TRIDENT BUILD

Autonomous Home Construction — Robots. Drones. Boats.
Accelerated by AI and Quantum Technologies.

Business Plan — July 2026
Confidential

1. Executive Summary

Trident Build is an autonomous construction company that uses coordinated fleets of self-directed ground robots, aerial drones, and autonomous marine vessels to build residential homes faster, cheaper, and safer than conventional methods. The trident's three prongs — land, air, and water — form a single AI-orchestrated construction system.

This plan adds a fourth force multiplier: quantum technologies. Trident Build will layer quantum and quantum-inspired computing, quantum sensing, and post-quantum security on top of its AI core across a phased, capital-efficient roadmap. Quantum-inspired optimization is deployable today for fleet scheduling and site logistics; cloud-access quantum processors and quantum sensors are integrated as the hardware matures — giving Trident a durable technology moat no competitor in residential construction currently pursues.

- Patent-pending: U.S. provisional patent application No. 64/105,529 (filed July 6, 2026) covers quantum computer and quantum technologies applied to constructing, building, repairing, and replacing physical components in housing, plumbing, electrical, and automobiles.
- Market: $35.5B serviceable market in U.S. residential construction automation; chronic labor shortage of 400K+ workers.
- Model: Build-as-a-service with ~50% gross margin per home at scale.
- Traction plan: prototype fleet in Year 1, first 10 homes in Year 2, 500+ homes/year by Year 5.
- Financials: revenue growth from $3.2M (Y1) to $210M (Y5).
- Ask: $15M Series A, including a dedicated quantum technology work-stream.

2. The Problem

- Labor crisis: the U.S. construction industry is short more than 400,000 workers; the median age of skilled tradespeople keeps rising.
- Cost inflation: home construction costs have risen faster than inflation for a decade, pricing out first-time buyers.
- Slow, serial process: a typical home takes 7–12 months; weather, scheduling conflicts, and rework cause chronic delays.
- Safety: construction remains one of the most dangerous industries, with ~1,000 U.S. fatalities per year.
- Coastal and waterfront logistics: material delivery to shoreline, island, and flood-zone sites is expensive and often the binding constraint.

3. The Solution: One AI Brain, Three Autonomous Limbs, Quantum Acceleration

3.1 Ground Robots

Autonomous excavation, foundation printing/pouring, framing assembly, and finishing. Robots work continuous shifts with millimeter-level repeatability.

3.2 Aerial Drones

Site survey and progress mapping, material lifting for light components, roof and facade work, and continuous quality inspection with computer vision.

3.3 Autonomous Boats

Self-directed marine vessels deliver materials to waterfront and island sites, stage floating logistics platforms, and enable construction in locations conventional trucking cannot economically serve.

3.4 The Orchestration AI

A central AI planner decomposes each home into thousands of tasks and assigns them across the fleet in real time, re-planning around weather, supply, and site conditions.

3.5 The Quantum Layer (New)

Construction orchestration is, at its core, a giant combinatorial optimization problem — exactly the class of problem where quantum and quantum-inspired methods show the earliest practical advantage. Trident's quantum layer has five components:

- Quantum-inspired fleet optimization (deployable now): quantum-inspired annealing and QUBO solvers for multi-robot task allocation, crane/drone routing, and just-in-time material logistics. Industries with complex routing, scheduling, and allocation problems are the first beneficiaries of quantum optimization.
- Hybrid quantum-classical scheduling (Years 2–3): cloud access to quantum processors (QPU-as-a-service) for the hardest schedule-optimization instances, with classical HPC handling everything else — the hybrid workflow pattern the industry is standardizing on in 2026.
- Quantum sensing for GPS-denied navigation (Years 2–4): quantum IMUs, magnetometers, and atomic-clock timing let robots and drones navigate precisely inside multi-story structures, urban canyons, and under jamming/interference — and let our boats navigate subsea and coastal environments where GNSS is degraded. Quantum-inspired onboard chips have already demonstrated real-time navigation on mobile robots.
- Quantum simulation for materials R&D (Years 3–5): quantum chemistry simulation to develop lower-carbon concrete formulations and advanced composites, plus structural and thermal design optimization.

- Post-quantum security (from day one): all fleet command-and-control links use post-quantum cryptography, protecting a safety-critical autonomous fleet against harvest-now-decrypt-later attacks.

4. Quantum Technology Strategy

Trident Build treats quantum as a staged capability, not a science project. Each phase must pay for itself operationally.

Phase	Timeline	Technology	Operational payoff
Phase 1: Quantum-inspired	Now–Y1	Quantum-inspired annealing / QUBO solvers on classical hardware	5–15% gains in fleet utilization and material logistics; zero exotic hardware required
Phase 2: Hybrid cloud QPU	Y2–Y3	QPU-as-a-service for hardest scheduling instances; hybrid quantum-classical workflows	Better schedules on 100+ robot task graphs; faster re-planning after disruptions
Phase 3: Quantum sensing	Y2–Y4	Quantum IMUs, magnetometers, atomic clocks on select platforms	GPS-denied autonomy indoors, in urban canyons, and subsea; jamming resilience
Phase 4: Materials & design	Y3–Y5	Quantum simulation for chemistry and structural optimization	Proprietary low-carbon concrete and composite IP
Ongoing: PQ security	Day 1	Post-quantum cryptography on all C2 links	Fleet security future-proofed

Partnership approach: Trident will not build quantum hardware. We partner with QPU cloud providers and quantum-sensor vendors, keeping capex low and letting us ride the maturity curve. Estimated quantum work-stream budget: $1.2M of the Series A (8%).

4A. Intellectual Property: Patent-Pending Quantum Construction

Trident Build's quantum strategy is protected by a filed U.S. provisional patent application:

Item	Detail
Application No.	64/105,529 (U.S. provisional, 35 U.S.C.

	111(b))
Filing date	July 6, 2026 (Confirmation No. 2415)
First named inventor	Mr. Keith Louis De Santo
Title	Quantum Computer and Quantum Computer technologies in the applications of constructing, building, repairing, and replacing physical components in housing, plumbing, electrical, and automobiles
Scope	Quantum computing, quantum technologies, quantum mechanics/physics, quantum communications, quantum robotics and drones, and associated algorithms applied to housing construction, plumbing, electrical, and vehicle/autonomous-vehicle construction, repair, and maintenance

- Patent-pending status: the filing establishes a priority date and permits use of “patent pending” in investor and marketing materials.
- Conversion window: a non-provisional (and/or PCT) application must be filed within 12 months (by July 6, 2027) to preserve the priority date — a funded milestone in the Series A plan.
- Expansion optionality: the claimed scope extends beyond housing into plumbing, electrical, and automotive services — supporting future adjacent-market entry with the same quantum-robotics platform.

Note: provisional applications are not examined; claim scope will be refined with patent counsel at conversion.

5. Market Opportunity

- U.S. residential construction: ~$900B annually.
- Serviceable market (single-family new builds suited to automation): $35.5B TAM.
- Construction robotics is growing at a double-digit CAGR; quantum computing market projected to compound rapidly through 2030, with optimization use cases commercializing first.
- Beachhead: coastal and waterfront residential builds in the Southeast U.S., where our marine logistics prong is a unique unlock and labor shortages are most acute.

6. Competition

Competitors automate one modality. No company combines ground, air, and marine autonomy for residential construction — and none has a quantum roadmap. Trident's patent-pending position (App. No. 64/105,529) raises the barrier further.

Category	Representative players	Modality	Quantum strategy
3D-printing / ground robots	ICON, Diamond Age, Built Robotics	Ground only	None
Drone construction platforms	Skydio (inspection), DJI ecosystem	Air only (mostly inspection)	None
Marine autonomy	Saildrone, Sea Machines	Water only (not construction)	None
Trident Build	—	Ground + Air + Water, one AI brain	Full-stack: optimization, sensing, materials, PQ security

7. Business Model & Unit Economics

- Build-as-a-service: Trident contracts directly with developers and land owners; price per completed home.
- Average revenue per home: ~$420K; fully-loaded autonomous build cost: ~$210K → ~50% gross margin at scale.
- Quantum-optimized logistics compounds the margin: each 1% of fleet-utilization gain is worth ~$2.1M/year at Y5 volume.
- Secondary revenue: fleet-licensing to regional builders (Y4+), and materials IP licensing from the quantum-simulation program (Y5+).

8. Product Roadmap

Year	Milestone	Quantum integration
Y1	Prototype fleet (2 robots, 4 drones, 1 boat); first demo structure	Quantum-inspired scheduler v1; PQC on all links
Y2	First 10 revenue homes; coastal beachhead market	Hybrid cloud-QPU pilot for schedule optimization; quantum IMU trial on one drone class
Y3	75 homes; second market; fleet v2	QPU in production re-planning loop; quantum magnetometer navigation on boats
Y4	250 homes; fleet licensing	Quantum-sensor

	pilot	navigation standard on indoor robots; materials simulation program starts
Y5	500+ homes; 3 markets	Proprietary low-carbon concrete formulation from quantum simulation enters testing

9. Financial Projections (5-Year)

	Y1	Y2	Y3	Y4	Y5
Homes delivered	1 (demo)	10	75	250	500
Revenue	$3.2M	$8.5M	$34M	$105M	$210M
Gross margin	—	22%	35%	44%	50%
EBITDA	-$6.5M	-$8M	-$2M	$12M	$38M
Headcount	18	35	70	120	180

Note: revenue in Y1 reflects pilot/partnership contracts and the demo build program.

10. Funding Ask: $15M Series A

Use of funds	Allocation	Amount
Fleet hardware (robots, drones, boats)	40%	$6.0M
AI orchestration platform & autonomy software	25%	$3.75M
Quantum technology work-stream (optimization, sensing pilots, PQC)	8%	$1.2M
First builds & site operations	15%	$2.25M
Team, G&A, regulatory, certification & IP (incl. non-provisional/PCT conversion)	12%	$1.8M

Milestones unlocked: prototype fleet, first demo home, quantum-inspired scheduler in production, two signed developer partnerships, and Series B readiness at a 75-home run rate.

11. Risks & Mitigation

Risk	Mitigation
Quantum hardware matures slower than expected	Phase 1 uses quantum-inspired classical solvers with immediate ROI; QPU phases are optional upgrades, not dependencies
Regulatory approval for autonomous fleets	Beachhead in states with favorable autonomy rules; human supervisor per site during early phases
Hardware capex intensity	Lease/financing structures for fleet; partner-owned marine vessels in Y1–2
Construction quality liability	Continuous drone QA imaging, third-party inspection at every milestone, warranty reserve
Talent competition for quantum + robotics engineers	Partner-first quantum strategy; advisory board over in-house hardware team

12. Vision

Every additional home Trident builds makes the fleet smarter and the optimization tighter. As quantum hardware crosses commercial thresholds over the next five years, Trident is positioned to be the first construction company where quantum advantage translates directly into cheaper, faster, greener homes — on land delivered by sea and air.