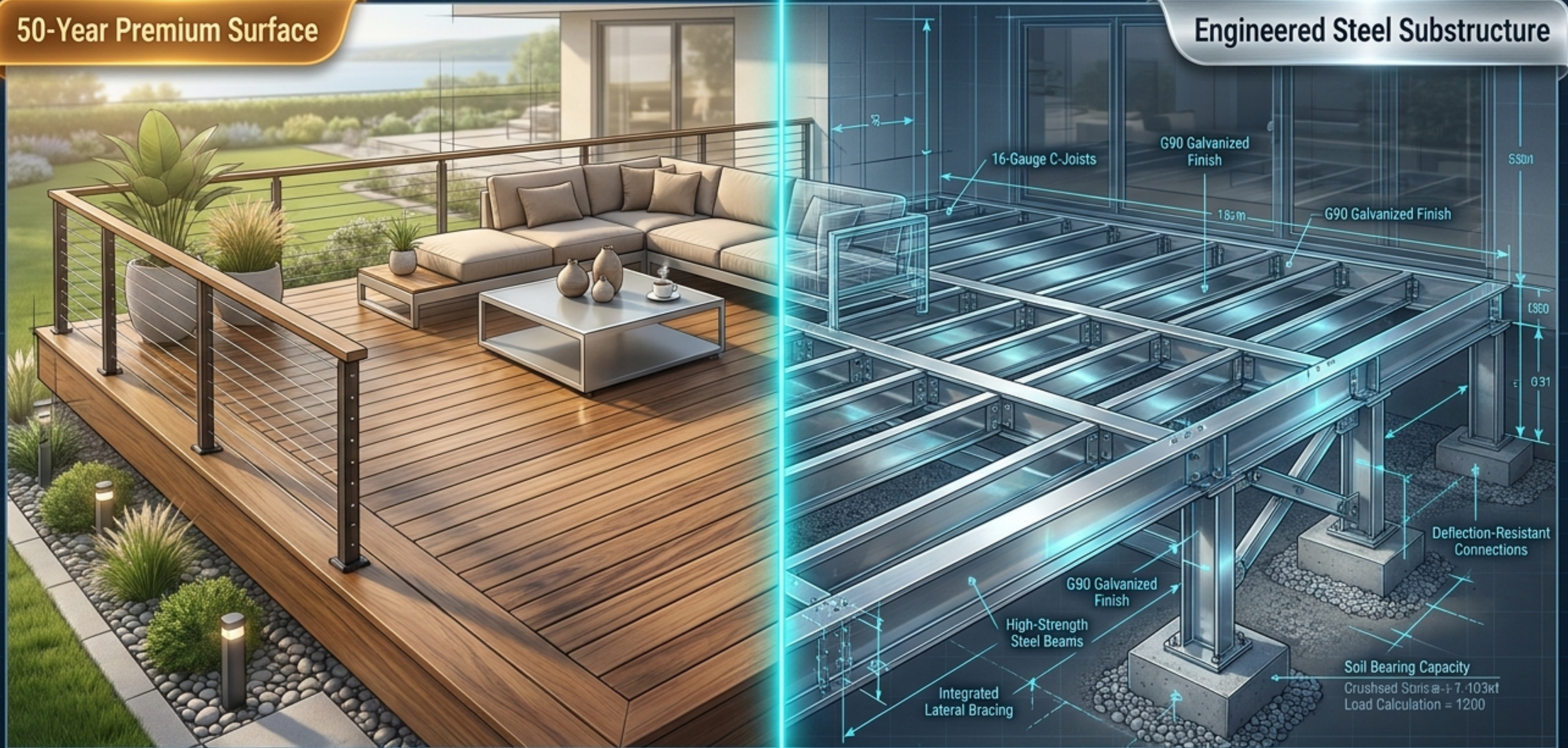


Building the “Forever Frame” Substructure

Cold-Formed Steel vs. Pressure-Treated Lumber: The engineering, safety, and financial realities of modern deck construction.

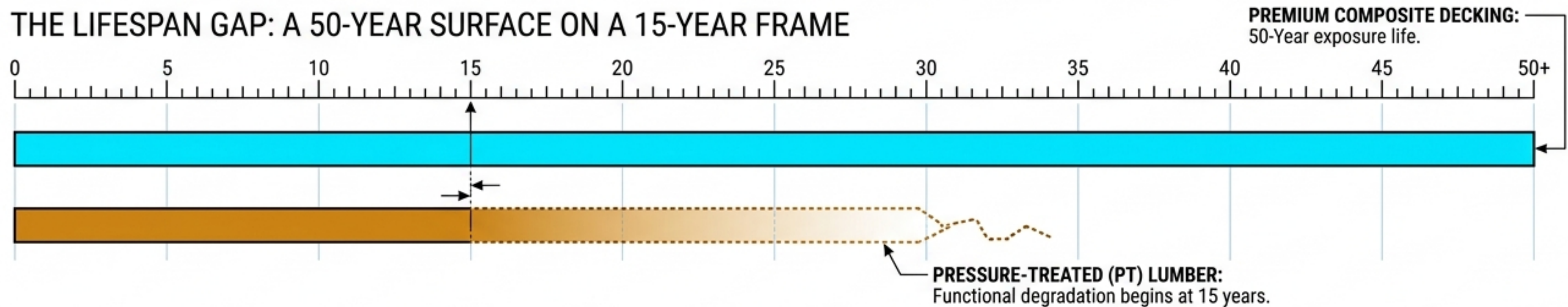
50-Year Premium Surface

Engineered Steel Substructure

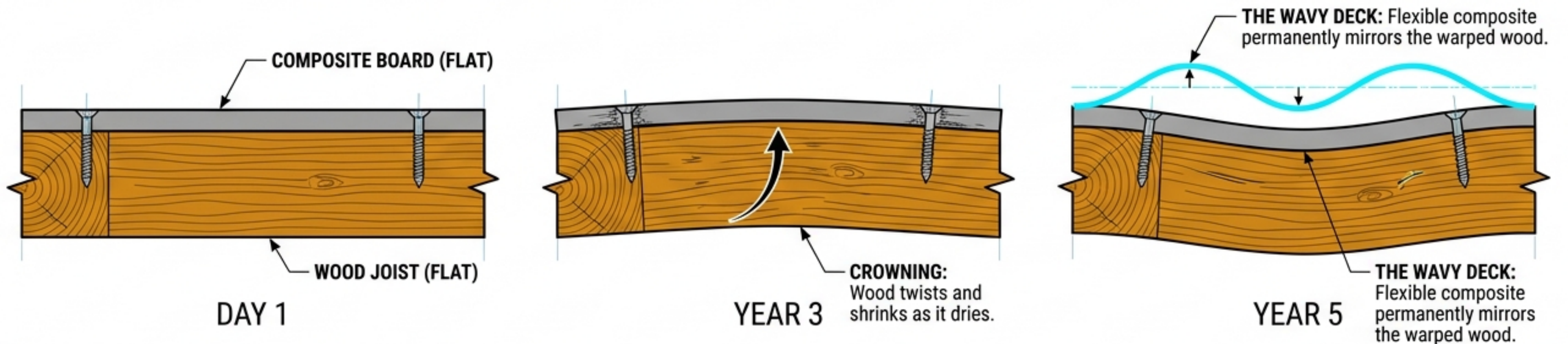


THE PROBLEM: WOOD JOIST WARPING & SURFACE DISTORTION

THE LIFESPAN GAP: A 50-YEAR SURFACE ON A 15-YEAR FRAME



THE PHYSICS OF FAILURE: MECHANICAL TRANSFER OF WARPING



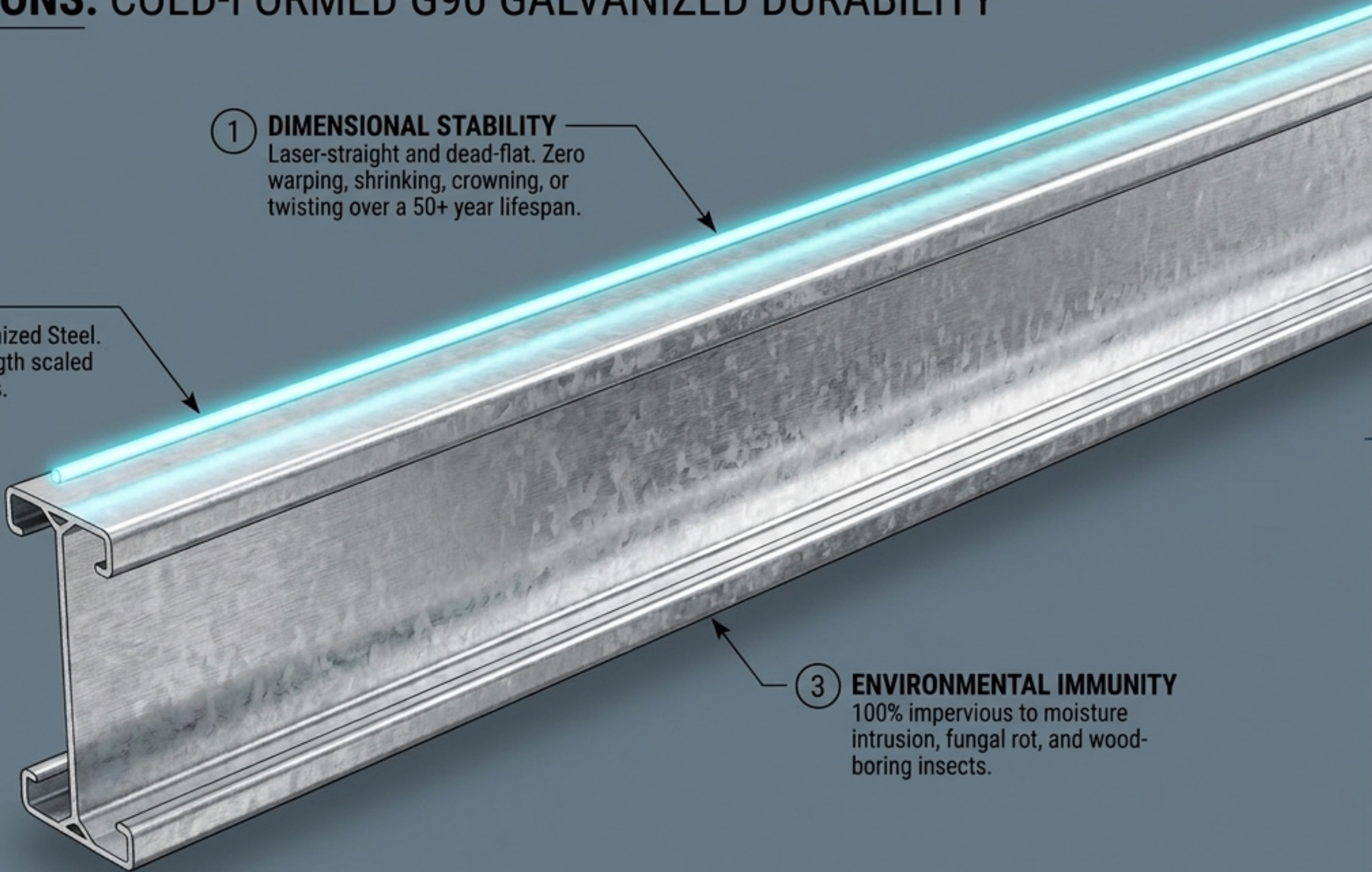
STEEL SPECIFICATIONS: COLD-FORMED G90 GALVANIZED DURABILITY

1		
SCALE	REVISION	PROJECT

1 **DIMENSIONAL STABILITY**
Laser-straight and dead-flat. Zero warping, shrinking, crowning, or twisting over a 50+ year lifespan.

2 **MATERIAL RATING**
Cold-Formed G90 Galvanized Steel. Commercial-grade strength scaled for residential backyards.

3 **ENVIRONMENTAL IMMUNITY**
100% impervious to moisture intrusion, fungal rot, and wood-boring insects.



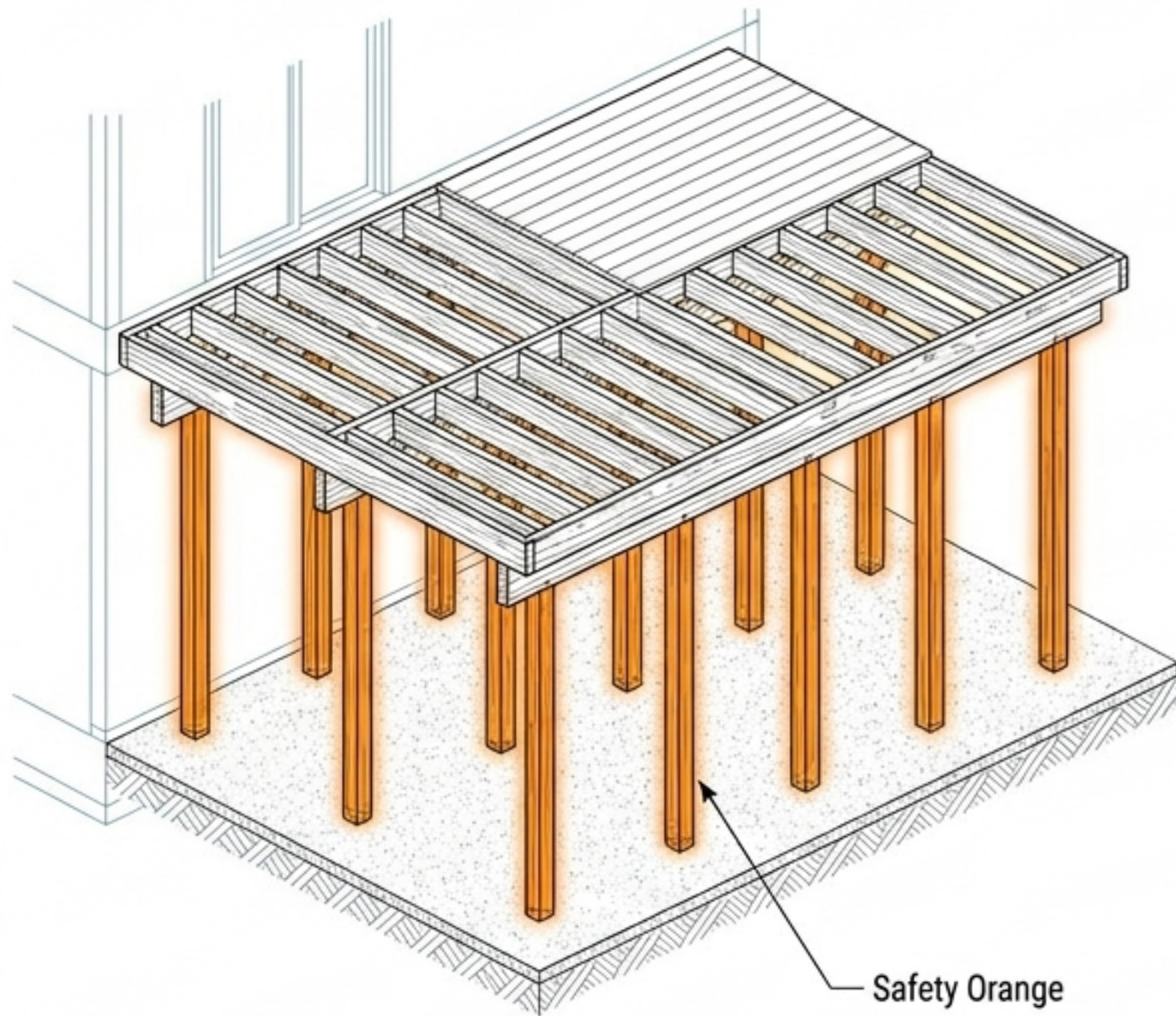
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SPANS & LAYOUT: LONGER BEAMS, OPEN SUB-DECK SPACE

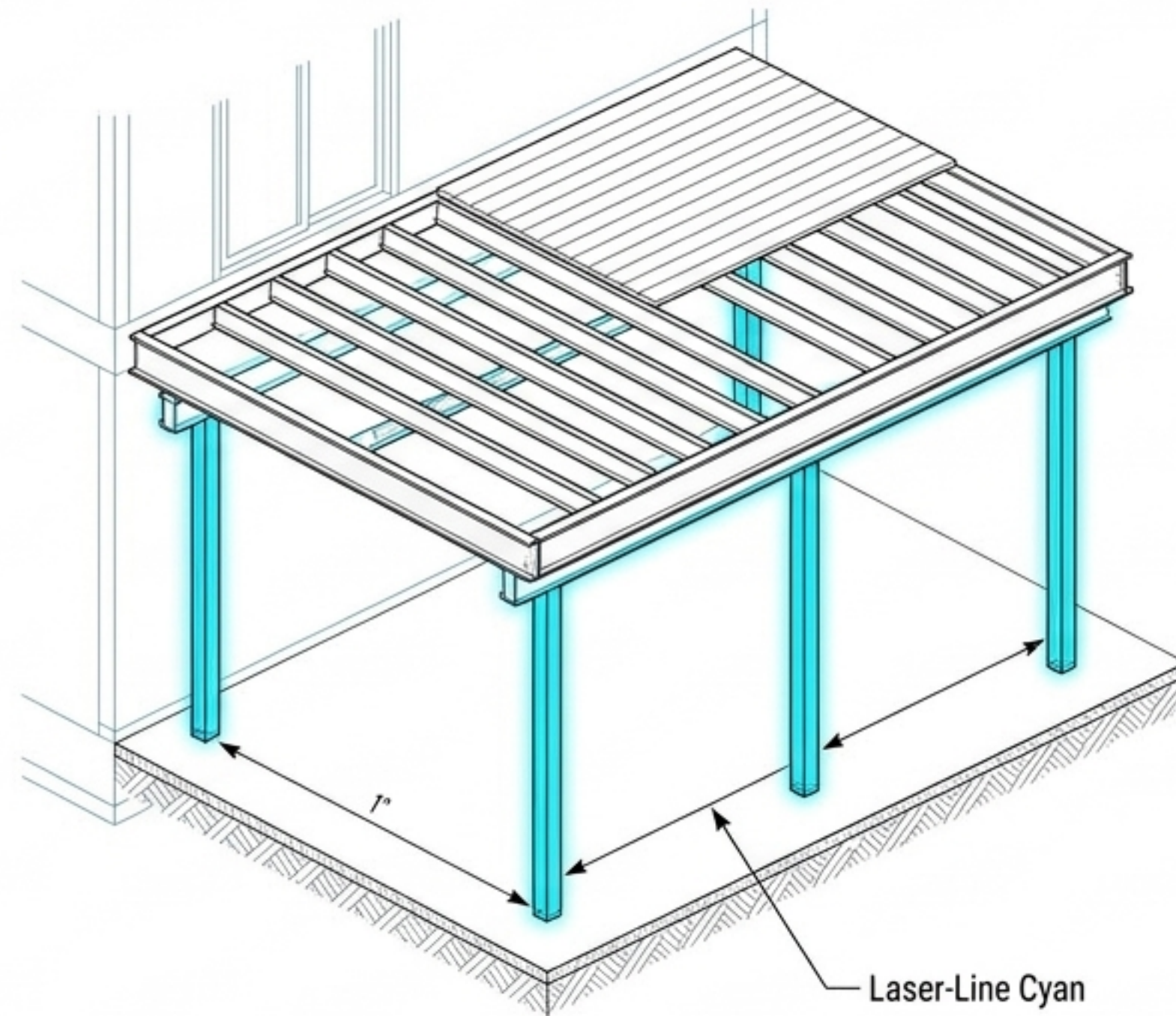
TRADITIONAL PT WOOD FRAME



Safety Orange

Requires tight post spacing and dense joist grids, creating a "forest of posts" that limits usable ground space.

COLD-FORMED STEEL FRAME



Laser-Line Cyan

Superior strength-to-weight ratio allows for extended spans, eliminating mid-span supports and unlocking the sub-deck for outdoor living.

SCALE	REVISION	PROJECT

1	2	3	4
1	2	3	4
1	2	3	4

1	2	3	4
1	2	3	4
1	2	3	4

SAFETY RATINGS: NON-COMBUSTIBLE & CHEMICAL-FREE FRAMING

CLASS A FIRE RESISTANCE



Steel is **100% non-combustible**. It acts as a critical firebreak against flying embers in Wildland-Urban Interface (WUI) zones. It will not ignite, melt, or contribute fuel to a fire.

ENVIRONMENTAL SAFETY



Chemically inert with zero leaching. Traditional pressure-treated lumber relies on harsh chemical treatments to delay rot, which can leach into backyard soil. Steel leaves zero environmental footprint.

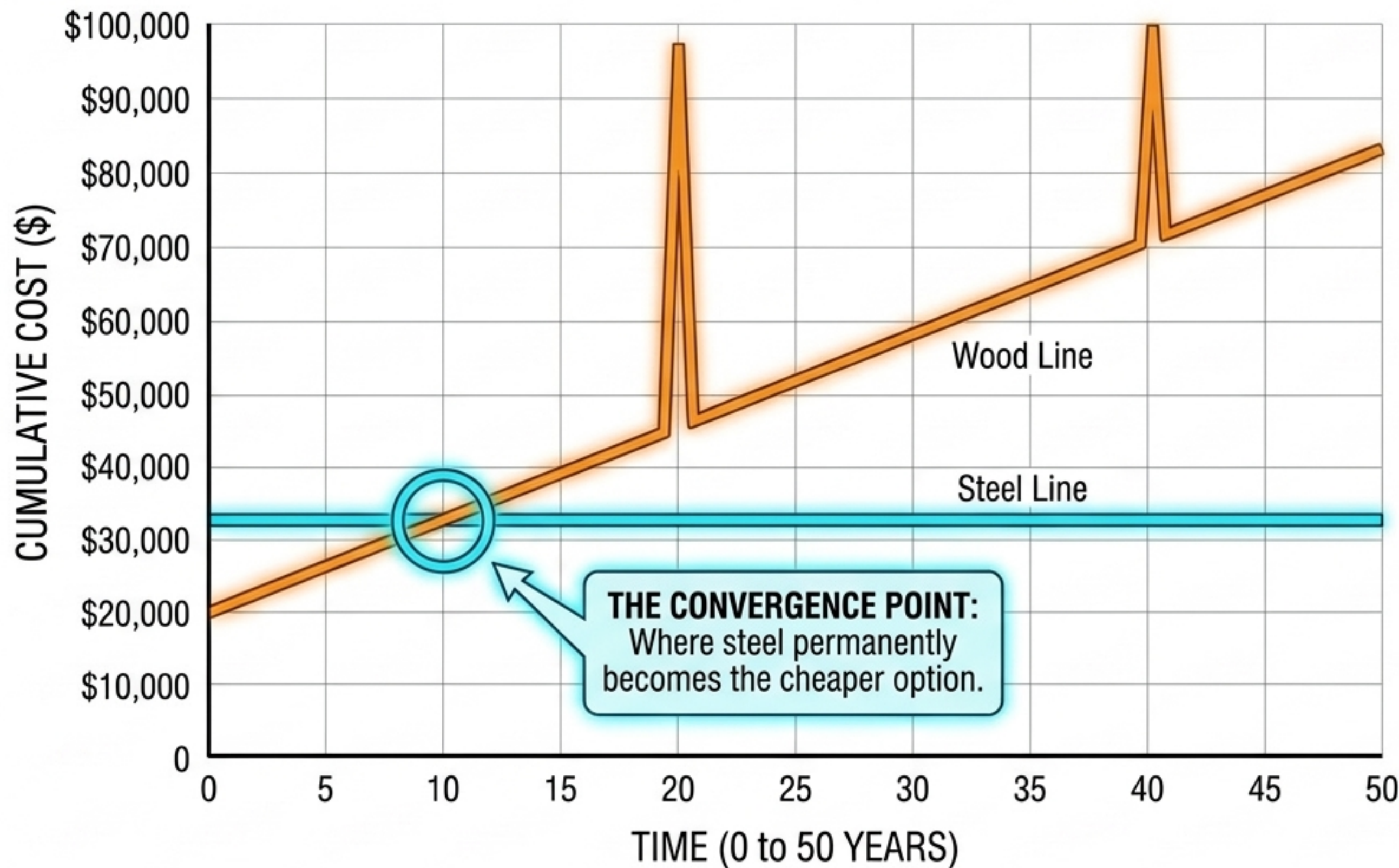
SCALE	REVISION	PRIEET

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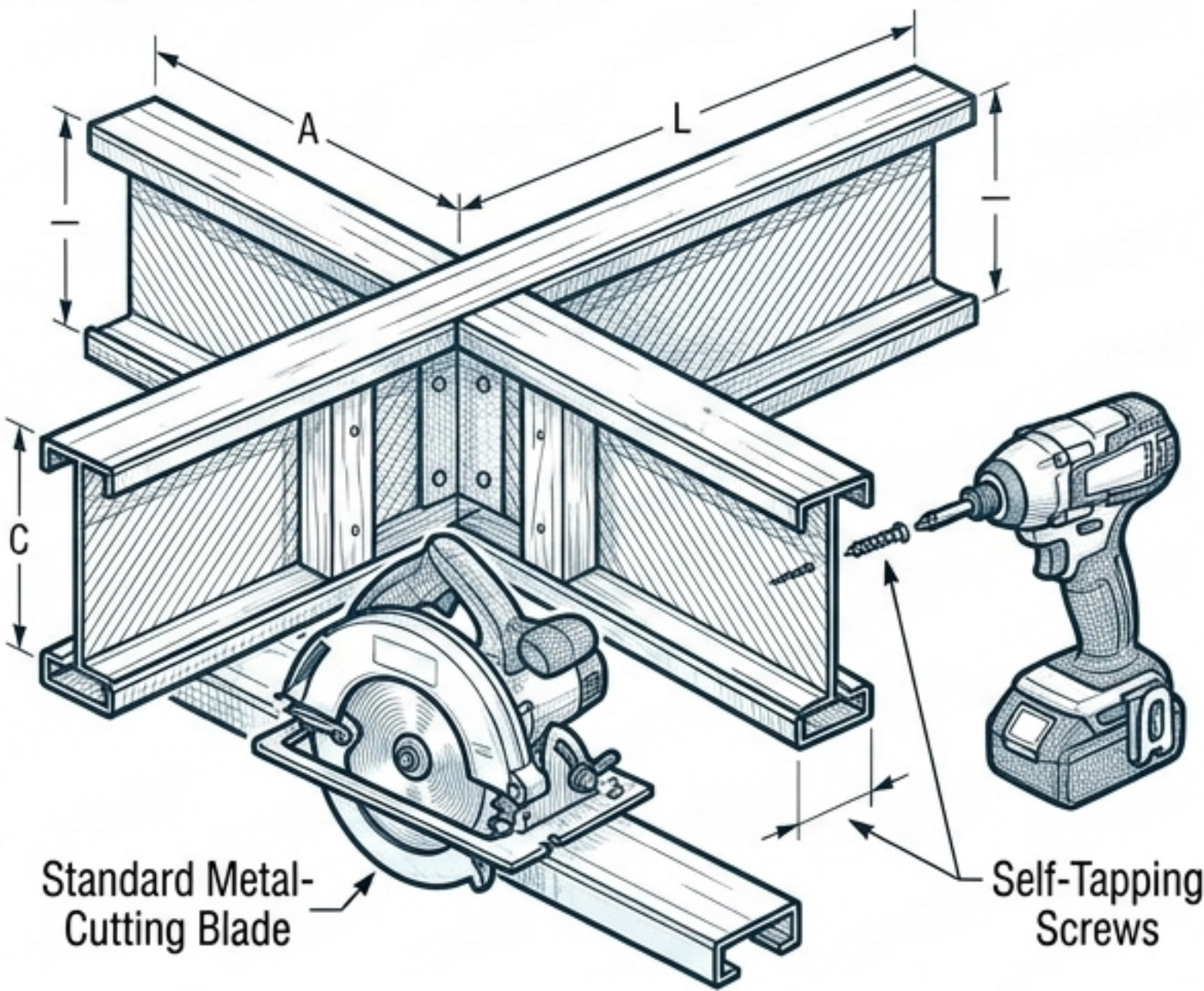
FINANCIAL ANALYSIS: UPFRONT COSTS VS. 50-YEAR TOTAL COST OF OWNERSHIP



- **The Upfront Gap:** Manufacturing efficiencies and lumber price volatility have narrowed initial material cost differences.
- **The Hidden Subscription:** Wood requires constant maintenance and guaranteed replacement cycles. Steel is a one-time, lifetime investment.

INSTALLATION WORKFLOW & THE SUBSTRUCTURE SCORECARD

LABOR PARITY & SPEED



Modern steel framing systems are engineered for the tools your crew already owns. Lighter weight and perfectly straight pieces eliminate hours wasted sorting and planing warped wood.

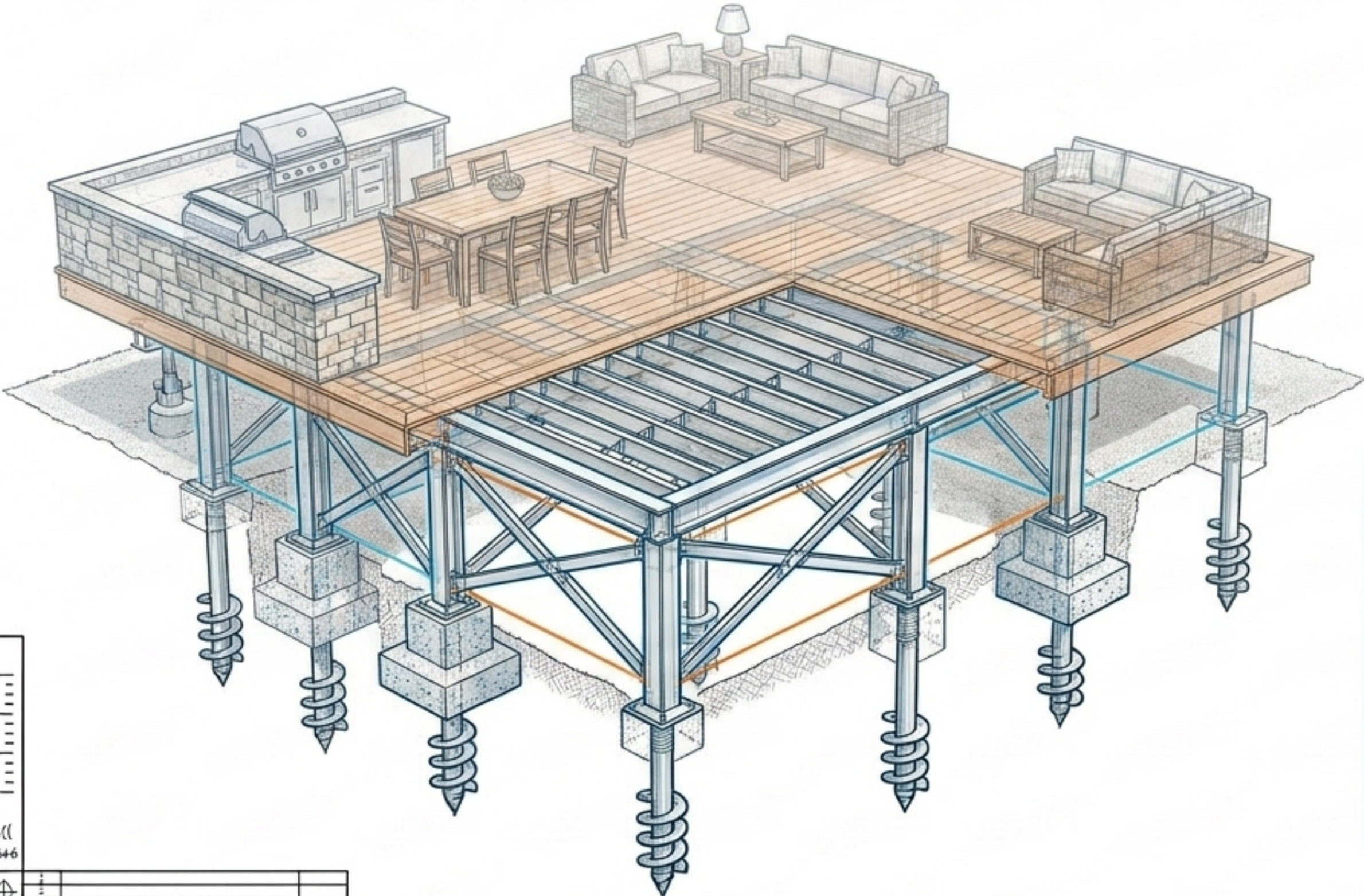
THE SCORECARD

	PT LUMBER	G90 STEEL
Surface Flatness	Susceptible to crowning	Dead-flat, permanently
Span Distance	Restricted	Extended open space
Combustibility	Fuel source	Class A Non-Combustible
Toxicity	Chemical leaching	Chemically inert
Lifespan	15-30 Years	50+ Years

SUMMARY & RECOMMENDATIONS: BUILD ONCE. ENJOY FOREVER.



If building a deck with a 50-year premium surface, the only logical foundation is a 50-year steel frame.



NEXT STEPS



Site Evaluation & Span Optimization



Engineering Review for Helical Pile Footing Integration



Finalized "Forever Frame" Proposal

