CONSTRUCTION ESTIMATING CASE STUDY

Construction of a Two-Storey Residential Building with Swimming Pool

Samar, Philippines

Architectural perspective render, as issued in the drawing set (Sheet A.01)

Prepared by

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Remote Construction Estimator · Quantity Surveyor · Technical Reviewer

Bluebeam · Excel · BOQ · Cost Estimation · Technical Review

Project Snapshot	
Type	Residential Construction, Philippines
Site	Coastal, flood-prone, Seismic Zone 4, typhoon corridor
Turnaround	≈48 productive working hours — full estimate package
Workflow	Bluebeam + Excel + Claude-assisted technical review

Executive Summary

Item	Detail
Project	Construction of a Two-Storey Residential Building with Swimming Pool
Client Goal	Sign-and-sealed, permit-ready structural and plumbing review; complete quantity takeoff and detailed cost estimate
My Role	Construction Estimator · Technical Reviewer · Quantity Surveyor · Documentation Lead
Duration	Approximately 48 productive working hours across review, takeoff, pricing, and documentation (6 workdays at 8 hours/day)
Total Project Cost	₱7,586,231.52 (inclusive of OCM, profit, and VAT) = US$124,414 = A$177,518
Contract Duration Assumed	120 calendar days
Building Footprint	≈ 138 sqm total floor area over 2 storeys, plus attached pool

Deliverables

- ✔ Drawing Review
- ✔ Technical (Structural/Geotechnical) Review
- ✔ Bluebeam Markups
- ✔ Scope Verification & Quantity Takeoff
- ✔ Bill of Quantities (BOQ), prepared from verified takeoff quantities
- ✔ Detailed Cost Estimate, developed using quantity verification, market pricing references, and documented assumptions
- ✔ DUPA (Detailed Unit Price Analysis)
- ✔ RFI Log
- ✔ Drawing Revisions
- ✔ Final Estimate Package

Why This Case Study Matters

This portfolio demonstrates my complete estimating workflow using an actual residential project in the Philippines. While the project follows local construction practices, the estimating principles — scope verification, quantity takeoff, RFI preparation, cost estimation, documentation, and quality control — are directly transferable to international estimating workflows. My objective here is to show not just the final estimate, but the structured thinking and verification process behind every quantity and pricing decision.

Project Background

Client & Project

The client is a private homeowner constructing a two-storey residential building with an attached swimming pool in Eastern Samar — a coastal poblacion on the Pacific-facing seaboard of Samar Island. The client engaged me for two linked scopes: sign-and-sealed structural/plumbing review for building permit acquisition, and a complete quantity takeoff and cost estimate.

Location & Hazard Context

This is not a neutral site. Samar sits in the highest wind-speed corridor in the Philippines, within Seismic Zone 4, and on low-lying coastal terrain exposed to flooding and storm surge. Eastern Samar experiences roughly 15 tropical cyclones a year during the November–March rainy season, and the province averages close to 400 recorded earthquakes annually — including about 5–6 of magnitude 5 or higher, and a magnitude-6+

event roughly every 1–2 years (PHIVOLCS/USGS catalog data). This is also the province where Super Typhoon Haiyan (Yolanda) made its first landfall in 2013 with gusts near 300 kph. No structural analysis or soil investigation had been carried out before the project reached me, and the client declined both when I raised them. In place of a soil investigation, I cross-referenced publicly available geotechnical and hazard data for the area against NSCP 2015 and used AI-assisted research to pressure-test my assumptions on soil properties and site conditions, documenting every resulting assumption so it could be traced and revisited. Every major design decision on this project — the elevated +1.8m ground floor, the mat foundation, the roof anchorage detailing — traces back to this hazard profile and that verification process, not just to the building's occupancy.

Building Type & Construction Method

Two-storey reinforced concrete frame residence with non-load-bearing CHB infill walls, cast-in-place mat foundation, engineered fill to +1.8m for flood elevation, steel truss and purlin roof system, and an attached in-ground swimming pool.

Client Objectives

The client required:

- ✔ Structural review and sign-off for building permit acquisition
- ✔ Permit-ready drawing revisions addressing code and site-hazard gaps
- ✔ A complete, verifiable quantity takeoff
- ✔ A detailed cost estimate backed by DUPA
- ✔ An organized Bill of Quantities
- ✔ Design recommendations appropriate to a flood-prone, seismic, coastal site
- ✔ Full technical documentation to support both permitting and construction

My Responsibilities

- ✔ Reviewing architectural, structural, and plumbing drawings
- ✔ Identifying missing or inconsistent information across the drawing set
- ✔ Reviewing structural and geotechnical adequacy against NSCP 2015 and the site's hazard profile
- ✔ Developing and logging RFIs
- ✔ Performing quantity takeoffs using Bluebeam and Excel
- ✔ Preparing the Bill of Quantities and DUPA
- ✔ Preparing the detailed cost estimate
- ✔ Exercising engineering judgment on assumptions where field data (soil investigation, supplier quotes) was unavailable
- ✔ Technical reporting and full documentation

> One clear boundary: the electrical quantity takeoff was completed with AI assistance since electrical work sits outside my core Civil Engineering and Master Plumber licensure — it is flagged in the estimate for review by a licensed Professional Electrical Engineer before final client submission. Knowing the edge of your own scope is part of the job.

Software Used

Bluebeam Revu

Measurement, markup, drawing review, and revision tracking — area, count, and length tools with color-coded layers for traceability.

Microsoft Excel

Detailed quantity takeoff, Bill of Quantities, DUPA (DPWH format), cost estimate, and the material rate/rental reference database built up from past projects.

AutoCAD

Cross-reference for drawing review where vector detail was needed beyond what the PDF markup allowed.

Claude

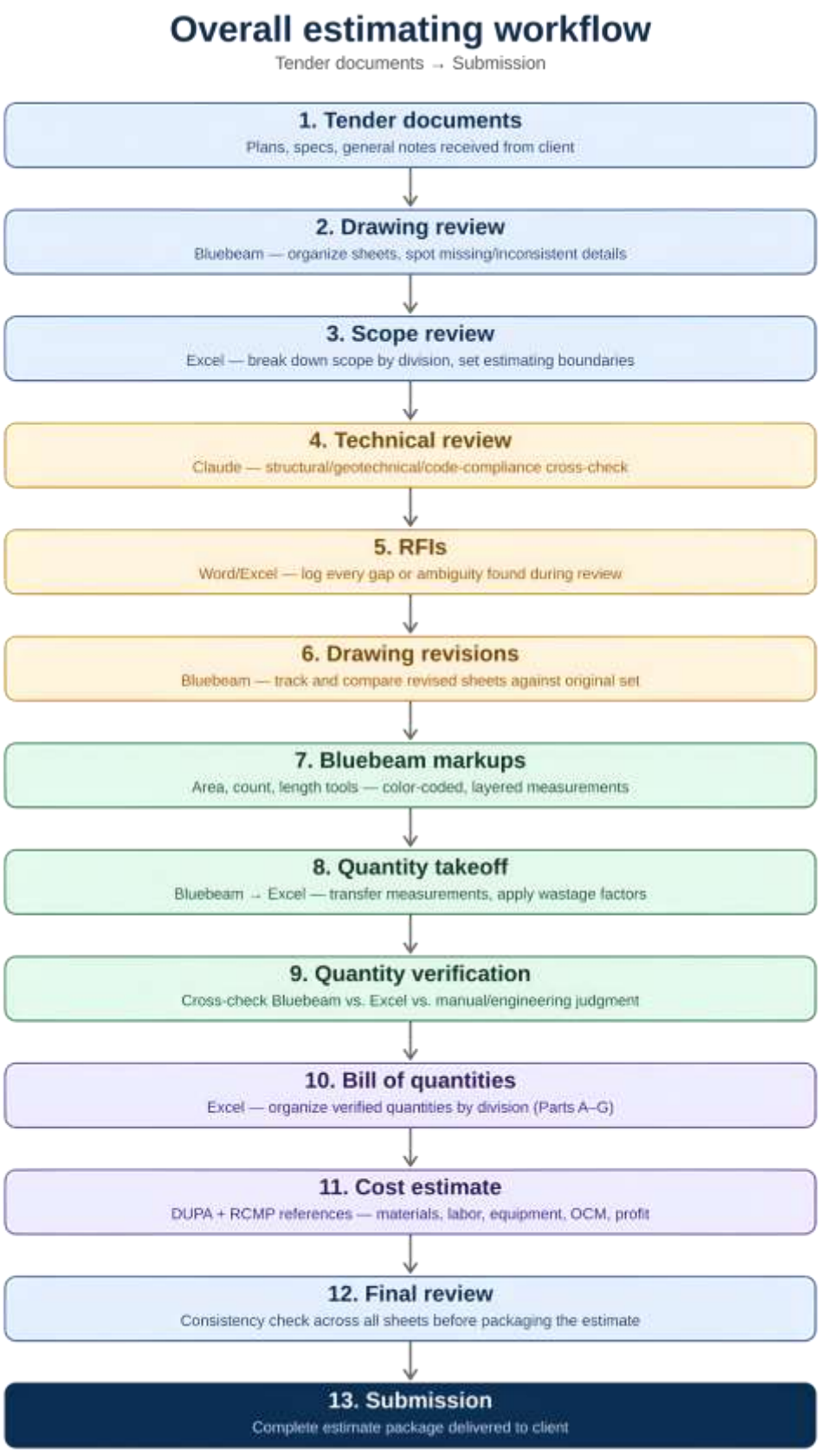
Structural and geotechnical cross-checking against NSCP 2015, since no structural analysis had originally been provided for this project. Used to pressure-test my own engineering judgment against the code — not to replace it.

ChatGPT

Workflow organization and documentation structuring.

> Every engineering decision, revision, and final number in this package is mine. AI tools were used to verify against code, check my assumptions, and speed up documentation — the sign-off is mine, and so is the responsibility.

Overall Estimating Workflow



Review phase (blue) · Technical/AI-assisted phase (amber) · Measurement phase (green) · Estimating phase (purple)

Tender Document Review

The full drawing set was reviewed before any measurement began: cover sheet and general notes, the complete architectural set (A.01–A.14), structural set (S.01–S.14), plumbing set (P.01–P.07), and electrical set (E.01–E.04).

What I checked

- Stated occupancy classification and load assumptions in the general notes
- Foundation type and the soil bearing pressure assumed in the structural notes
- Consistency between architectural and structural dimensions across sheets
- Completeness of schedules (doors/windows, ceiling finishes, lintel/reinforcement tables)

How I organize drawings

Grouped by discipline, cross-indexed against the sheet's own table of contents, with every sheet that referenced a detail not actually included in the set flagged immediately — for example, the plumbing set repeatedly references a “Swimming Pool Design & Specifications” document that had to be tracked down and confirmed separately.

Scope Review and Summary

Before any measurement, the project scope was broken down by division to set clear estimating boundaries and reduce the risk of missed components — including the design review scope, which isn't usually part of a standard estimating engagement.

Division	Scope Summary	Value (₱)	Value (USD)	Value (AUD)
A — General Requirements	Permits, OSH, mobilization/demobilization	67,255.00	$1,103	A$1,574
B — Site Clearing & Disposal	Removal of existing structures/obstructions	21,671.44	$355	A$507
C — Earthworks & Site Prep	Excavation, backfill/ground improvement, termite treatment, damp-proofing, gravel bedding	478,342.03	$7,845	A$11,193
D — Structural Works	Concrete, reinforcement, formwork, steel truss & purlins	3,471,961.27	$56,940	A$81,244
E — Architectural Works	Roofing, CHB walls, tiles, painting, ceiling, doors & windows	2,920,475.70	$47,896	A$68,339
F — Plumbing Works	Fixtures, water lines, sewer, pool plumbing, storm, water storage	423,462.76	$6,945	A$9,909
G — Electrical Works	Service entrance, wiring, lighting, outlets, pool electrical	203,063.32	$3,330	A$4,752

Technical Engineering Review

This is the part of my process most estimators skip — and it's the part that mattered most on this project, since no structural analysis had been done before it reached me.

What I reviewed

- Structural adequacy — occupancy classification, load assumptions, seismic/wind parameters
- Geotechnical assumptions — assumed bearing capacity and foundation type for a coastal, flood-prone soil profile. I initially proposed a strip foundation for economy, but the client wanted a mat foundation, which was significantly more costly and which he wanted to pursue without a soil investigation or structural analysis.

- Constructability — whether the drawn details (e.g., grade beam vs. mat, roof anchorage) could actually be built as shown
- Code compliance — against NSCP 2015 and general Philippine building code practice
- Site-specific risk — flood elevation, typhoon wind exposure, seismic zone

Claude review summary (my curated takeaways, not the full report)

- Corrected an Occupancy Category I ("essential facility") classification carried over from what was clearly a reused school-building template — this residence is Category IV
- Flagged an undocumented 340 kph design wind speed against the true NSCP 2015 figure for this region (≈250 kph) and had it reconciled
- Resolved a mismatch between the owner's requested mat foundation and drawings that still showed isolated footings with grade beams
- Worked out the correct detailing for a slab-on-grade cast over engineered backfill on a flood-elevated site — including the isolation joint between the slab and the structural frame, which is the detail most commonly missed on this type of construction in the Philippines
- Flagged the original roof truss anchorage (10mmØ bolts, 300mm embedment) as light for this wind corridor and had it upsized

My decisions

I made the final call on every member size that ended up in the executed drawings. The owner wanted a mat foundation; before agreeing, I recommended at least a structural analysis, since he was also unwilling to commission a soil investigation. He declined, so I proceeded on my own engineering judgment given the coastal, flood-prone soil profile — the AI-assisted review gave me a code-referenced basis to act on, but the sign-off and the responsibility are mine.

Requests for Information (RFIs)

#	Question / Item	Reason	Status
1	Pool design and specifications not included in original drawing set	The drawings as originally issued omitted swimming pool structural and plumbing details entirely.	Resolved — obtained and incorporated the referenced Swimming Pool Design & Specifications document.
2	Gutter downspout hardware (end caps, outlets, brackets) not shown	No gutter accessory details were provided in the roofing section of the plans.	Assumption documented — standard hardware allowance applied pending confirmation.
3	Revised mat foundation details required per code	Reinforcement bar sizes and spacing, ground beam dimensions, and slab elevations were inconsistent or missing across the structural sheets.	Resolved — revisions marked up in Bluebeam and adopted into the final structural drawings.
4	Stemwall details not shown	No section or design detail was provided for the stemwall.	Open — flagged for the structural engineer's follow-up.
5	General notes require revision per NSCP 2015	General notes appeared to be copied from an unrelated school-building template and did not reflect the correct	Resolved — general notes revised and

#	Question / Item	Reason	Status
		occupancy classification or code basis for this residence.	reconciled against NSCP 2015.
6	Door and window labels not reflected on floor plans	Schedule references could not be matched to callouts on the floor plans, preventing quantity verification.	Resolved — revised floor plans received with labels added; quantities verified against the updated schedule.
7	Pool plumbing system requires revision	The pool plumbing layout lacked a complete system for circulation, filtration, and maintenance.	Assumption documented — standard configuration applied pending mechanical/pool contractor confirmation.
8	No electrical drawing for pool equipment (pump/filter/chlorinator)	Electrical requirements for the pool equipment were not shown on the electrical set; gap identified during AI-assisted cross-check of the drawings.	Open — flagged for review by a licensed Professional Electrical Engineer before final client submission.
9	Window W5 listed in schedule/estimate but not located on any floor plan or elevation	W5 appeared in the door/window schedule but could not be located on the revised floor plans or elevations, despite the revision otherwise reflecting updated labels.	Resolved via addendum — clarified with client and incorporated into the Design & Estimate Addendum Memo.
10	No exterior stair detail found on the plans	An exterior stair was implied by the site layout, but no structural or architectural detail was provided anywhere in the set.	Resolved via addendum — dimensions and railing detail assumed and documented in the Design & Estimate Addendum Memo.

Drawing Revisions

Revisions were tracked against the original issued set using Bluebeam's markup and comparison tools. The table below summarizes the structural revisions that were actually adopted into the executed drawings, cross-checked against the final QTO workbook.

Item	Original	Revised
Mat foundation thickness	Not clearly specified / assumed thin	400mm — governed by punching shear check
Mat reinforcement	25mmØ @ 110mm o.c. (congested)	16mmØ @ 150mm o.c., both ways, both faces
Ground level structural element	Tie beam	Grade beam, appearing only above the +1.8m backfill level
Slab-on-grade (SOG) thickness	Unspecified	125mm, confirmed final
Columns	Mixed sizing across sheets	400×400mm, uniform ground floor & 2nd floor

Item	Original	Revised
Beams (GTB / 2F)	300×500 / 300×450mm (early proposal)	300×400mm, uniform, as adopted in final drawings
Roof truss base anchorage	4-10mmØ A325 bolts, 300mm embedment	4-16mmØ A325 bolts, 400mm embedment

Bluebeam Markups

Construction of 2 Storey Residential Building with pool.pdf Markup Summary 01-08-2026

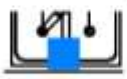
Plumbing Fixtures (10)
Count: 10 **Measurement:** 10 Count

Subject: Plumbing Fixtures
Length: 0
Area: 0.00
Wall Area: 0
Volume: 0
Count: 1
Measurement: 1 Count
Label: Floor Drain
Layer: Plumbing

Subject: Plumbing Fixtures
Length: 0
Area: 0.00
Wall Area: 0
Volume: 0
Count: 1
Measurement: 1 Count
Label: Shower Head
Layer: Plumbing

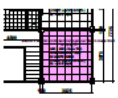
Subject: Plumbing Fixtures
Length: 0
Area: 0.00
Wall Area: 0
Volume: 0
Count: 1
Measurement: 1 Count
Label: Lavatory
Layer: Plumbing

Subject: Plumbing Fixtures
Length: 0
Area: 0.00
Wall Area: 0
Volume: 0
Count: 1
Measurement: 1 Count
Label: Water Closet
Layer: Plumbing

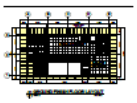


Subject: Plumbing Fixtures
Length: 0
Area: 0.00
Wall Area: 0
Volume: 0
Count: 1
Measurement: 1 Count
Label: Kitchen Sink
Layer: Plumbing

Floor Finish (5)
Length: 0.00 m **Area:** 125.08 sq m **Wall Area:** 4.62 sq m **Volume:** 4.43 cu m **Measurement:** 125.08 sq m



Subject: Floor Finish
Length: 15.40 m
Area: 14.78 sq m
Wall Area: 4.62 sq m
Volume: 4.43 cu m
Count: 0
Measurement: 14.78 sq m
Label: 600mm x 600mm UnGlazed Homogenous Tiles in matte finish
Layer: Architectural



Subject: Floor Finish
Length: 107073.00 mm
Area: 59.97 sq m
Wall Area: 0
Volume: 0
Count: 0
Measurement: 59.97 sq m
Label: Pavement Stones
Layer: Architectural

Sample markup summary page — plumbing fixture and floor finishes takeoff with count tool annotations, label, and layer assignment

Tools used

- Area Tool — slab, wall, and finish quantities (e.g., mat foundation footprint measured at 95.29 sqm)
- Count Tool — fixtures, doors/windows, lighting points
- Length Tool — CHB wall runs, piping runs
- Notes & Layers — every markup tagged to a discipline layer (Plumbing, Architectural, Structural, To Revise) with color coding for traceability

Quantity Takeoff

Example — mat foundation concrete volume, traced end to end:

Step	Detail
1. Measured in Bluebeam	Mat foundation footprint area tool → 95.29 sqm
2. Transferred to Excel	Area carried into the FINAL BACKUP (rect) sheet
3. Verified	Cross-checked footprint against the structural mat foundation plan
4. Design thickness applied	0.4m confirmed thickness (governed by punching shear)
5. Result	95.25 sqm × 0.4m = 38.116 m³ concrete → carried to BOQ

Quantity Verification (QA/QC)

This step is missing from most estimating portfolios — here's how it was actually done on this project:

- Cross-check between Bluebeam-measured areas/lengths and the Excel takeoff sheet, line by line
- Manual spot-checks against dimensioned callouts on the structural sheets (not scaled measurements alone)
- Engineering judgment applied wherever a drawing was ambiguous or incomplete — documented as an assumption, never silently guessed
- Every AI-assisted takeoff item (electrical scope) was individually re-checked by hand before being accepted into the final BOQ

Detailed Quantity Takeoff — Selected Highlights

Full detail lives in the appendix; the items below are the ones worth walking through.

Item	Basis	Quantity
Mat foundation concrete	95.25 sqm × 0.4m	38.116 m³
Mat edge thickening	Perimeter × 0.4m × 0.6m	12.629 m³
Slab-on-grade (SOG)	0.125m thickness	10.646 m³
2nd floor slab	0.125m thickness	10.646 m³
Columns (concrete)	400×400mm, ground & 2F	15.936 m³
Reinforcing steel, Grade 60 (main bars)	Columns, tie beams, beams, lintel beams, slab, footings	10,977.41 kg
Reinforcing steel, Grade 40 (ties/stirrups)	All transverse reinforcement	4,979.15 kg
Formworks and falseworks	All cast-in-place elements	183.34 sqm

Item	Basis	Quantity
Engineered select granular backfill (to +1.8m)	Platform area net of pool, net of mat/gravel/blinding	364.5 m³
Surcharge preload fill (temporary)	Ground improvement per Structural Review Sec. 12	≈100.0 m³

Bill of Quantities — Summary

Part	Division	Total (₱)	Total (USD)	Total (AUD)
A	General Requirements	67,255.00	$1,103	A$1,574
B	Site Clearing, Demolition & Disposal	21,671.44	$355	A$507
C	Earthworks & Site Preparation	478,342.03	$7,845	A$11,193
D	Structural Works	3,471,961.27	$56,940	A$81,244
E	Architectural Works	2,920,475.70	$47,896	A$68,339
F	Plumbing Works	423,462.76	$6,945	A$9,909
G	Electrical Works	203,063.32	$3,330	A$4,752
	TOTAL PROJECT COST	7,586,231.52	$124,414	A$177,518

> Structural (Part D) and Architectural (Part E) works together make up roughly 85% of total project cost — consistent with a hazard-driven design where foundation, frame, and envelope carry most of the budget.

Detailed Cost Estimate

Component	Amount (₱)	Amount (USD)	Amount (AUD)
Materials	4,654,690.86	$76,337	A$108,920
Labor	865,399.28	$14,193	A$20,250
Equipment	585,104.92	$9,596	A$13,691
Total Direct Cost	6,105,195.05	$100,125	A$142,862
OCM (Overhead, Contingency & Miscellaneous)	905,823.01	$14,855	A$21,196
Contractor's Profit	483,985.60	$7,937	A$11,325
TOTAL PROJECT COST (VAT-inclusive)	7,586,231.52	$124,414	A$177,518

Pricing basis: historical prices from my past projects, DPWH RCMP (Regional Consolidated Market Prices), DPWH DUPA format for unit price analysis, and engineering judgment where current supplier data wasn't yet available. Future revisions will replace placeholder pricing with actual supplier quotations.

Supplier Validation — Planned Next Step

Not yet completed on this engagement — flagged here as a deliberate next step for future estimates, since current pricing is still reference-based rather than quoted.

Item	Supplier A	Supplier B	Supplier C
Ready-mix concrete, f'c=27.6 MPa	To be quoted	To be quoted	To be quoted
Reinforcing steel, Grade 60	To be quoted	To be quoted	To be quoted

Item	Supplier A	Supplier B	Supplier C
PPGI roofing sheet, 0.6mm	To be quoted	To be quoted	To be quoted

Building this comparison table into the estimating workflow — rather than treating supplier validation as an afterthought — is one of the maturity improvements I'm carrying into future engagements.

Risks Identified

No soil investigation was conducted — all bearing capacity values in the structural notes are assumed, not tested.

Flood-prone coastal site — required a full re-think of the ground floor system (elevated slab-on-grade over engineered backfill), not just a foundation upsize.

Seismic Zone 4 — highest seismic zone designation nationally.

No structural analysis was originally provided — initial member sizes were dimension-only, not calculated.

Drawing inconsistencies across revisions — required active version tracking to avoid pricing an outdated detail.

Missing specifications — lighting fixture schedule, pool equipment electrical layout, and other items logged as RFIs.

Placeholder material brands/allowances used pending client/supplier confirmation.

Challenges

Organizing a large, inconsistent drawing set into a structured estimating workflow was the first challenge — but not the hardest one.

The harder challenge was structural: the design showed a lot of details that weren't standard code-compliant practice, and no soil investigation or structural analysis had been performed — member sizes came from initial dimensioning, not calculation. I offered the client a proper structural analysis and soil investigation for the mat foundation design; both were declined, and there was no signed contract in place by the time that became clear. Rather than walk away from work already in progress, I stayed on and built a code-referenced basis for every decision instead — cross-checking against NSCP 2015 and using AI-assisted verification to pressure-test my assumptions before signing off.

The site itself compounded this: it's genuinely earthquake-prone and sits in a heavy typhoon corridor along the Pacific side of Samar, and it's coastal. Given all of that, an isolated footing was the wrong call — the owner independently wanted a mat foundation, which I agreed with, and I redesigned the other structural members around that decision with Claude's help to check my reasoning against the code.

The +1.8m flood elevation added its own layer: elevating soil like that properly needs an engineered fill methodology and a retaining structure to hold the elevated soil in place while also supporting the structure above it — not just a taller foundation.

On top of the structural struggles, the drawing set itself had a lot of errors, and the resulting revisions repeatedly delayed my quantity takeoff and scope assessment. Keeping Bluebeam measurements and Excel calculations consistent while all of this was moving took real discipline, as did managing assumptions where supplier pricing wasn't yet available.

Solutions

- Built a structured estimating workflow from drawing review through to final estimate preparation, instead of measuring ad hoc.
- Used Bluebeam markups together with Excel verification to reduce omissions and keep quantities traceable.

- Logged every note and revision, marking up drawings in Bluebeam so revisions were clearly spotted and identified.
- Organized estimating documents into clearly defined sections for easier review and future updates.
- Planned to replace preliminary pricing with supplier quotations to improve estimate reliability going forward.
- Used AI deliberately — not only to work faster, but for critical thinking, cross-checking against code, and catching things I might otherwise have missed. I verified every AI-assisted output one by one, correcting, adding missing scope, and fixing wrong takeoffs myself before anything went into the final package.

Final Deliverables

- ✔ Drawing Review
- ✔ Bluebeam Markups
- ✔ RFI Log
- ✔ Quantity Takeoff
- ✔ Bill of Quantities
- ✔ Detailed Cost Estimate
- ✔ Technical Review Report
- ✔ Design Recommendations & Addendum

Key Results

Metric	Result
Structural gaps caught before permitting	Occupancy classification, wind speed basis, foundation system, roof anchorage — all corrected before sign-off
Estimating omissions reduced	10 RFIs logged and tracked, including 2 gap items (W5, railings) resolved via formal addendum
Documentation	Traceable quantities — every BOQ figure can be walked back to a Bluebeam measurement or a structural calculation
Turnaround	Complete estimate package developed over approximately 48 productive working hours, from drawing review through final documentation
Total Project Cost	₱7,586,231.52, fully broken down by division and by material/labor/equipment/markup

Lessons Learned

- A structured workflow reduces estimating errors.
- Clear client communication and boundary-setting — including a proper contract agreement — protects both sides.
- Clear documentation improves review and collaboration.
- Quantity verification is just as important as the measurement itself.
- Reliable pricing should be backed by current supplier quotations whenever possible.
- Before accepting a project, check the tendered documents first — completeness, complexity, design risk, and level of detail all belong in the rate, not just the hours.

Reflection

Clients are best served by getting design work done by qualified professionals from the outset — not just for aesthetics, but because life-safety code compliance has to come first. That's the standard I now apply to how I scope and price my own engagements: I review the tendered documents up front — completeness, complexity, design risk, and level of detail — and the final rate reflects the actual scope, hours, and complexity of the work, structured as a lump sum where appropriate.

A signed contract now sits at the start of every engagement — it protects the client's scope and my time, and it's non-negotiable before work begins. That structure is what lets me commit fully to a project: the client gets quality output, and I get the compensation the work is worth.

Appendix

Full supporting documentation is maintained separately and available on request. This case study intentionally keeps the main narrative focused — the appendix is where completeness lives.

Document	Contents
Full Bill of Quantities	Complete line-item BOQ, all divisions (Parts A–G)
Complete Excel Workbook	SOW, BOM/BOQ, estimate, DUPA, POW, manpower & equipment, material rates — full computation backup
Complete Bluebeam Markups	Full markup summary, all disciplines, all sheets
Complete RFI Log	All 10 logged items with full remarks and cross-references
Structural & Geotechnical Review Report	Full technical review with code basis, revised general notes, and structural member schedule
Design & Estimate Addendum Memo	W5 window and railings follow-up, per personal review notes
Swimming Pool Design & Specifications	Referenced pool design/spec document
Full Drawing Set	Architectural, structural, plumbing, and electrical sheets, as revised