



CATHA PRACTICAL AI FOR CONSTRUCTION LIBRARY

Will AI Pay for Itself in Construction?

Construction AI ROI and Business Case Workbook

Guide 1

Practical AI for Construction. Responsible. Outcome-driven.

Catha Construction Services | 2026 Edition

How to Use This Guide

This workbook turns an AI idea into a measurable investment case. It is deliberately skeptical: a use case should earn the right to be funded.

This workbook is for construction companies evaluating a specific AI use case. Baseline the current labor, cycle time, error, missed follow-up, rework or opportunity cost before assigning any value to AI.

Best use

Complete one workbook per workflow. Use actual operating data where possible. If you cannot estimate the current cost of the problem, do not claim a future ROI yet.

1. Define the Business Problem

Question	Your answer
What work are we changing?	
Who owns the outcome?	
What failure or delay are we trying to reduce?	
What measurable result should improve?	
What happens if we do nothing?	

2. Establish the Current-State Baseline

Metric	Current value	Source
Monthly volume		
Human hours per unit		
Loaded labor cost/hour		
Error/rework rate		
Average delay		
Revenue lost or delayed		
Customer-service cost		
Compliance/quality incidents		

3. Calculate the Cost of the Current Process

Use conservative numbers. Count only costs that can be traced to the workflow.

Cost component	Formula	Annual estimate
Direct labor	Volume × hours × loaded hourly cost	

Cost component	Formula	Annual estimate
Rework	Errors × average rework cost	
Delay	Delayed cases × economic cost of delay	
Lost opportunity	Qualified opportunities missed × expected contribution	
Other recurring cost	Licenses, contractors, manual handling	

Current-state cost

Annual current-state cost = direct labor + rework + delay + lost opportunity + other recurring cost.

4. Estimate the AI-Enabled Future State

Assumption	Low	Expected	High
Adoption rate			
Time reduction			
Error reduction			
Volume handled			
Revenue lift			
Human review time			
Exception rate			

5. Add the Full Cost of AI

Cost category	Year 1	Recurring annual
Software subscriptions		
API/model usage		
Automation/integration		
Implementation/build		
Security & governance		
Training/change management		
Human review & QA		
Monitoring/maintenance		
Contingency (10-20%)		

6. ROI Calculations

Measure	Formula	Result
Annual gross benefit	Cost avoided + contribution gained	
Annual net benefit	Gross benefit - recurring AI cost	
Year-1 net benefit	Gross benefit - Year-1 total cost	
ROI %	Net benefit ÷ total cost × 100	
Payback months	Initial investment ÷ monthly net benefit	
3-year net value	3-year benefit - 3-year total cost	

7. Reality-Check the Business Case

Check	Item	Notes
☐	Benefits are tied to a named owner	_____
☐	Baseline numbers came from operating evidence	_____
☐	Savings represent work actually eliminated or redeployed	_____
☐	Human review time is included	_____
☐	Integration and maintenance are included	_____
☐	Adoption below 100% is modeled	_____
☐	Failure/exception handling is costed	_____
☐	A simpler non-AI alternative was compared	_____

8. Decision Gate

Score	Interpretation	Recommended action
80-100	Compelling	Fund a controlled pilot with explicit success thresholds.
65-79	Promising	Pilot narrowly; validate the largest assumptions first.
50-64	Marginal	Redesign the workflow or reduce solution cost before proceeding.
<50	Weak	Do not implement yet. Fix the business case, process, or data first.

Catha principle

AI should not be approved because it is interesting. It should be approved because the expected value exceeds the full cost, risk and management burden.

Construction Applications

Good candidates include estimating research, bid document review, project administration, customer/subcontractor follow-up, closeout, reporting and business-development research. Keep expected revenue benefits conservative and separate hard savings from capacity gains.