

**CASE STUDY 2.0**  
REBUILDING LOS ANGELES

*A Visionary  
Catalog for  
Resilient and  
Sustainable  
Homes*

# DELIVERABLES

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# INTRODUCTION

# breakformdesign

## breakformdesign

**Breakform Design** is a El Segundo-based, integrated design, architecture, construction, and metal fabrication firm dedicated to the creation of deeply intentional and enduring spaces. With roots in custom metalwork, the firm has evolved into a multi-disciplinary studio that merges artistic vision with technical mastery, delivering projects that are as functionally sound as they are emotionally resonant. By uniting all aspects of the building process under one roof—from initial planning and design to construction and fabrication—Breakform Design offers a uniquely streamlined, cohesive, and hands-on approach that ensures every detail is executed with precision and care.

Founded on the principle that architecture should be both expressive and grounded, Breakform balances innovation with practicality. Every project begins with a thoughtful exploration of site, context, and client goals, and unfolds through a design process that is iterative, inclusive, and detail-oriented. The firm's approach is guided by a commitment to material honesty and a reverence for the craft of building. Rather than layering on ornamentation, Breakform distills ideas down to their essence, allowing materials and form to speak for themselves.

The studio is known for its refined and modern aesthetic—marked by clean geometries, tactile surfaces, and a conscious interplay of light, space, and scale. While the visual language is minimal, it is never cold; Breakform's spaces are warm, grounded, and human-centered. Every project is viewed as a spatial narrative—one that reflects the client's needs, the spirit of the place, and the enduring beauty of well-executed details.

Breakform Design delivers projects through a fully integrated service model that brings together design, documentation, permitting, fabrication, and construction within one unified workflow. This approach removes traditional barriers between disciplines, reducing miscommunication and delays, while promoting design fidelity from concept to completion. The result is a process that is as transparent and collaborative as it is efficient.

Our Services Include:

### **Feasibility & Planning**

Early-stage analysis that lays the groundwork for success. Breakform provides in-depth site evaluations, zoning research, code compliance review, and strategic guidance to determine project viability and direction. This phase is critical to establishing clear expectations and aligning vision with real-world constraints.

### **Architecture & Design**

Architecture is at the heart of what we do. From ground-up custom homes and commercial developments to adaptive reuse and remodels, our design process is rooted in context, scale, and material. We approach every building as a unique opportunity to create something functional, expressive, and lasting. The team works closely with clients to explore multiple design options and refine concepts into buildable realities.

### **Interior Architecture & Design**

Breakform designs interiors that reflect the rhythms and rituals of everyday life. Through curated material palettes, careful space planning, and attention to natural light and movement, we create environments that feel cohesive and purposeful. Every fixture, finish, and piece of built-in furniture is approached as an extension of the architecture itself—designed with precision and intention.

### **General Contracting & Construction Management**

Our in-house construction team brings a deep understanding of our design philosophy, allowing us to translate ideas into built form with uncommon accuracy. We manage the entire construction process—from procurement and scheduling to site coordination and quality control—with an emphasis on clarity, accountability, and craftsmanship. This direct control over execution ensures continuity, minimizes risk, and leads to higher-quality outcomes.

### **Custom Metal Fabrication**

As the firm's original discipline, metal fabrication remains a cornerstone of Breakform's identity. Our in-house metal shop enables us to design and build custom architectural elements that elevate our work—from staircases and railings to cladding, furniture, and hardware. The close collaboration between designers and fabricators fosters innovation and allows for truly bespoke solutions that seamlessly integrate into the architecture.

At the core of every Breakform project is a collaborative spirit. We believe the best outcomes are achieved through open communication, shared vision, and mutual respect. Our team works closely with clients, consultants, engineers, and trades from day one to align goals, identify opportunities, and solve challenges as they arise. This collaborative ethos ensures that each project not only meets practical needs but also resonates on a deeper, more personal level.

We view design as a dialogue—not only between client and designer, but between structure and site, material and form, light and shadow. Our work is inspired by the specific stories of the people we build for, the neighborhoods they inhabit, and the natural and urban environments that surround them. We are particularly attentive to longevity—designing spaces that will evolve with their users and remain relevant for decades to come.

Breakform Design's portfolio spans a wide range of typologies and scales, including single-family residences, multifamily developments, commercial spaces, hospitality venues, and cultural institutions. Across all projects, the throughline is a dedication to quality, material richness, and architectural restraint. Our work has been recognized for its innovation, clarity, and craftsmanship, and continues to reflect a philosophy grounded in integrity and intentionality.

We do not just build structures—we craft environments that are lived in, felt, and remembered. Breakform Design creates spaces that are grounded in place, rich in character, and built to last.

# HOUSE OF RETURN

## Altadena Case Study Residence

3306 Tonia Avenue, Altadena, CA 91001

This proposed two-story single-family residence is a contemporary reinterpretation of the Southern California Case Study House ethos—emphasizing innovation, integration with landscape, and a timeless approach to modern living. Situated on a 130' x 56.5' lot in a quiet Altadena neighborhood, the home is designed to blend functionality with architectural clarity.

The first level is clad in durable stone, with the option to substitute a 3D-printed concrete system as a cost-effective and resilient alternative. The second level features light-toned smooth stucco accented with bold horizontal reveal lines, creating a refined contrast in both texture and tone. The overall massing is composed of interlocking rectangular volumes, softened by generous overhangs and expansive glazing that connects the interior to natural light, fresh air, and outdoor living areas.

The floor plan is organized to balance privacy and connectivity:

- Ground Floor: Includes a spacious two-car garage, one en-suite guest bedroom, and a communal open-plan living, kitchen, and dining space that connects to the outdoors.
- Second Floor: Features three bedrooms, each with a private bath, including a generous primary suite with a view and abundant natural light.

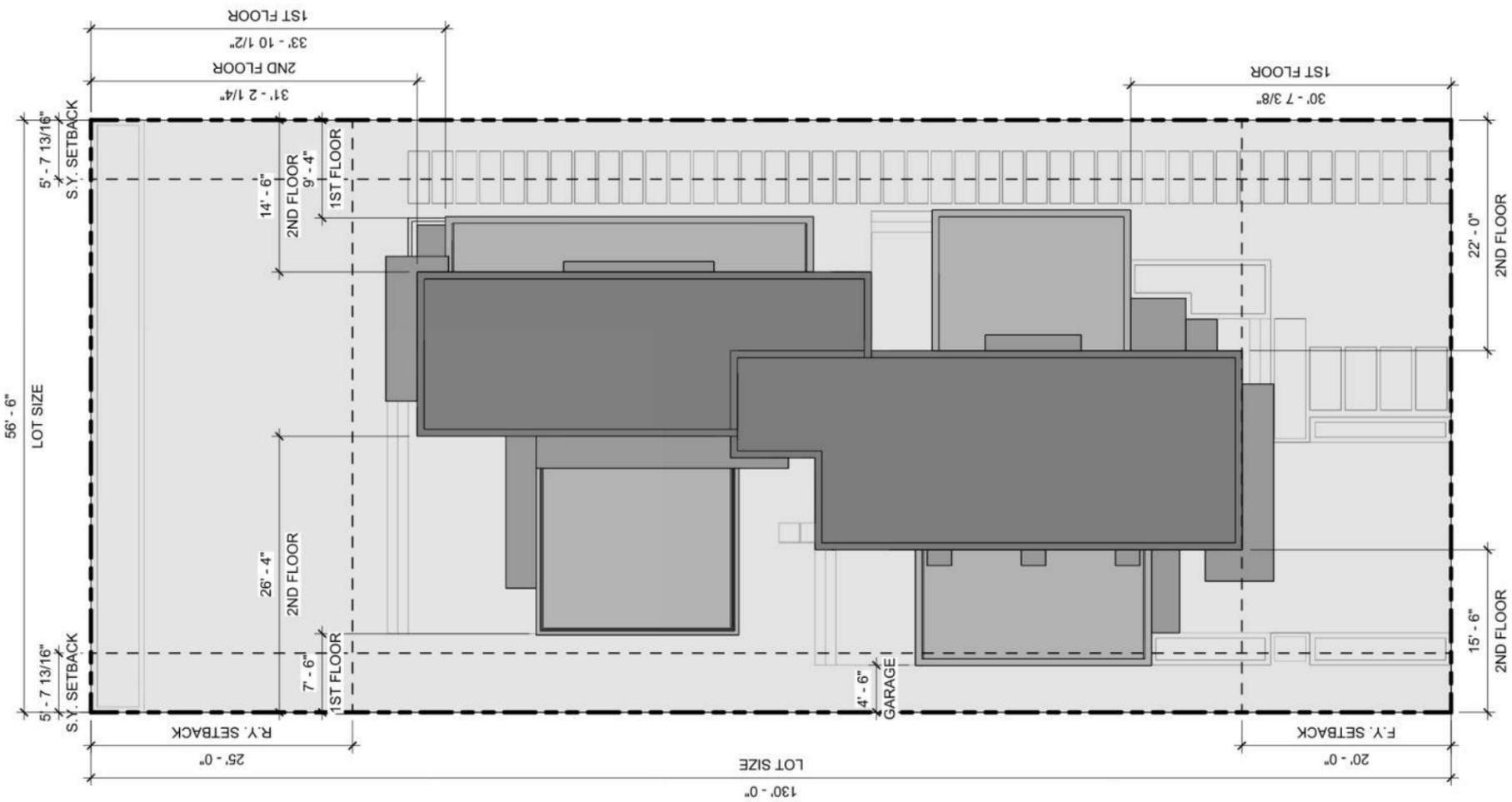
Landscape elements are incorporated into the architectural strategy, guiding movement along the side yard and providing visual relief through layered planting. The roofline is articulated to offer shade and sculpt the building profile in response to the California sun.

The project's material simplicity and formal clarity reflect a deliberate effort to reduce visual clutter while emphasizing craft, proportion, and sustainability. This residence stands as a forward-thinking model of high-quality, accessible residential design rooted in local context and modernist tradition.

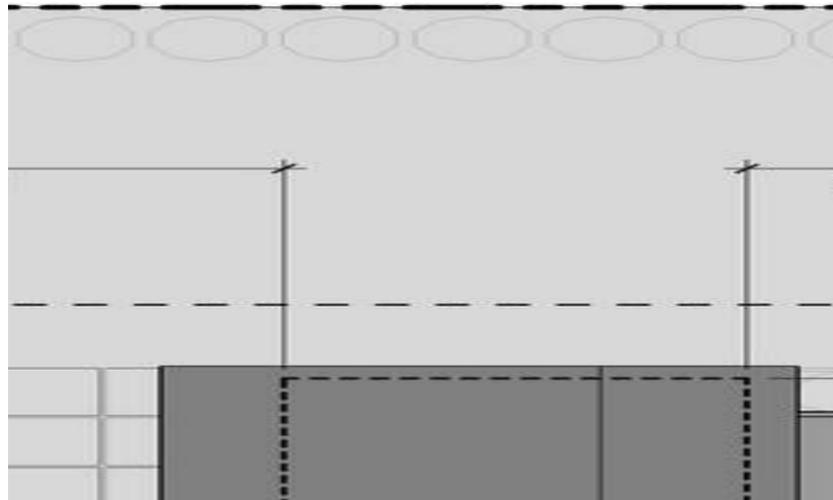


# PARCEL INFO & DIAGRAMS

ADDRESS: 3306 TONIA AVENUE, ALTADENA, CA 91001



## PROJECT DATA



## BUILDING AREAS

BUILDING AREA	
RESIDENTIAL FLOOR AREA	
LEVEL 1:	1,537 SF
BEDROOM:	1
BATHROOM:	1.5
GARAGE:	483 SF
<small>(NOT INCLUDED IN TOTAL SF)</small>	
LEVEL 2:	1,232 SF
BEDROOM:	3
BATHROOM:	3
TOTAL:	2,769 SF

# DESIGN FEATURES



## FIRE RESISTANCE

The design integrates a comprehensive fire-resistant strategy through both material selection and architectural detailing. A Class A fire-rated standing seam metal roof provides maximum protection from ember ignition and flame spread. The second floor is clad in non-combustible fiber cement panels, while the first floor features a stone cladding system, with the option of fire-rated 3D-printed concrete pending approval.

All windows and glazed doors are dual-pane with tempered glass to resist heat and breakage. Ember-resistant vents with 1/8-inch metal mesh are used selectively, and where possible, venting is eliminated. Eaves are fully boxed-in with fire-rated soffits, and gutters are metal with integrated leaf guards to prevent debris accumulation. The entry canopy is constructed with vertical metal fins over a fire-rated core, reinforcing both design intent and fire safety. Though fencing is not included in this phase, future additions will use non-combustible materials. Defensible space is maintained within five feet of the structure, using only fire-resistant plant species. Trees are kept at least 10 feet from the building and from one another. An exterior roof-edge sprinkler system is included to actively suppress embers during wildfire events.



## ROOFING

The roofing system consists of standing seam metal panels with a Class A fire rating, chosen for their high durability, fire resistance, and low-maintenance performance. The panels are installed over a fire-rated underlayment with concealed fasteners to ensure watertight integrity and a crisp, modern profile. The shallow-sloped roof form is optimized for water runoff, solar panel integration, and long-term resilience against wildfire exposure and extreme weather.



## BUILDING SIDING

The building features a material contrast between the floors, both selected for their durability and fire-resistant performance. The ground floor is clad in horizontally coursed stone, providing thermal mass and excellent resistance to flame and ember exposure. As an alternative, 3D-printed concrete may be used to streamline construction while preserving non-combustibility. The second floor is finished in smooth stucco with clean horizontal reveal lines, offering a refined, monolithic appearance while meeting ignition-resistant standards and enhancing the home's modern character.



## WINDOWS & DOORS

All glazing assemblies utilize dual-pane, tempered glass for enhanced impact and heat resistance. Minimalist aluminum frames with thermal breaks support energy efficiency and clean detailing, while all operable units are fitted with ember-resistant vent screens or gaskets. Door systems at the entry and patio are solid-core and non-combustible, with strategic placement to limit vulnerability without compromising daylight and access.



## DEFENSIBLE SPACE INTEGRATION

The landscape design maintains a clear five-foot perimeter around the building, free of combustible materials or vegetation. All plantings beyond this buffer will be selected from an approved fire-resistant species list. Tree placement complies with fire-safe spacing: minimum 10 feet from structures and 10 feet between canopies. The simplified hardscape layout reinforces defensible space while enhancing usability and reducing maintenance.



## VENTS

Ventilation strategies prioritize ember exclusion without sacrificing indoor air quality. Where venting is required, all assemblies are fitted with 1/8-inch corrosion-resistant metal mesh to block ember intrusion. In low-risk areas, venting is eliminated altogether and replaced with sealed construction or mechanical ventilation systems, ensuring code compliance and improved enclosure integrity.



## EMBER-RESISTANT FEATURES

Key architectural details are designed to eliminate common ember entry points. All eaves are fully enclosed using fire-rated soffit panels, eliminating exposed overhangs. Gutters are fabricated from coated metal and include debris-blocking covers to prevent leaf accumulation and ignition. The home's form minimizes complex junctions, and exterior detailing such as metal entry fins and tight material joints further reduce ember-catching surfaces. An exterior sprinkler system is integrated at the roof edge to provide active ember suppression during fire events.



## SUSTAINABILITY

The design encourages long-term environmental responsibility through material selection, system readiness, and optional performance upgrades. Structural and cladding materials are chosen for durability and low embodied carbon, with potential to integrate 3D-printed concrete for further waste reduction. The roof is solar-ready, and the building systems allow for future net-zero adaptation. Orientation and overhangs are tuned for passive shading and thermal efficiency, aligning with California's energy codes and sustainability targets.



## DESIGN QUALITIES

The home balances fire safety with thoughtful spatial quality, clean geometry, and restrained material expression. The massing creates visual interest through offset planes and vertical layering, while maintaining a compact footprint that supports both density and defensible space. Interior layouts prioritize natural light, privacy, and efficient circulation, allowing for flexibility in function while reinforcing durability and performance.



## CONSTRUCTION METHODOLOGY

The construction approach is based on conventional framing paired with prefinished cladding systems for speed and consistency. The home's base may alternatively be realized using 3D-printed concrete wall modules if approved, offering accelerated assembly, reduced labor needs, and high fire resistance. Panelized wall systems and straightforward roof geometry further streamline the construction process without compromising customization or code compliance.



## EFFICIENCY

The design integrates both passive and active energy-efficient strategies. The dual-pane glazing, shaded openings, and high-performance envelope reduce thermal loads, while systems are configured for efficient mechanical operation. Plumbing runs are stacked for reduced material use, and lighting is arranged to maximize daylight while minimizing artificial demand. The layout supports natural cross ventilation where feasible, contributing to reduced HVAC dependency.



## STYLE FEATURES

Architecturally, the home embodies a modern minimalism that is regionally grounded yet forward-looking. The contrasting material palette of stone and concrete provides a tactile, durable identity. Clean horizontal lines, deep reveals, and a consistent rhythm of window openings give the façade clarity and scale. The restrained detailing emphasizes resilience and permanence, without sacrificing warmth or visual appeal.



## ADDITIONAL SPECIAL FEATURES

Special considerations include the integration of a roof-edge fire sprinkler system, solar-ready infrastructure, and optional prefabricated components for select walls or core systems. The design also allows for the inclusion of battery storage, future electric vehicle charging, and smart-home system integration, giving homeowners the ability to tailor their performance environment over time.



## CUSTOMIZATION POTENTIAL

The design offers flexibility through architectural modifications that maintain code and fire compliance. Homeowners may select from optional upgrades such as integrated solar panels, expanded roof overhangs for shading, alternate siding materials within the approved fire-rated palette, or the inclusion of a rooftop deck. The structural layout also accommodates future additions like detached ADUs or carports. Optional elements such as prefabricated wall panels or 3D-printed concrete modules can be selected based on cost, performance, and construction timeline preferences.



# SITE PLAN



# GROUND LEVEL



# SECOND LEVEL



# ROOF



# SECTIONS

# LONGITUDE





# ELEVATIONS

**NORTH**



# SOUTH







# RENDERINGS



3306



