resistencia última**

$E := 200000\ MPa$ **módulo de elasticidad**

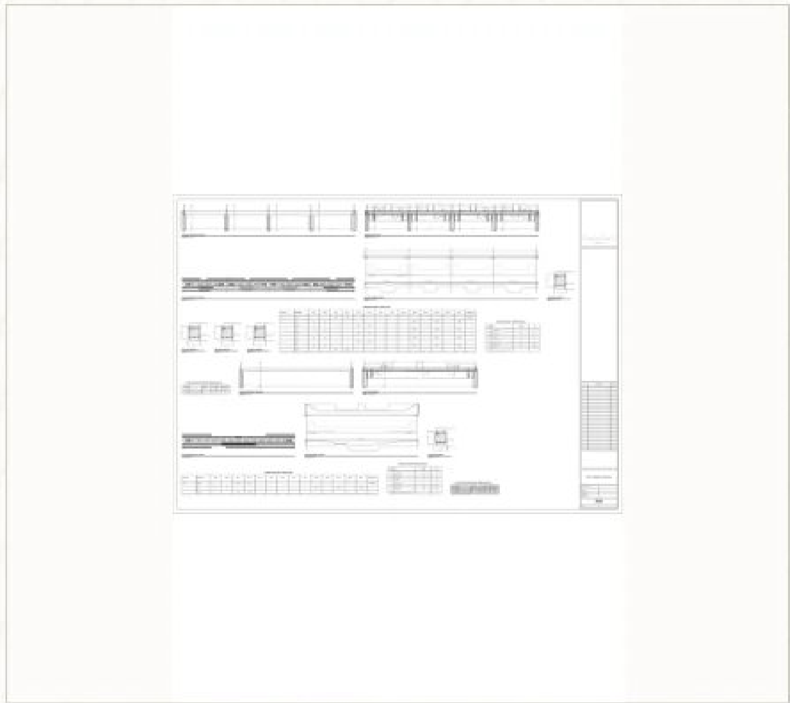
$\gamma := 7850\ \frac{kg}{m^3}$ **peso especifico**

8 — PRATT TRUSS DESIGN REPORT — AISC LRFD

9 — MOMENT ENVELOPE



10 — SOIL STUDY — QADM



11 — BEAM DRAWINGS — S-02 (39 SHEETS)

12 — COMPLETED WORK

TECHNICAL NOTE — ROOF

6-panel steel Pratt truss in L 3×3×1/4" angles, ASTM F1554 Gr. 36 Ø3/4" J-bolt anchors and E7018 fillet welding — design calculation report attached under the AISC LRFD code. Soil study and beam drawings (39 sheets, S-02) complete the technical file.

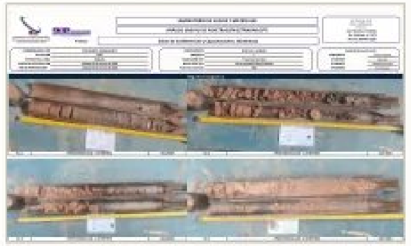
WATCH VIDEO

SIGNED ENGINEERING DOCUMENTS

DESIGN CALCULATION REPORTS

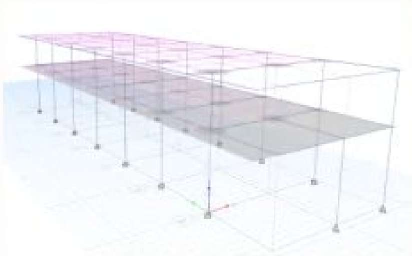
Soil study → ETABS model → signed design calculation report → drawings with reinforcement → built work. *The complete chain, delivered and verifiable.*

01
SOIL STUDY


CC-135 — LL, PI, AASHTO, Unified, φ, Cu, **Qadm**, RQD, compaction. Basis of the foundation design.

02
ETABS MODEL


CC-135 — ETABS Model Explorer + 3D view of the structural model, verified under ACI 318-19.

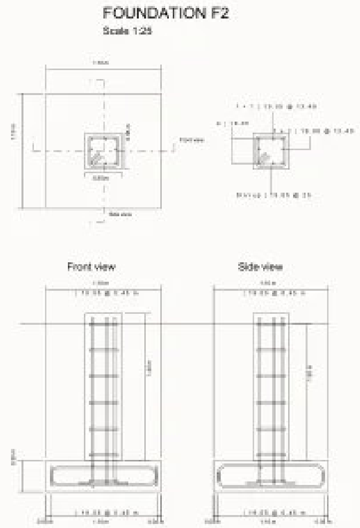
03
SIGNED DESIGN REPORT




Two signed design reports, each 2+ pages — **"By. Ing. David A. Chinchilla"**, letterheaded CONSUCONSTRUCT.COM.

04
DRAWINGS WITH REINFORCEMENT





CC-135 — a set of **39 sheets**, elevations generated in ETABS with reinforcement.

05
COMPLETED WORK



CC-135 FITTACORI — delivered and in use. The chain closes in the field.

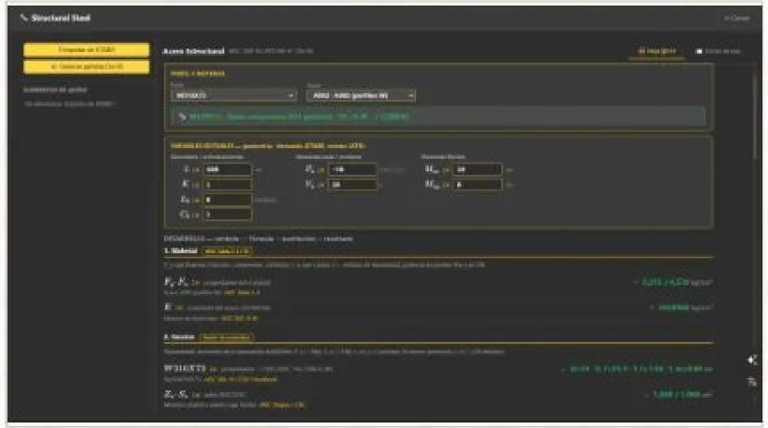
> *"No black boxes — every formula referenced to its clause, exportable straight to ETABS."*

0 — LIVE CALCULATION SHEET — ACI 318-19

Element	**Simple beam · 40 × 54 cm (d) · L = 6 m**
Materials	**f'c = 210 · f'y = 4,200 kg/cm²**
Demand	**Mu = 52 t·m · Vu = 21 t**
β_1	**0.85 for f'c ≤ 280 · ACI 318-19 §22.2.2.3**
Ec	**15100·√f'c = 218,820 kg/cm² · §19.2.2.1**
ρb	**0.02125 — seismic cap ρmax = 0.5·ρb**
Factors	**φflex 0.90 · φshear 0.75 · φcol 0.65**

1 — SEISMIC SPECTRUM — CHOC-08

Seismic zone	**3b (Z = 0.25)**
S1 · I · Rw	**S1 · I = 1 · Rw = 8**
Period T	**0.167 s**
Coefficient C	**2.75**
Base shear V	**104 kgf**
Ordinate a/g(T)	**0.6875 g · CHOC-08 §1.3.6**
Drift limit	**min(0.04/Rw, 0.005) = 0.005 · CHOC-08 §1.3.5.8.2**



2 — STEEL DESIGN — AISC 360-16 LRFD §D–H

Section	**W310X73**
Steel	**A992**
Governing equation	**Combined flexure-compression §H1**
D/C	**0.48**
Result	**PASSES**

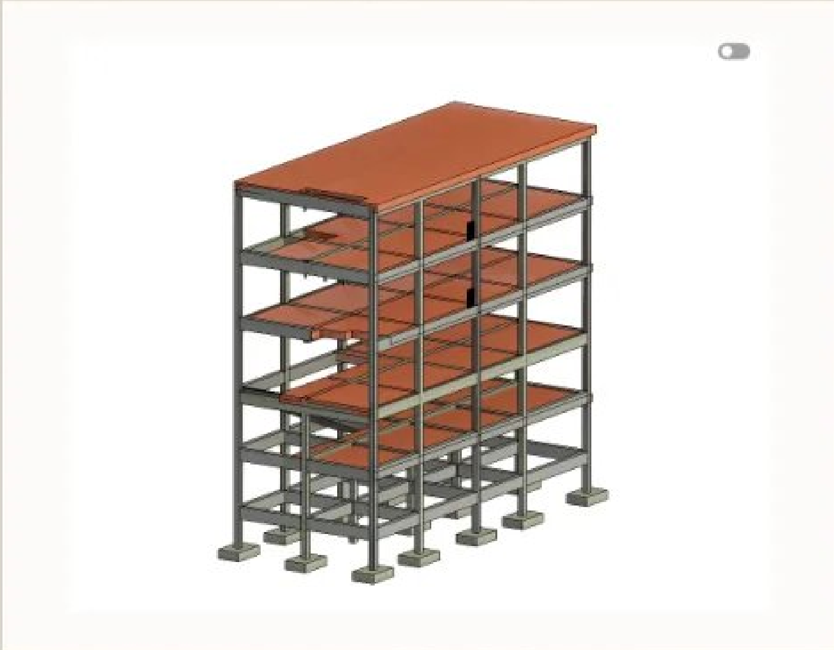
CRITERION

A calculation you cannot audit is not a calculation, it is an assertion. Every formula in the engine prints its exact clause — ACI 318-19, AISC 360-16, CHOC-08 — with the numeric substitution in plain view, so an outside reviewer can follow the reasoning line by line without opening the code. The CHOC-08 spectrum exports straight into the ETABS model: the same code that gets calculated is the one that gets run.

03

GUIFARRO APARTMENTS

SIGNED STRUCTURAL FRAMING PLAN — S-130



S-130 — STRUCTURAL FRAMING PLAN N-1

CLIENT: ANGELA GUIFARRO · DRAWN AND SIGNED BY ING. DAVID CHINCHILLA, CICH SEAL. LEGEND:

03 31 13.2

CONCRETO PREMEZCLADO 3,000 PSI, AGREGADO 3/4", REVENIMIENTO 6 ·

04 21 11.2

COLUMNA 60×60, 8N°6, N°3@30 ·

04 21 11.10

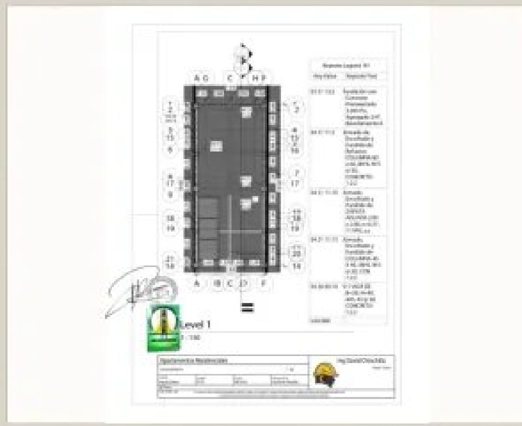
ZAPATA AISLADA 2.00×2.00, E=0.37, 11 N°6 A.S. ·

04 21 11.13

COLUMNA 40×40, 6N°6, N°3@20 ·

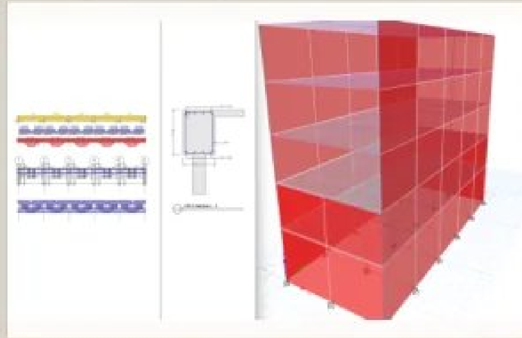
04 26 00.10

V-1 VIGA B=30 H=40, 4#5, #3@30, CONCRETO 1:2:2.



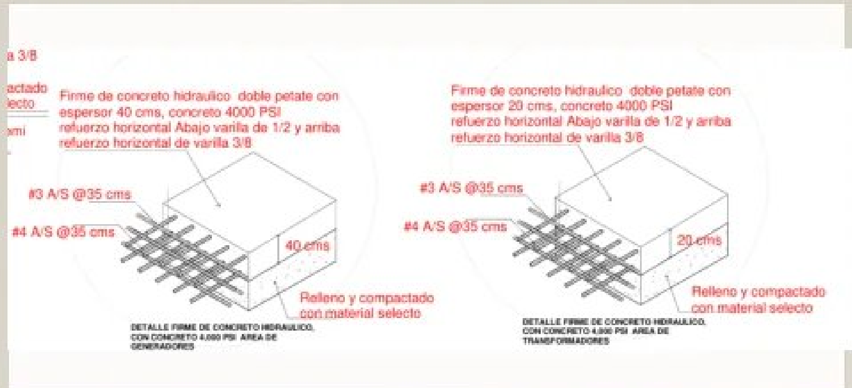
S-131 — STRUCTURAL FRAMING PLAN LEVEL 1

SAME CSI KEYNOTE SET, ONE LEVEL UP.



ETABS MODEL AND CB-1 SECTION

3D MODEL OF THE 4 LEVELS WITH SLABS AND SUPPORTS · JOIST-AND-BLOCK DETAILING BY GRIDLINE · CB-1 BEAM SECTION 50 × 70 CM WITH 2-#5 A + 2-#5 B TOP, 2-#5 F + 2-#5 G BOTTOM AND 3-#11.



A106 — DIMENSIONED PLAN, PARKING

TRAPICHE APARTMENTS PROJECT, EL TRAPICHE · FOUNDATION SLAB WITH 6"×6" 4/4 WELDED WIRE MESH, 8 M³ UNDERGROUND CISTERN. SIGNED, CICH 8222.

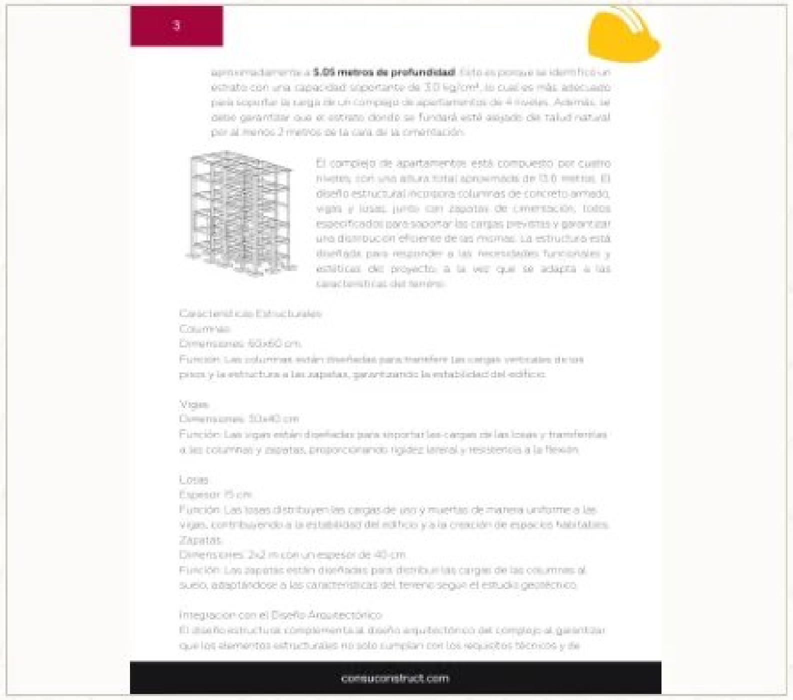
PROJECT DETAILS

Period: 2024 (Jan–Oct).
Role: Engineer of record · Structural design — CICH 8222.

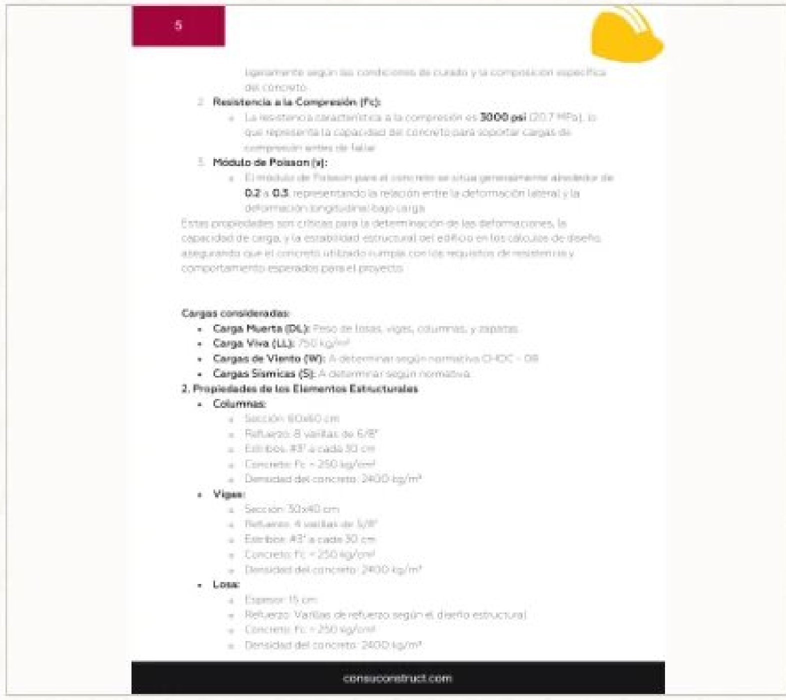
SCOPE

Structural framing plan N-1 (sheet S-130) signed and sealed by CICH, with a complete keynote legend — isolated footings 2.00×2.00 m, columns 60×60 and 40×40 cm, beam V-1 30×40 cm, 3,000 psi ready-mix concrete. Accompanied by the level-1 framing plan (S-131) and the dimensioned parking plan (A106, Trapiche Apartments Project, El Trapiche) — the most complete structural drawing set in the archive outside CC-135 Fittacori.

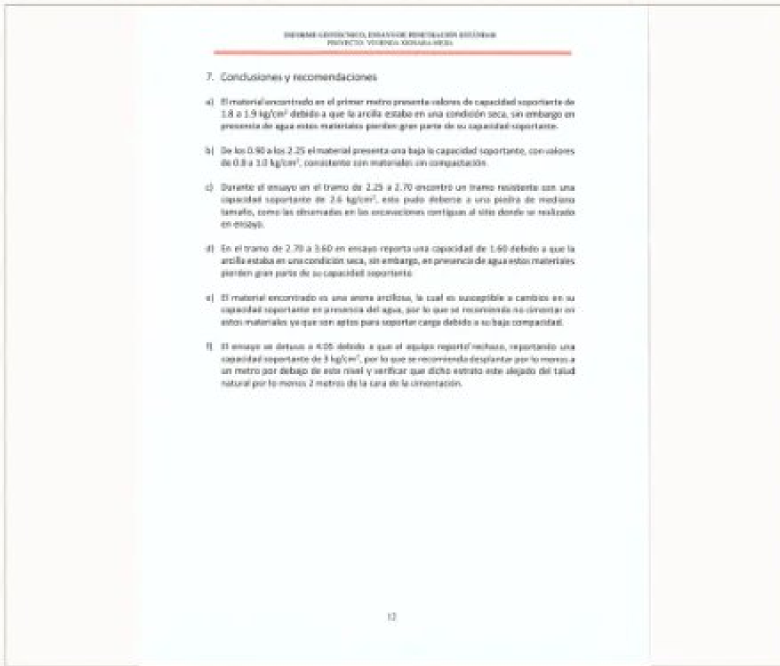
View project on consuconstruct.com → (https://consuconstruct.com/es/projects/guifarro-apartments)



1 — DESCRIPTIVE REPORT



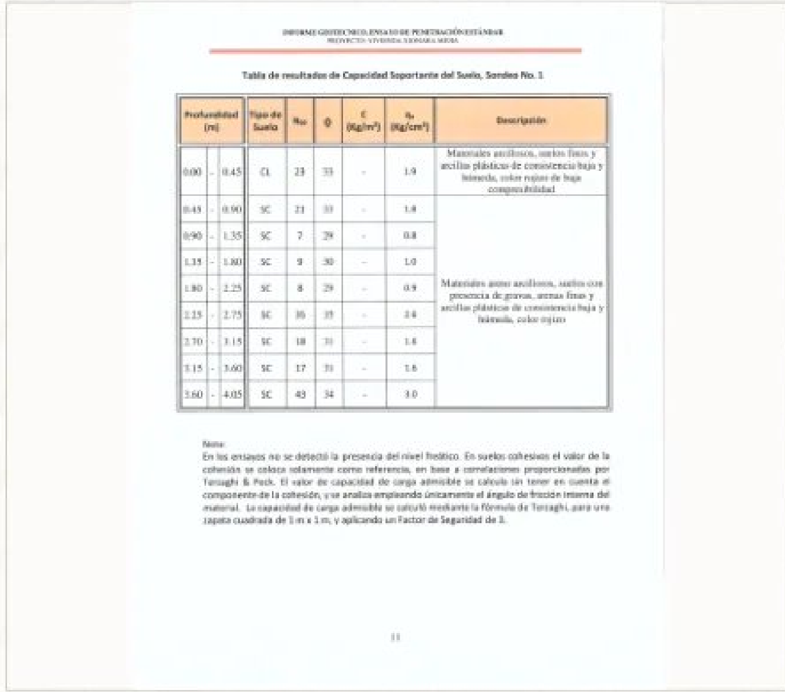
2 — ELEMENT SPECIFICATIONS



3 — SPT TEST — BORINGS

CINSA · MAR 2024

4 — BEARING CAPACITY BY STRATUM

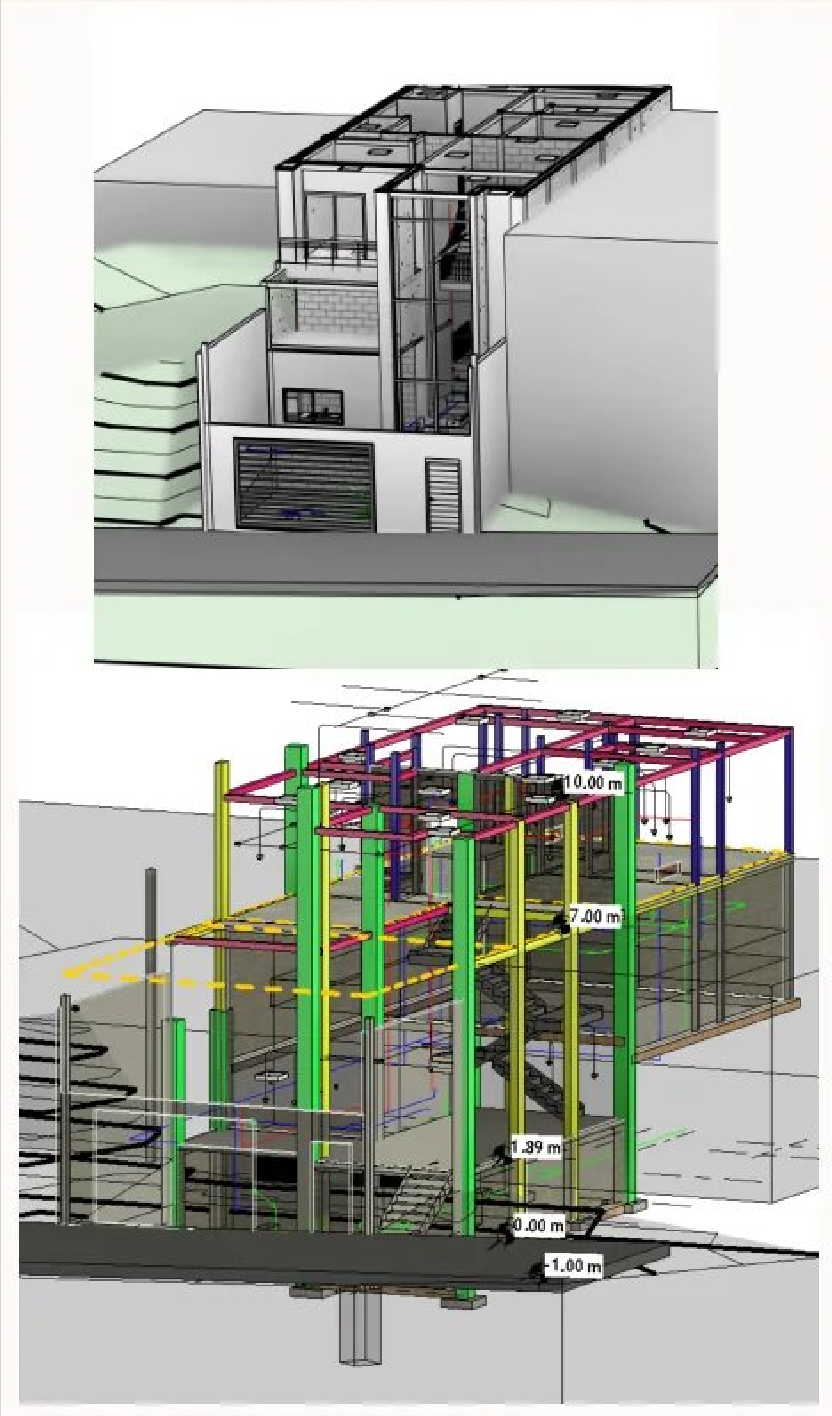


5 — STRATIGRAPHIC PROFILE

TECHNICAL NOTE

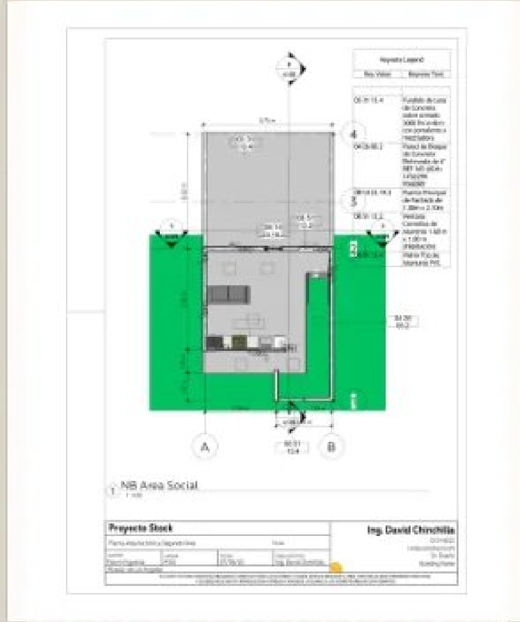
4-level apartment complex, total height 13.6 m. The site's Standard Penetration Test (SPT) — commissioned by the owner — delivers the bearing capacity by stratum: clayey and sandy-clay materials, CL and SC type, N_{60} between 7 and 43, internal friction angle 29°–35°, and q_a calculated by the Terzaghi formula for a 1×1 m square footing with a safety factor of 3. Foundation is set on that data at ≈5.05 m, targeting the 3.0 kg/cm² stratum. Columns 60×60 cm (8 no. 6/8" bars) and 40×40 cm (6 no. 6/8" bars), beams 30×40 cm (4 no. 5/8" bars), slabs e=15 cm, f'c=250 kg/cm², live load 750 kg/m² under CHOC-08. Soil first, section second.

04



FRAMING PLAN — BEDROOMS

CSI KEYNOTES 03 21 11.11 (GRADAS, HMAX 0.18 M) · 04 26 00.6 (BORDILLO DE DUCHA) · 09 29 00.2 (CERRAMIENTO TABLA YESO).



FRAMING PLAN — SOCIAL AREA

3,000 PSI CONCRETE SLAB E=8 CM · 6" REINFORCED BLOCK WALL WITH 1#3 @ 0.6 M + 1#3 @ 2 COURSES · CSI KEYNOTES PER ELEMENT.

ETABS REPORT — MODEL WITH LOADS

18-PAGE REPORT, REVISION 0 (2025). BASIS OF THE 3D ANALYSIS UNDER ACI 318-19.

CC130

SINGLE-FAMILY RESIDENCE — STRUCTURAL CALCULATION

PROJECT DETAILS

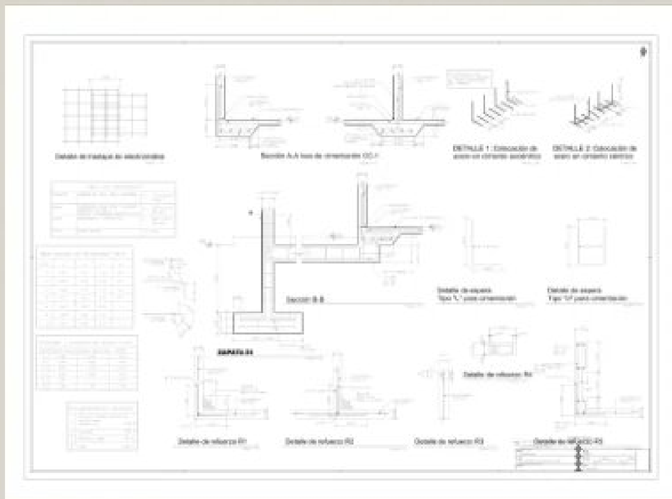
Period: 2024–2026, ongoing.
Role: Engineer of record · Structural design — CICH 8222.

SCOPE

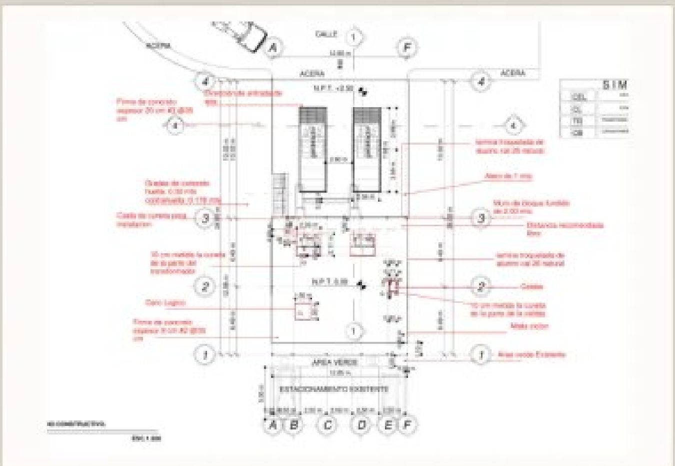
Casa Stock — Marvin Figueroa, Mirador de Los Ángeles Housing Project, Comayagüela. Original confined-masonry system redesigned to an isolated-footing RC frame after AMDC required a retaining wall. R3 column 20×20 cm (4 No. 4, No. 3), 3,000 psi concrete slab e=8 cm poured by day laborers and mixer, 6" reinforced block wall with 1#3 @ 0.6 m plus 1#3 @ 2 courses. ETABS verification — model report with loads, 18 pages, revision 0 (2025). The file includes a retaining-wall design calculation report with a signed statement of responsibility, and a change order logged for the slab pour: when the ground forces a change, the change is written, calculated, and signed.

05

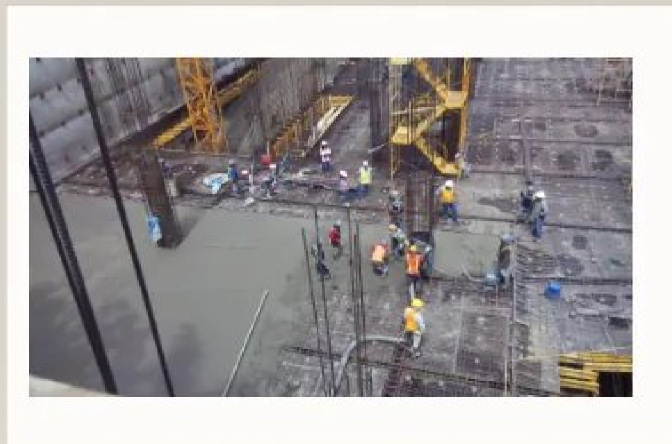
A115 — FOUNDATION PLAN
SCALE 1:20.



A114 — SLAB REINFORCEMENT DETAIL
REINFORCED FOUNDATION.



A118 — BLOCK REINFORCEMENT
VERTICAL REINFORCEMENT DETAIL.



DOWEL DETAILS
CCL / CCU.

OASIS

RESIDENCE · FOUNDATION AND REINFORCEMENT

PROJECT DETAILS

Period: 2020–2023.
Area: 120 m².
Role: Engineer of record · Structural design — CICH 8222.

SCOPE

Reinforced masonry resolved down to the detail, which is where Honduran construction fails. Vertical reinforcement housed inside the block cells, filled with 1:3:5 flowable concrete poured in lifts as the wall rises. Horizontal reinforcement in the mortar joints: 1#3 above the first course, 1#3 every 3 courses (≈0.63 m) and 1#3 below the top course. Minimum 30 cm horizontal reinforcement at every wall intersection. 1:4 mortar, type 1 cement with washed river sand. Common bond beam 15 cm with 4#3 and closed tie. Details of filled 6" block for corners and intersections at 1:10 and 1:20 scale, plus a reinforced foundation slab and CCL/CCU column dowels. Three years of documented work.

View project on consuconstruct.com → (https://consuconstruct.com/es/projects/oasis)

A133 — 2ND LEVEL STRUCTURAL FRAMING PLAN

OWNER: BENJAMÍN VARELA · LOARQUE, TEGUCIGALPA, F.M. · DESIGNED, REVIEWED AND APPROVED BY: ING. DAVID CHINCHILLA CICH 8222 · SCALE 1:75 · 2024-07-17. LEGEND BY COLOR — PRIMARY BEAM

72.9 M

· SECONDARY BEAMS

70.3 M

· PRIMARY COLUMNS

11

· CONFINING COLUMNS

17

·

VILLAREAL

RESIDENCE · BIM STRUCTURAL FRAMING PLAN

PROJECT DETAILS

Location: Loarque, Tegucigalpa, F.M.
Period: 2023–2025.
Area: 250 m².
Role: Engineer of record · Structural design — CICH 8222.

SCOPE

Foundation slab with welded wire mesh, Z1 footings 80×80 cm, strip footing 0.40×0.20 m, R2 columns and V-2 beams 0.15×0.30 m, joist-and-block floor system. The deepest BIM project in the archive: 64 in-house Revit models, including dedicated plumbing and electrical, coordinated via MCP.

View project on consuconstruct.com → (https://consuconstruct.com/es/projects/villareal)

07

SINGLE-FAMILY RESIDENCE

DESIGN AND TECHNICAL DOCUMENTATION — ETABS ANALYSIS

ETABS 3D MODEL — TWO LEVELS

ETABS REPORT COVER WITH ISOMETRIC VIEW OF THE STRUCTURAL MODEL, BASIS OF 3 ETABS REPORTS + TECHNICAL ANNEX (L1/L2).

PROJECT DETAILS

Period: 2024–2026.
Role: Engineer of record · Structural design — CICH 8222.

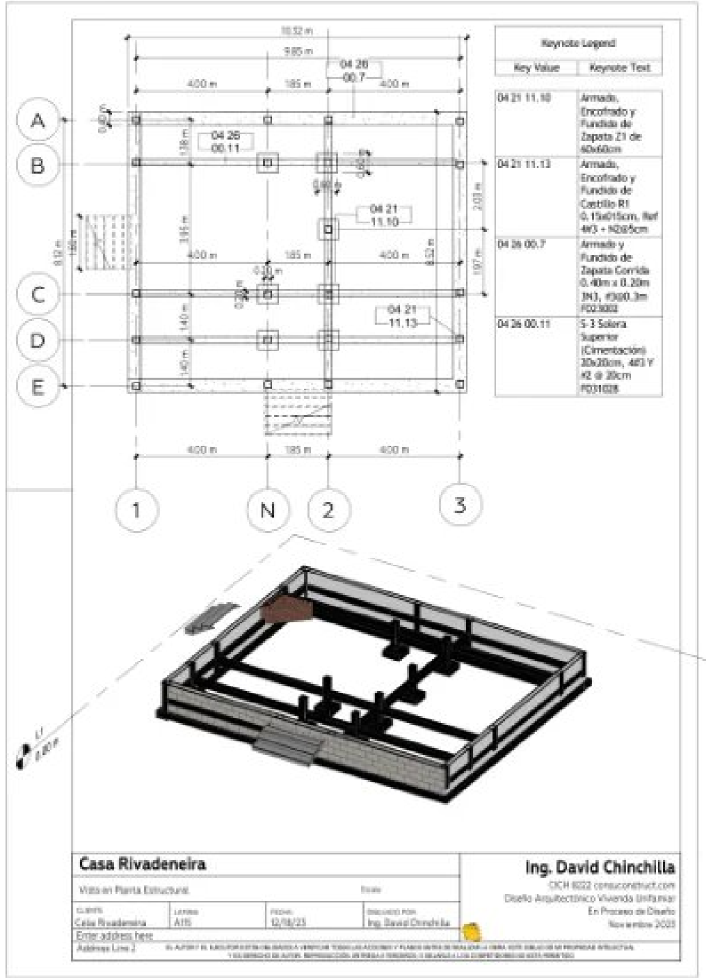
SCOPE

ETABS analysis resolved level by level, with an independent structural framing plan for L1 and L2 instead of a single repeated plan. Three model reports and a technical annex complete the verification file.

08

RIVADENEIRA

RESIDENCE · FOUNDATION — CC-223



A115 — STRUCTURAL FOUNDATION

PROJECT DETAILS

Period: 2023–2025.
Area: 50 m².
Role: Engineer of record · Structural design — CICH 8222.

SCOPE

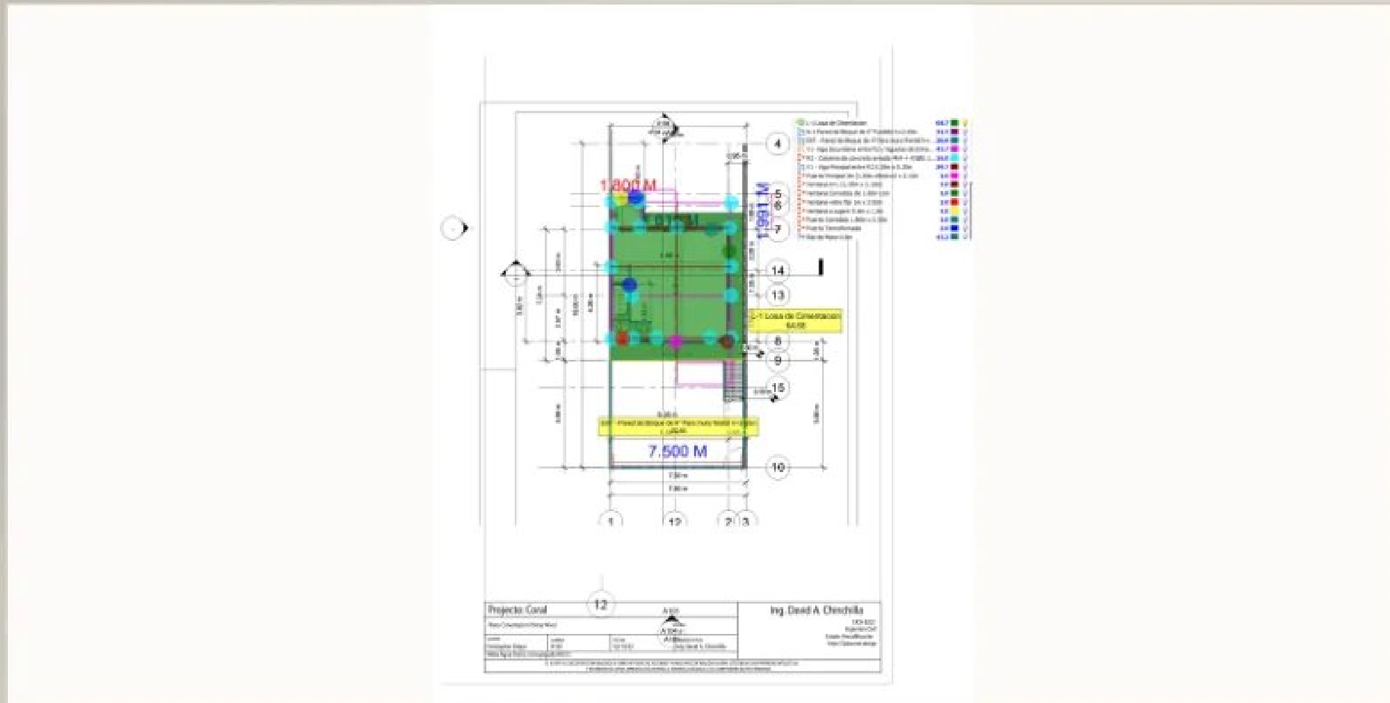
Z1 footing 60×60 cm and R1 confining column 0.15×0.15 m reinforced with 4#3 plus N2 @ 5 cm. Strip footing 0.40×0.20 m with 3N3 and #3 @ 0.30 m, capped by an S-3 upper foundation bond beam 20×20 cm with 4#3 and #2 @ 20 cm. Complete foundation on a 50 m² house: small section, full engineering rigor. Built and photographed.

View project on consuconstruct.com → (https://consuconstruct.com/es/projects/rivadeneira)

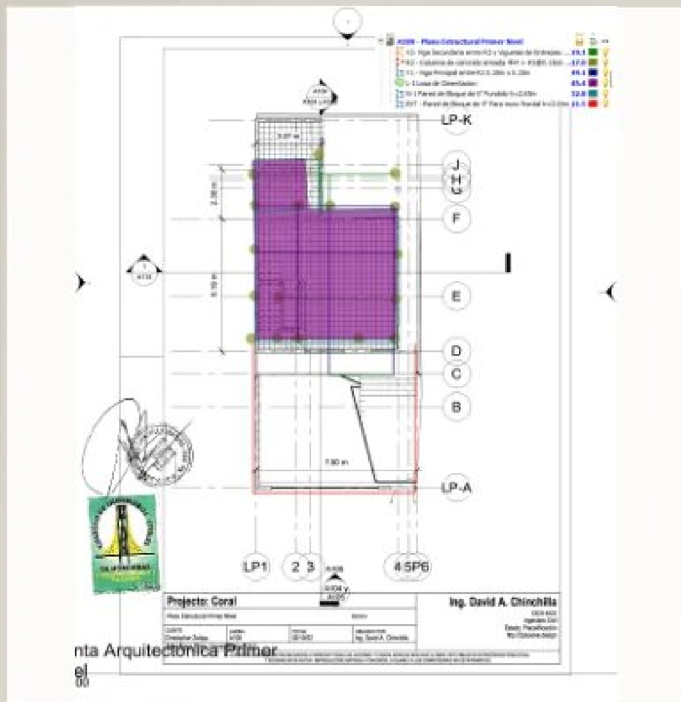
09

TWO-LEVEL SINGLE-FAMILY RESIDENCE

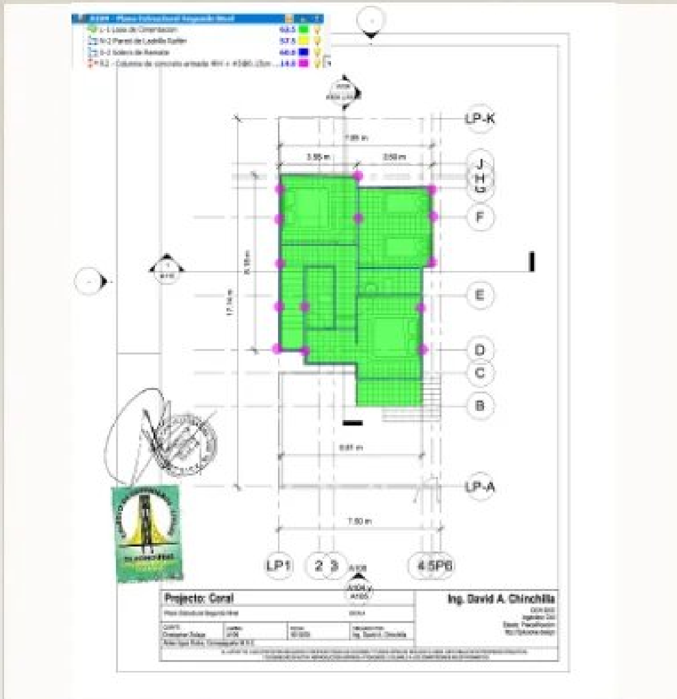
STRUCTURAL CALCULATION BY LEVEL — 2022



A108 — FOUNDATION PLAN



A108 — FIRST-LEVEL FRAMING



A109 — SECOND-LEVEL FRAMING

PROJECT DETAILS

Period: 2022–2023.
Role: Engineer of record · Structural design — CICH 8222.

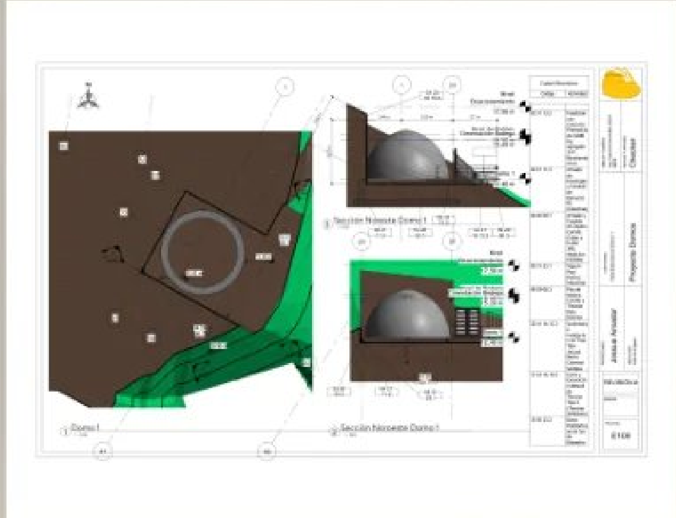
SCOPE

Complete structural drawing set resolved level by level: foundation, first-level framing and second-level framing, each on its own sheet. The set closes with a combined structural-and-electrical drawing — coordination between disciplines drawn on the same sheet, not resolved in the field.

10

PROJECT DOMES

PREFABRICATED DOMES — STRUCTURE AND FOUNDATIONS



E109 — STRUCTURAL VIEW, DOME 1

OWNER: JOSSUE AMADOR · DRAWING AND DESIGN BY ING. DAVID CHINCHILLA, CICH 8222. SCHEDULE:

04 26 00.7

ZAPATA CORRIDA 0.40×0.20, 3N3, #3@0.3M ·

05 31 23.1

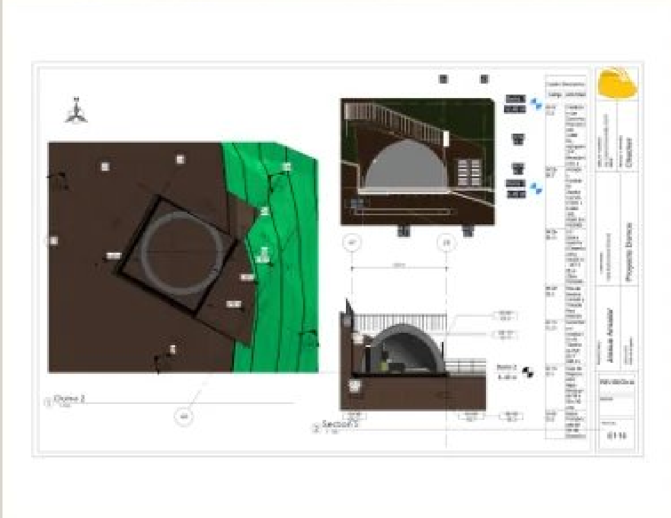
VIGAS H PARA PÓRTICO INDUSTRIAL ·

33 92 23.2

DOMO PREFABRICADO DE 3 M DE DIÁMETRO ·

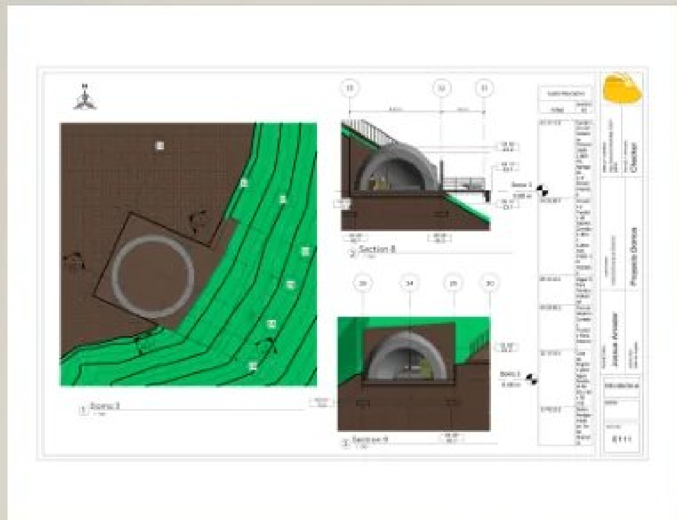
31 23 16 16.6

CORTE Y EXCAVACIÓN EN TERRENO SEMIDURO. LEVELS 17.50 / 15.20 / 12.40 M.



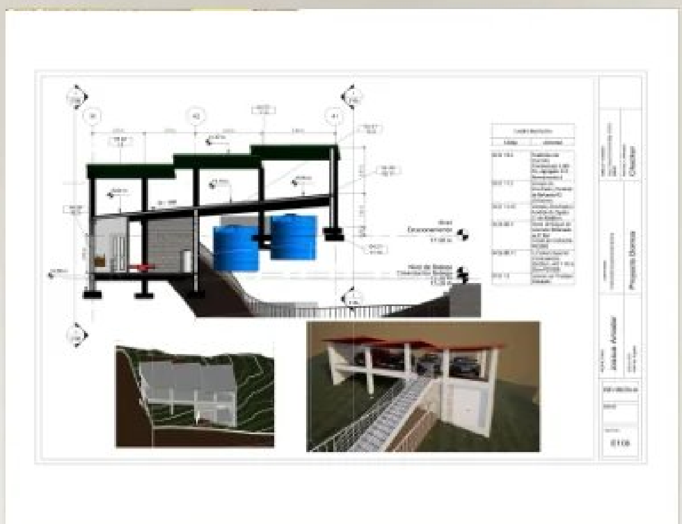
E110 — STRUCTURAL VIEW, DOME 2

S-3 STRIP FOOTING 20×20 CM — SAME CSI SCHEDULE, NORTHEAST/NORTHWEST SECTIONS.



E111 — STRUCTURAL VIEW, DOME 3

SECTIONS 8/9 — CUT AND EXCAVATION IN SEMI-HARD GROUND, STRIP-FOOTING FOUNDATION.



E105 — PARKING, EAST VIEW

STEEL INDUSTRIAL PORTAL FRAME AND WATER CISTERNS — SAME STRUCTURAL ASSEMBLY, WITH A 3D RENDER OF THE ROOF AND ACCESS POINTS.

PROJECT DETAILS

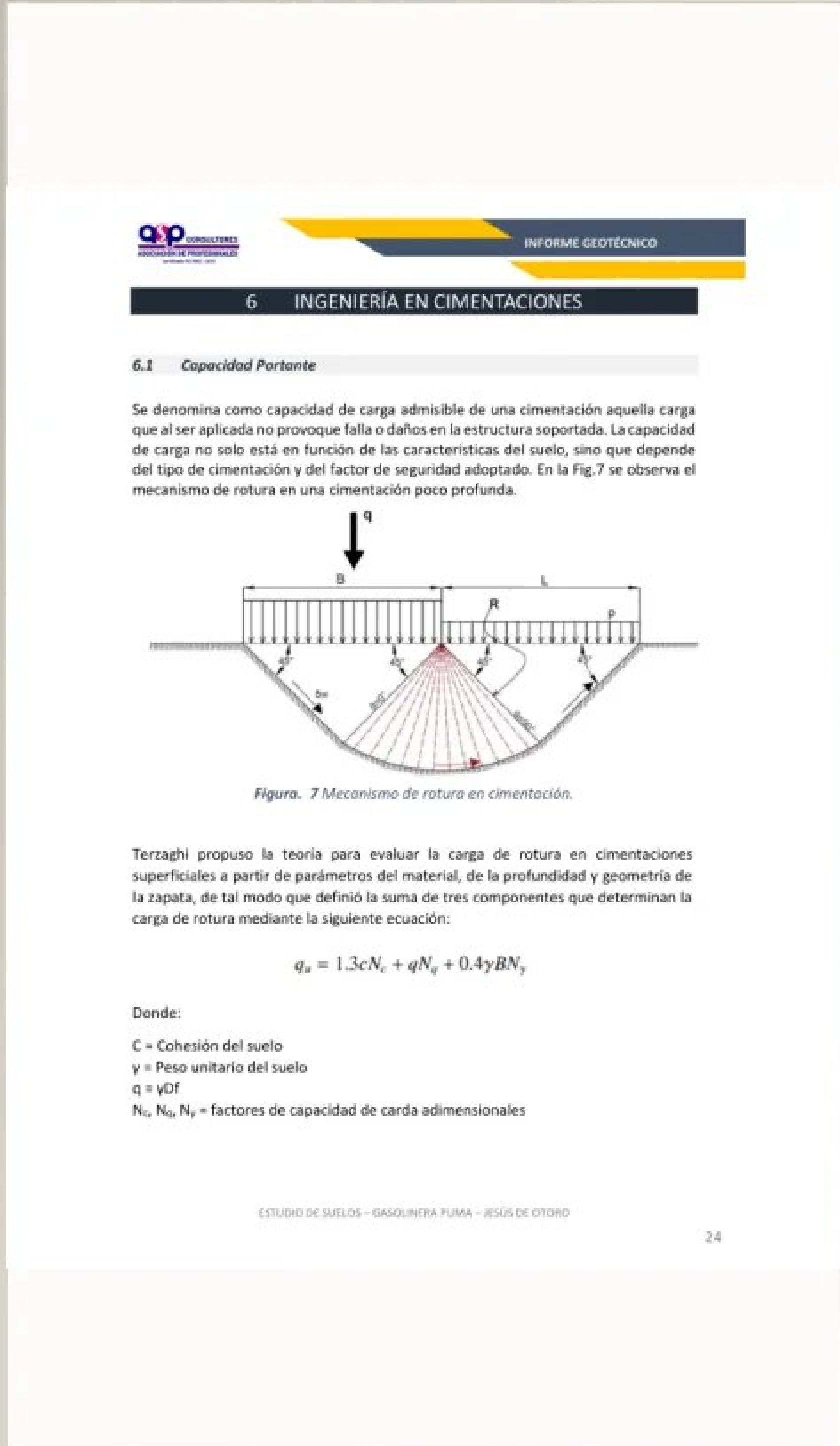
Location: Valle de Ángeles, Honduras.
Period: 2024.
Area: 200 m².
Role: Engineer of record · Structural design — CICH 8222.

SCOPE

Three prefabricated 3 m diameter domes on industrial steel portal frames (H-beams) and strip footings, plus an adjacent parking structure. Platform levels 17.50 / 15.50 / 12.40 m, with cut and excavation in semi-hard ground. Sheet E109 signed — **drawing and design: Ing. David Chinchilla, CICH 8222**.

View project on consuconstruct.com → (https://consuconstruct.com/es/projects/project-domes)

11



INFORME GEOTÉCNICO

6 INGENIERÍA EN CIMENTACIONES

6.1 Capacidad Portante

Se denomina como capacidad de carga admisible de una cimentación aquella carga que al ser aplicada no provoque falla o daños en la estructura soportada. La capacidad de carga no solo está en función de las características del suelo, sino que depende del tipo de cimentación y del factor de seguridad adoptado. En la Fig.7 se observa el mecanismo de rotura en una cimentación poco profunda.

Figura. 7 Mecanismo de rotura en cimentación.

Terzaghi propuso la teoría para evaluar la carga de rotura en cimentaciones superficiales a partir de parámetros del material, de la profundidad y geometría de la zapata, de tal modo que definió la suma de tres componentes que determinan la carga de rotura mediante la siguiente ecuación:

$$q_u = 1.3cN_c + qN_q + 0.4\gamma BN_\gamma$$

Donde:

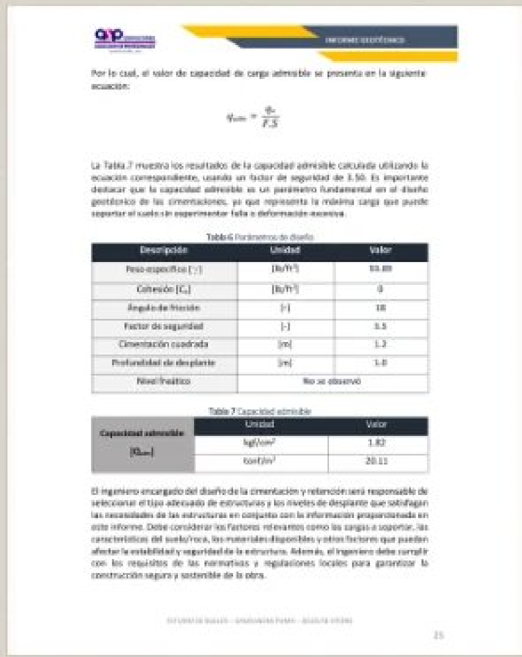
C = Cohesión del suelo
γ = Peso unitario del suelo
q = γDf
N_c, N_q, N_γ = factores de capacidad de carda adimensionales

ESTUDIO DE SUELOS – GASOLINERA PUMA – JESÚS DE OTORO

24

BEARING CAPACITY — TERZAGHI'S THEORY

FAILURE MECHANISM IN A SHALLOW FOUNDATION, ULTIMATE BEARING EQUATION Q_U.



INFORME GEOTÉCNICO

$$q_{adm} = \frac{q_u}{F.S}$$

Tabla 6 Parámetros de diseño

Descripción	Unidad	Valor
Peso específico (γ)	[lb/ft³]	93.89
Cohesión [C_u]	[lb/ft²]	0
Ángulo de fricción	[-]	18
Factor de seguridad	[-]	3.5
Cimentación cuadrada	[m]	1.2
Profundidad de desplante	[m]	1.0
Nivel freático	No se observó	

Tabla 7 Capacidad admisible

Capacidad admisible [q_{adm}]	Unidad	Valor
	kgf/cm²	1.82
	tonf/m²	20.11

25

DESIGN PARAMETERS AND ALLOWABLE CAPACITY

Q_ADM = 1.82 KGF/CM² (20.11 TONF/M²) · FS=3.5 · 1.2 M SQUARE FOOTING · 1.0 M EMBEDMENT DEPTH.

INFORME GEOTÉCNICO

7 CONCLUSIONES Y RECOMENDACIONES

29

CONCLUSIONS AND RECOMMENDATIONS

SHALLOW FOUNDATION ON A COMPETENT STRATUM AT 1.00 M · AVERAGE ALLOWABLE BEARING PRESSURE 1.89 KGF/CM² · PEAK GROUND ACCELERATION 0.30G, SOIL TYPE S2.

PROJECT DETAILS

Location: Jesús de Otoro, Departamento de Intibucá, Honduras.
Period: 2024.
Area: 6118 m².
Role: Engineer of record · project's geotechnical basis (soil study) — CICH 8222.

SCOPE

The largest project in the portfolio by area — 6,118 m². The scope documented here is the **geotechnical basis**: a 49-page soil report by ASP Consultores (laboratory, Tegucigalpa) — 3 PCA borings, grain-size classification, bearing capacity by Terzaghi's theory, and a design-parameter table. Does not include the station's complete structural design.

View project on consuconstruct.com → (https://consuconstruct.com/es/projects/gasolinera-puma-otoro)

GASOLINERA PUMA OTORO

GEOTECHNICAL STUDY — DESIGN BASIS

12

COMMERCIAL AND OFFICE BUILDING

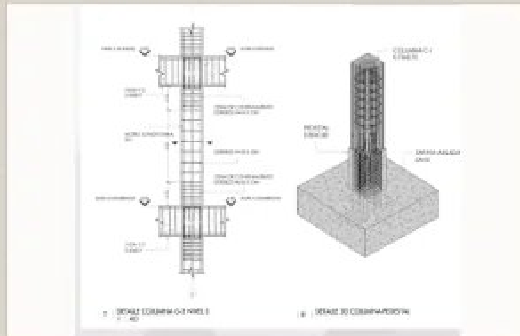
REINFORCED CONCRETE STRUCTURE — MIXED USE

STRUCTURAL ISOMETRIC

SYSTEMS LABELED ELEMENT BY ELEMENT: 2D RIBBED SLAB · SOLID SLAB · JOIST-AND-BLOCK SLAB · ELEVATED TANK SLAB · SHEAR WALL · RETAINING WALL · CONSTRUCTION JOINT · ISOLATED FOOTING ZA-1 AT −7.03 M.

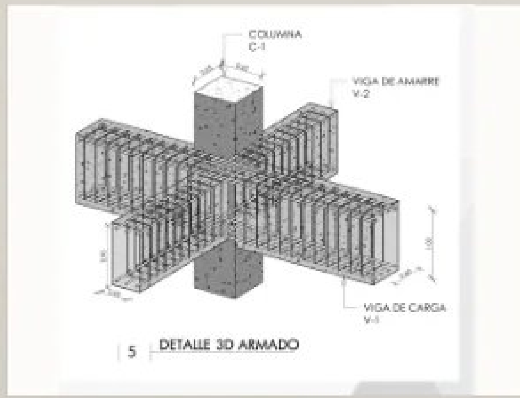
LIGHTWEIGHT SLABS — TWO ALTERNATIVES

METAL JOIST @ 1.7 M WITH GALVADECK DECKING AND E=0.08 M TOPPING · INVERTED T JOIST WITH CONCRETE BLOCK FILLER AND CONSTRUCTION JOINT.



COLUMN G-3 · LEVEL 2 (1:40) AND 3D COLUMN-PEDESTAL DETAIL

C-1 0.70×0.70 WITH #11 LONGITUDINAL STEEL · CONFINEMENT STIRRUPS #4 @ 0.10 M, MIDSPAN @ 0.35 M · PEDESTAL 0.80×0.80 · ISOLATED FOOTING ZA-01.



3D REINFORCEMENT DETAIL — JOINT

COLUMN C-1 WITH LOAD-BEARING BEAM V-1 AND TIE BEAM V-2, REINFORCEMENT AND LAP SPLICES SHOWN IN THREE DIMENSIONS.

PROJECT DETAILS

Role: Structural design · technical documentation — CICH 8222.

SCOPE

Mixed-use building: retail on level 2 (+4.50 m) and offices on level 3 (+9.00 m), over a basement with isolated footing ZA-1 set at −7.03 m. C-1 column 0.70×0.70 m with #11 longitudinal steel and #4 stirrups — confinement zones at 0.10 m near the joints and 0.35 m at midspan, on a 0.80×0.80 m pedestal. V-1 load-bearing beam and V-2 tie beam, 0.45×0.90 m.

The system combines a **shear wall** and a **retaining wall** with three floor systems resolved separately: 2D ribbed slab, solid slab and joist-and-block slab, plus an elevated tank slab. The lightweight-slab details document the two alternatives that were costed — metal joist with galvadeck decking and 0.08 m topping, versus inverted T joist with concrete block filler.

THE DATA STACK

07 WHY A DATABASE IN AN ENGINEERING PORTFOLIO

A price catalog is not a spreadsheet: it's a database with integrity constraints. Mine runs on **PostgreSQL 16** — 68 tables across 7 schemas — and carries the CSI catalog of **375 line items**, the **367 productivity-rated resources**, and the **7,344 resource breakdowns** that turn a quantity take-off into an auditable unit price.

pgvector adds semantic search inside the same SQL: vector(768) columns with cosine ivfflat indexes. In practice that means a description written in plain language — "30×30 pedestal with J-bolts" — finds its CSI code by similarity, not by text match. Without it, every new line item gets classified by hand.

What it solves on site: the same engine takes the Revit schedule, cross-references it against the catalog, assembles the budget, derives the schedule from each line item's productivity, and issues the PDF the bank accepts to the cent.

68 tables · 7 schemas · 7,749 vectorized chunks over 4,231 documents · 4 ivfflat indexes in production · local Nomic 768d embeddings, no external provider in the critical path.

07C BIM → BUDGET

49%

195 OF 398 LINE ITEMS WITH QUANTITY TAKEN DIRECTLY FROM THE REVIT MODEL

The whole system rests on a single concept: **the CSI code**. Every element in the Revit model is born with its keynote embedded, and that same code travels the full chain — which is why the sheets in this portfolio carry the CSI legend printed next to the drawing. It's not decoration: it's the thread that lets the schedule export, cross-reference against each element's keynote, and land the quantity in the budget without anyone typing it in (field `revit_q`). What is normally days of quantity take-off is one pipeline run. A drawing that knows what it costs to build what it draws.

FIGURES AND TOOLS

07B PROJECT FIGURES (ACTUAL BUDGET)

PROJECT	CLIENT	LINE ITEMS	TOTAL L	LABOR L	MATERIALS L
Gasolinera Puma Otoro	Puma Energy	~26	24,921,068.15	—	—
CC-135 Fittacori	FITTACORI	~133	5,131,915.40	—	—
UNNEVENNESS (Santa Lucia)	Daniel Espinal	~343	2,972,776.53	—	—
Apt. Trapiche	**Angela Guifarro**	**~193**	**1,655,987.42**	**—**	**—**

Gasolinera Puma Otoro: preliminary architectural budget per source document, subject to adjustment for Puma Energy's own investment in materials and distribution equipment. UNNEVENNESS: two budget versions on file — figure shown is "Modelo Full"; reduced version = L 2,867,471.55. Labor/materials split not itemized in the source documents for these four engagements. Figures in Lempiras.

08 TOOLS BUILT

TOOL	WHAT IT IS	VERIFIED SCALE
EstimaStruct	In-house construction ERP	1,145 line items · 7,344 resource breakdowns · 367 resources · 90 CSI chapters · catalog v1.3, 375 line items
Structural engine	ACI 318-19 + AISC LRFD + CHOC-08 in Python	22/22 tests · Mathcad-style sheet in KaTeX · clause cited per step
ETABS 22 bridge	In-house C# stdio connector	Attaches to a live instance, MCP layer validated in production
Revit MCP	In-house server, public fork DavidChin0/revit-mcp-server	48 tools · 23 module families · Revit 2024–2027
pyRevit extensions	In production	Generate Layout · Conduit by Circuit · TypeMark TagAll
Brain	**LangGraph orchestrator with human approval**	**299-entry tool registry · checkpoints in Postgres**

09 BIM

Revit 2024–2027 at author/developer level, not operator.

2,000+ hours · 1,147 models · 66.7 GB across 80+ projects.

Villareal alone: 64 RVT files (architecture + dedicated plumbing + dedicated electrical + coordination model).

CSI keynote audit over 494 elements: dump → normalization → audit → approval → color sync.

04 SITE ARCHIVE

19,898 files · 290 GB · 889 dated folders · 45 months documented
12,865 site photographs · 7,007 site videos
11 projects with their own folder linked to the public site

Continuous photo and video record 2019–2026. Villareal alone: 379 videos, 16.8 GB.

10 CONTRACT CHANNELS

Banks: Davivienda · Banpais · BAHPROVI · Atlántida · Lafise · Ficensa — budget PDF that matches the approved loan to the cent.
Institutional: Municipalidad de El Progreso · Registered UNDP supplier · Ciudad Mujer Presidential Project · FITTACORI.
Public works: active HonduCompras / ONCAE / CIRCE chain.

CONSUCONSTRUCT

STRUCTURAL · PORTFOLIO

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