

Four sins

Office ⇌ Housing

BAR architects

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Holmes Structures **Holmes Fire**



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A Surplus of Post-Pandemic Office Space

COVID-19 affected every aspect of our lives – work, social interaction, recreation, economic conditions, our homes – leaving long-lasting marks on us and our culture.

- Millions of square feet of office space are empty or underutilized.
- Working from home is now standard procedure for millions.
- Businesses are reducing the sizes of their office spaces.

A SCARCITY OF HOMES

California’s housing shortage continues to challenge our social structure and economic growth.

- Meeting the state’s goal of 3.5 million new homes in the next four years would require quadrupling the current housing production rate.
- Buildings require land. By re-investing in our existing infrastructure, we reduce sprawl and preserve open space, one of our most valuable natural resources.

A SYNERGISTIC SOLUTION

Converting office space to housing – whether market rate, affordable or supportive – is not a new idea, but with a housing shortage and empty office space, **the strategy has never had been more compelling or needed.**

“The ability to work remotely will not drive most people away from cities and offices, but it will enable many to live and work in new ways and places.”

– DROR POLEG, NY TIMES, JANUARY 4, 2021



Windows of Opportunity

URBAN LIVING

Vacant office space is available in virtually all areas, but downtown office buildings offer the greatest potential for sustainable residential life.

- Sites are integrated with the city and infrastructure.
- Proximity to work and retail eliminates most commutes and promotes healthful walks.
- Existing transit, parking, car share, and bicycle share networks provide travel options.
- New residents bring vitality to urban centers.

RE-SOURCE, RE-USE, RESIDE

Existing buildings have identity, history, and maybe even a little charm. Like any Fixer-Upper, some TLC can make them into a distinctive residence with desirable amenities, views and character.

Most important, reusing these buildings conserves existing resources and minimizes the carbon footprint of demolition and new construction.

- **Historic buildings** offer exceptional opportunities. Lobbies, stairs, elevators, windows, materials and details create unique and memorable residences.
- **Newer buildings** bring greater design freedom and the opportunity to create a new residential identity for an existing property.
- Existing structure and exterior windows shape **unique unit plans**, sometimes more spacious than new construction, featuring existing building elements and finishes and differentiating them from the competition.
- Deeper floor plates allow for **resident amenities** (exercise rooms, small meeting spaces, storage lockers, bicycle storage and service spaces) typically not found in office buildings or many residential buildings.
- Street level gardens, rooftop terraces and unit balconies can create important **outdoor spaces** for residents.

BAR Multifamily Housing and Building Reuse projects noted in captions throughout. Bottom: Yotel



“The greenest building is the one that already exists.”

– CARL ELEFANTE, FORMER PRESIDENT OF THE AMERICAN INSTITUTE OF ARCHITECTS



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Safe, High-Performing, Comfort-Focused

Renovations bring **new life to existing structures**, extending their usefulness, conserving energy and water and reducing the impact of new construction on the environment.

- Improved building envelopes, designed to **Passive House** standards, increase comfort and reduce operating costs for tenants and owners.
- **Roof decks**, with green roof areas, reduce heat gain and create outdoor community space.

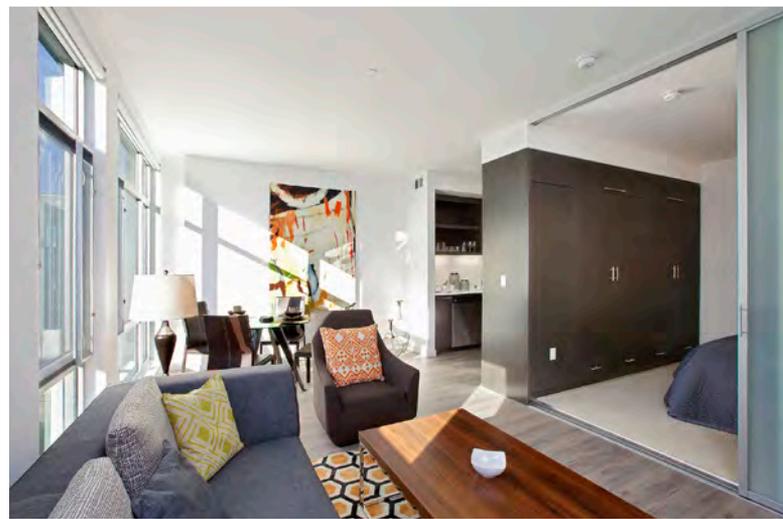
The **reduced loads for residential occupancies** and local jurisdiction requirements may allow creative solutions with minimal structural intervention.

- Careful documentation of existing structures and **Performance-Based Engineering (PBE)** analysis methods are essential.
- Occupancy changes do not always lead to seismic reinforcement, but local jurisdictions may require upgrades.

New **mechanical, plumbing, electrical and telecommunications** systems are usually required for residential conversions.

- **Office floor-to-floor heights** provide adequate space for new systems and ceiling heights that are taller than housing market standards.
- Although **centralized systems** are not typical for new residential projects, existing chillers, cooling towers, pumps and piping infrastructure can be adapted for residential use.
- New **plumbing** distributed to individual dwelling units will replace the centralized office systems.
- **All-electric** buildings eliminate the need for meters and gas piping.
- Residential buildings, with **lower occupancy loads** than offices, often need fewer elevators. Surplus elevator shafts provide opportunities for faster call times, VIP elevators, or new shafts for mechanical systems.
- New or modified automatic sprinkler and fire alarm systems ensure code compliance and **life safety** for residents.

Top: Futures Without Violence; Bottom: Alchemy by Alta



CASE STUDIES

“Office demand won’t disappear, but industry pros say companies may rethink their needs, and landlords may turn to the increasing need for housing.”

— THE REAL ESTATE TIMES



Proving the Point: Five Case Studies

BAR Architects (Architecture & Interiors) partnered with industry leaders – Holmes (Structure and Fire Life Safety), Interface Engineering (MEPS), TBD Consultants (Cost) and Plant Construction – to explore the potential opportunities and challenges in converting office buildings to housing. We evaluated five buildings of different eras, locations and construction types.

The projects are theoretical and, to our knowledge, not based on current projects by BAR, other developers or architects. The Case Study examples use floor plans available from BAR’s previous office space searches or drawings that were found online. The buildings are not currently distressed properties or on the market. In fact, some were recently renovated and leased as improved office space. As hoped, the examples do illustrate the potential for conversion of prototypical office buildings to housing.

Right: 901 Battery Street



PROJECT INFORMATION	CASE STUDY 1	CASE STUDY 2	CASE STUDY 3	CASE STUDY 4	CASE STUDY 5
YEAR BUILT	1902, 1910	1921	1926	1973	1971
HISTORIC STATUS	Yes	Yes	Yes	No	No
BUILDING SHAPE	'H' Shape	'U' Shape	'U' Shape	Square Shape	Large Rectangle
NO. STORIES	9	16	12	14	24
TOTAL SF (SF/FLOOR)	135,490 (~15,000)	270,500 (~17,000)	159,560 (~13,300)	200,675 (~14,000)	600,000 (25,000)
STRUCTURAL SYSTEM	Concrete encased steel columns and load-bearing masonry	Concrete frame and load-bearing masonry	Concrete frame and load-bearing masonry	Concrete frame	Structural steel



CASE STUDY 1

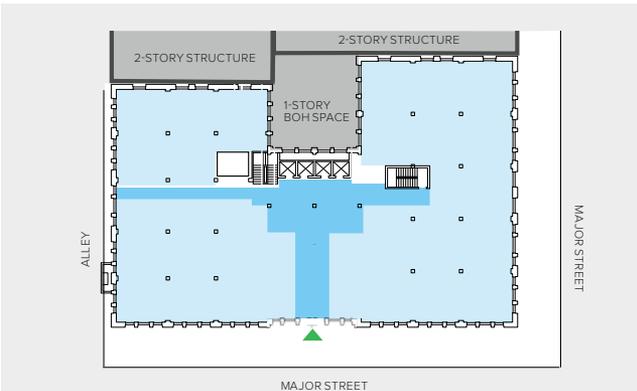


EXISTING CONDITIONS

CONSTRUCTED	1902, 1910
BUILDING USE	Offices with retail at ground level
PARKING	None on site
APPROX. FLOOR AREA	15,000 sf
HEIGHT IN STORIES	9
TOTAL SF	135,490 sf
CONSTRUCTION TYPE	Steel frame; Masonry exterior walls
ZONING	C-3 District, Downtown Commercial
HISTORIC PRESERVATION	National Register, SF Category A

PROPOSED RENOVATION

UNIT TYPES	Studio, 1BR, 2BR, 3BR
NO. UNITS / FLOOR	14
TOTAL NO. UNITS	112



STREET-LEVEL FLOOR AND SITE PLAN



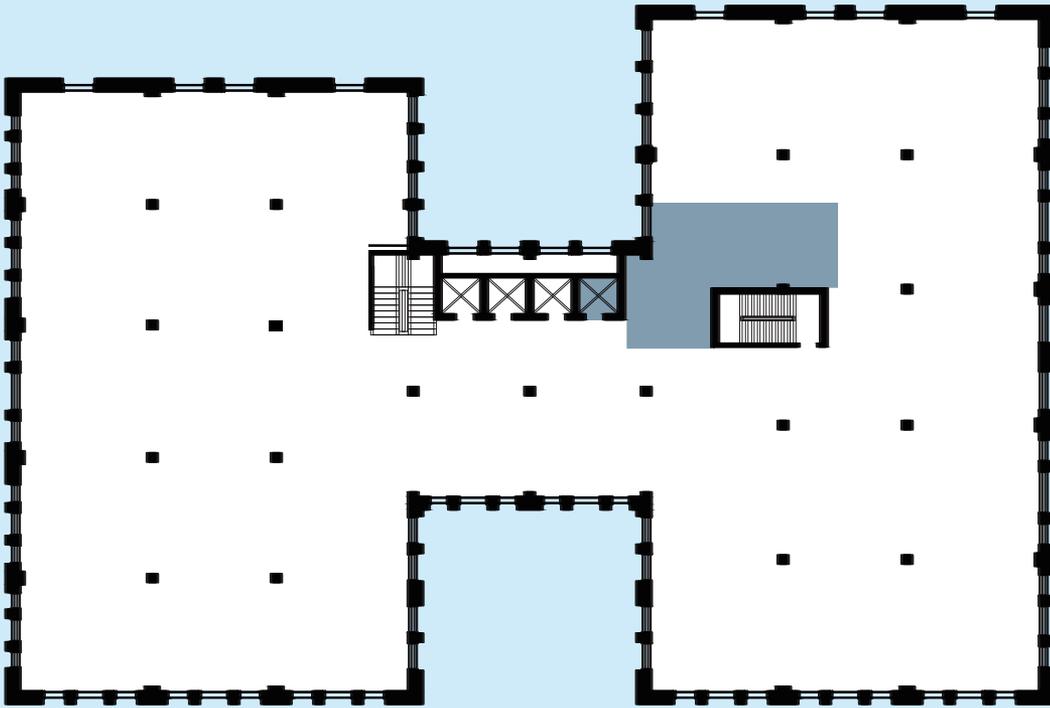
Top right: One Henry Adams; Bottom right: 901 Battery Street

THE STORY

A survivor of the 1906 Great Earthquake, this historic building is prominently located in San Francisco's vibrant SOMA district. With abundant access to transit, residents would enjoy easy access to retail, workplaces and cultural institutions. The historic status, elaborate ornamentation and unique units would make this building a truly distinctive residential property.

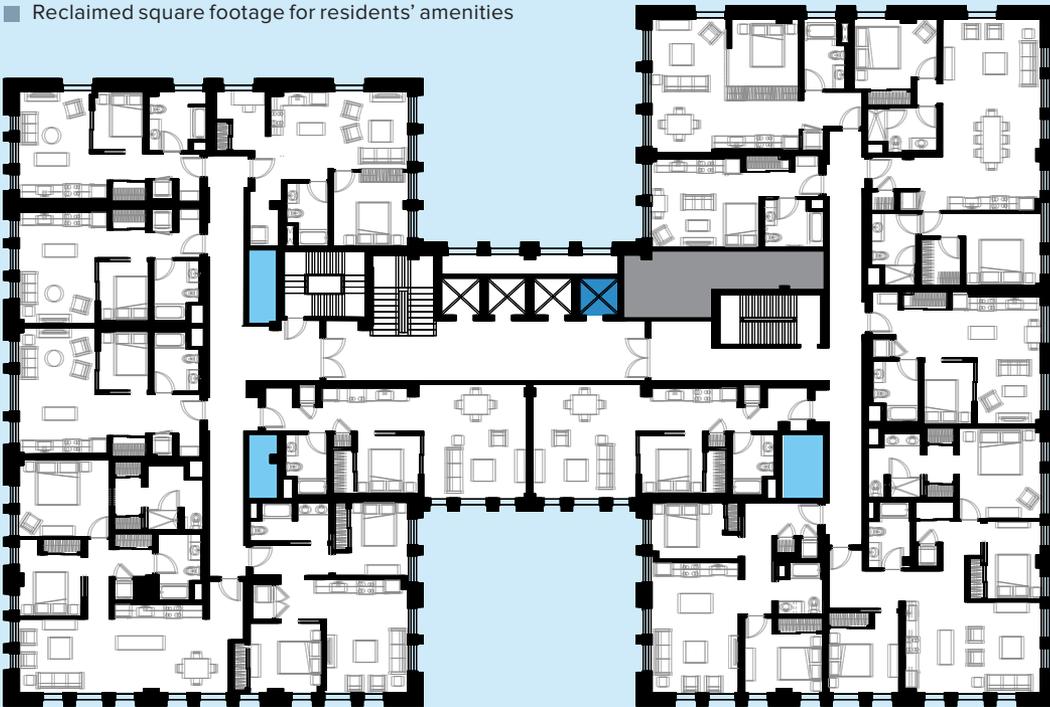
THE DETAILS

- Irregular bay sizes, large windows and high ceilings shape **unique units** with multiple variations.
- The H-shaped plan minimizes distances to natural light and ventilation.
- New glazing at large double hung windows improves acoustic and thermal performance.
- Multiple HVAC options are available for this building as well as the other Case Study sites: Vertical Thermal Air Conditioners (VTACs), Water-Source Heat Pumps (WSHPs) and hotel-style Fan Coil Units (FCUs).



EXISTING CONDITIONS

■ Reclaimed square footage for residents' amenities



RENOVATION POTENTIAL

KEY

- REUSE ELEVATOR SHAFTS FOR RESIDENTIAL HVAC REQUIREMENTS
- SHARED MEETING ROOMS, BIKE STORAGE OR STORAGE
- ADDITIONAL UTILITIES ROOMS NEEDED FOR RESIDENTIAL USE

CASE STUDY 2

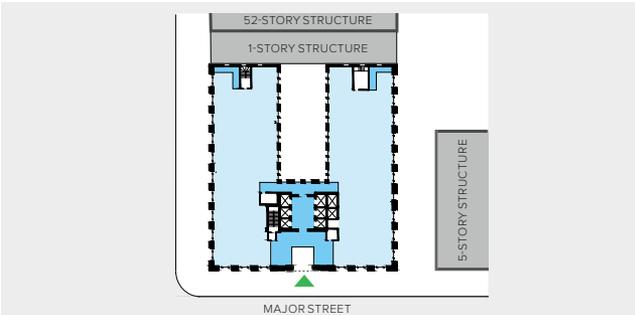


EXISTING CONDITIONS

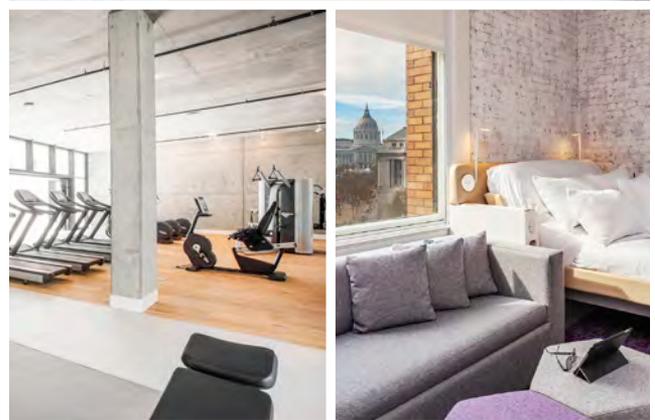
CONSTRUCTED	1921
BUILDING USE	Offices with retail at ground level
PARKING	Available on adjacent sites
APPROX. FLOOR AREA	17,000 sf
HEIGHT IN FLOORS	16
TOTAL SF	270,500 sf
CONSTRUCTION TYPE	Steel frame; Masonry exterior walls
ZONING	C-3-0 District, Downtown Office
HISTORIC PRESERVATION	SF Category A

PROPOSED RENOVATION

UNIT TYPES	Micro-Units
NO. UNITS / FLOOR	32
TOTAL NO. UNITS	325 (on 13 Floors)



STREET-LEVEL FLOOR AND SITE PLAN



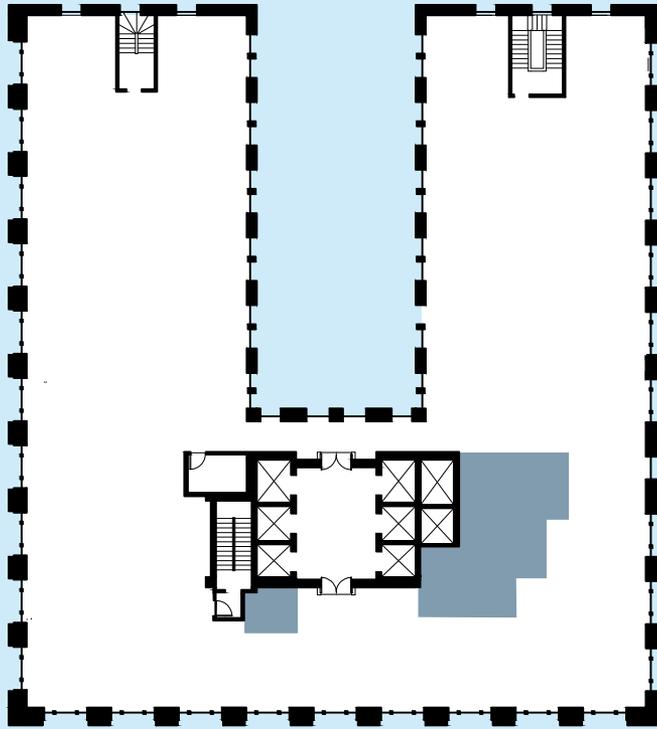
Top: Cambria Showroom Lounge; Bottom left: Alchemy by Alta; Bottom right: Yotel

THE STORY

This elegant National Register-worthy building contrasts with its more modern and taller neighbors in the Financial District. The narrow width of its wings make it an optimal candidate for co-living dwelling units and shared communal areas.

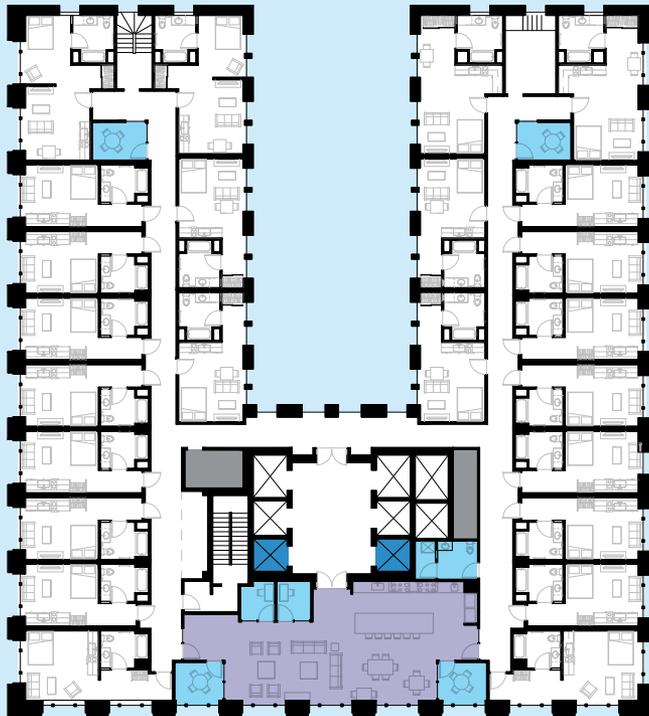
THE DETAILS

- Existing elevators are conveniently located for access to units and the shared common spaces.
- High ceilings (12' floor to floor) enhance both the common areas and dwelling units.
- Shared amenities include lounges, kitchens, meeting rooms, bicycle storage and storage on each floor.
- A roof deck would further enhance the co-living experience.
- All new systems, similar to Case Study 1, improve life safety and comfort.



EXISTING CONDITIONS

■ Reclaimed square footage for residents' amenities



RENOVATION POTENTIAL

KEY

- REUSE ELEVATOR SHAFTS FOR RESIDENTIAL HVAC REQUIREMENTS
- SHARED MEETING ROOMS, BIKE STORAGE OR STORAGE
- CO-LIVING SHARE PROGRAM
- ADDITIONAL UTILITIES ROOMS NEEDED FOR RESIDENTIAL USE

CASE STUDY 3

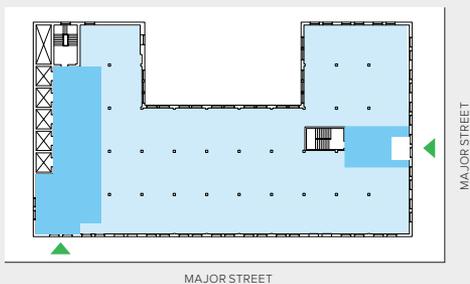


EXISTING CONDITIONS

CONSTRUCTED	1926
BUILDING USE	Offices with Retail at Floors 1, 2 & 3
PARKING	36 surface spaces, 145 covered
APPROX. FLOOR AREA	13,300 sf
HEIGHT IN STORIES	12
TOTAL SF	159,560 sf
CONSTRUCTION TYPE	Concrete frame; Masonry exterior walls
ZONING	[Q]R5-4D, High-Density Residential
HISTORIC PRESERVATION	Eligible, subject to review

PROPOSED RENOVATION

UNIT TYPES	Studio, 1BR, 2BR
NO. UNITS / FLOOR	12
TOTAL NO. UNITS	108 (on 9 Floors)



STREET-LEVEL FLOOR AND SITE PLAN



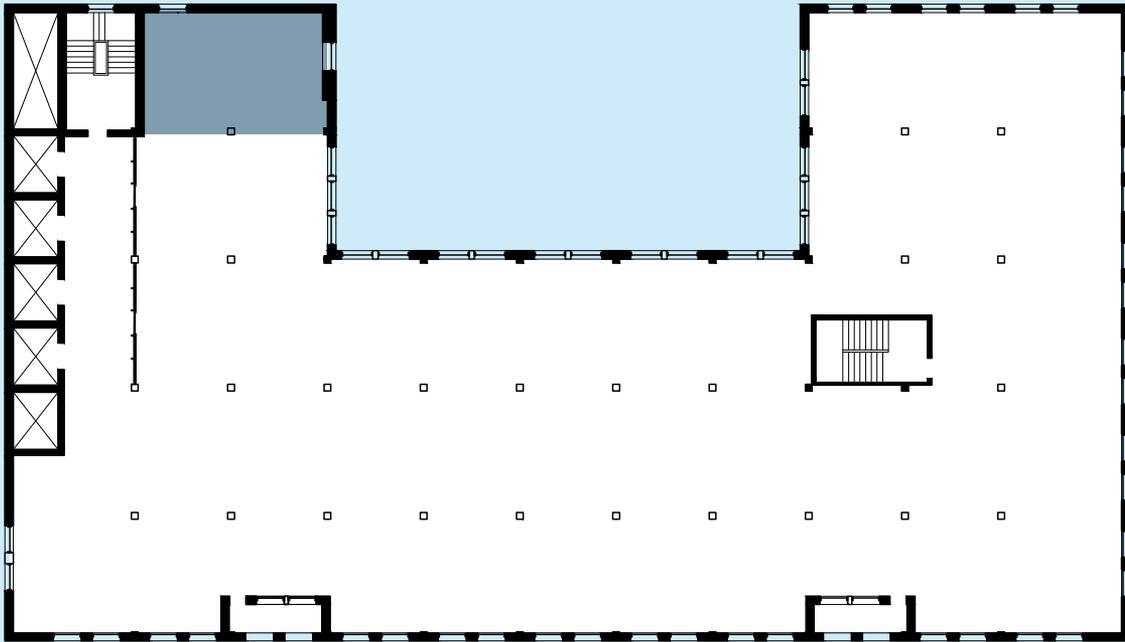
Top: Alchemy by Alta

THE STORY

Located in a mixed-use neighborhood of **Downtown LA**, this handsome office structure is near major attractions and amenities: Staples Center, LA Live, Fashion District, transit, freeways, offices and retail. With thin floor plates, generous windows and a corner location, this historic building, located in an adaptive reuse incentive area, would **elegantly convert to housing**.

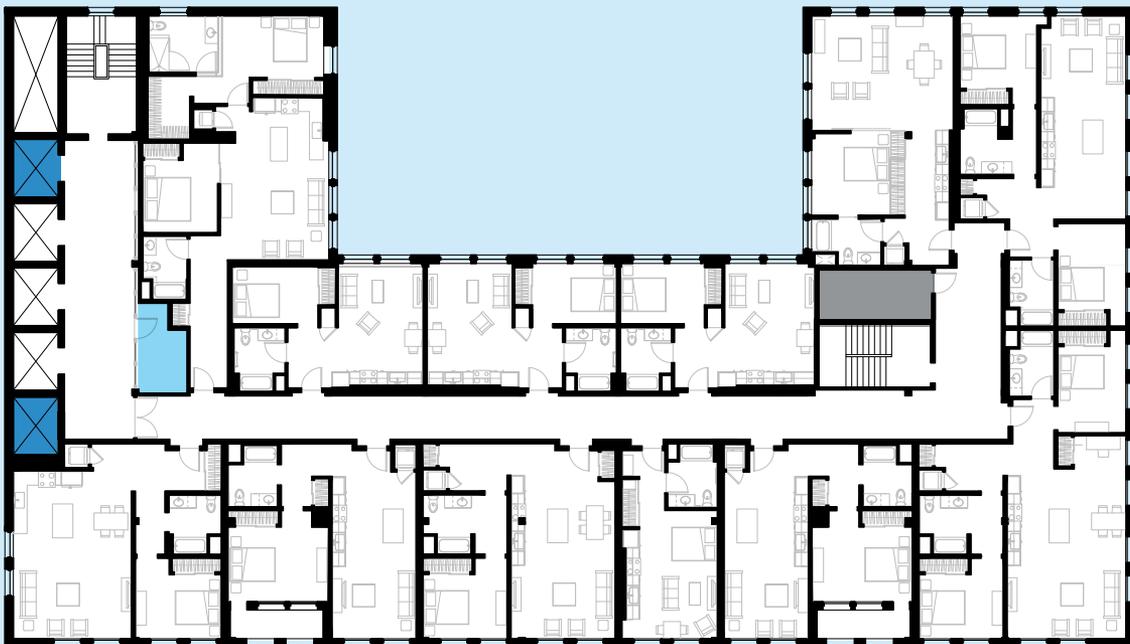
THE DETAILS

- Unit types and layouts vary to accommodate irregular column spacing. 11'-ceilings add **height and drama** to each unit.
- Existing fire escapes, no longer needed, are redesigned as **unit balconies** to supplement the shared outdoor space.
- All new systems, similar to Case Study 1, improve life safety and comfort.



EXISTING CONDITIONS

- Reclaimed square footage for residents' amenities



RENOVATION POTENTIAL

KEY

- REUSE ELEVATOR SHAFTS FOR RESIDENTIAL HVAC REQUIREMENTS
- SHARED MEETING ROOMS, BIKE STORAGE OR STORAGE
- ADDITIONAL UTILITIES ROOMS NEEDED FOR RESIDENTIAL USE

CASE STUDY 4

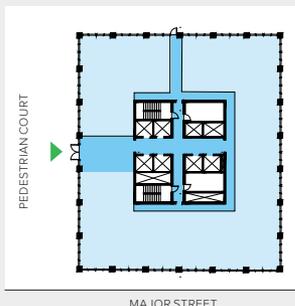


EXISTING CONDITIONS

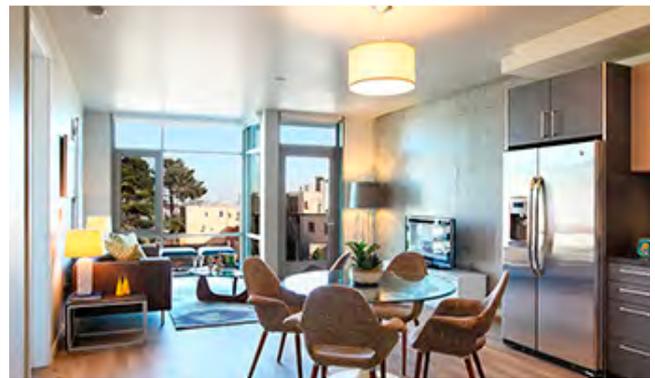
CONSTRUCTED	1973
BUILDING USE	Offices with Retail at Floors 1 and 2
PARKING	Adjacent parking structure
APPROX. FLOOR AREA	14,000 sf
HEIGHT IN STORIES	14
TOTAL SF	200,675 sf
CONSTRUCTION TYPE	Concrete frame; Precast concrete panels
ZONING	DC – Downtown Primary Commercial
HISTORIC PRESERVATION	Not Eligible

PROPOSED RENOVATION

UNIT TYPES	1BR, 2BR
NO. UNITS / FLOOR	12
TOTAL NO. UNITS	144 (on 12 Floors)



STREET-LEVEL FLOOR AND SITE PLAN



Top and bottom: 38 Dolores Street

THE STORY

One of a pair, this building is located in a creative and lively downtown San Jose neighborhood. Near restaurants, bars, light rail and other amenities, residents will have **prime views, rooftop access and multiple amenities** shared by two-building complex.

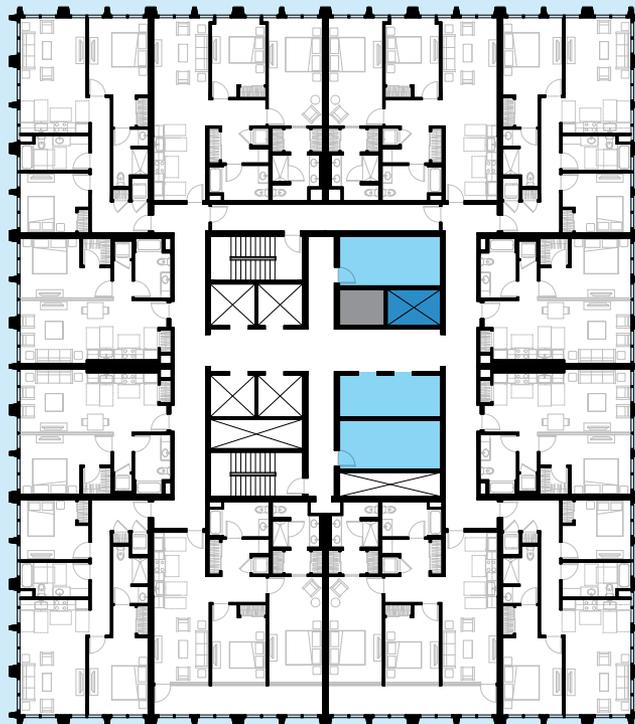
THE DETAILS

- Floors 1 and 2 could accommodate a gym, café, meeting spaces, bicycle storage and other amenities for residents.
- **Recessed balconies** provide private outdoor space for some units.
- Concrete core walls are inflexible, but fortunately, **few structural modifications** are needed for this newer building.



EXISTING CONDITIONS

- Reclaimed square footage for residents' amenities



RENOVATION POTENTIAL

KEY

- REUSE ELEVATOR SHAFTS FOR RESIDENTIAL HVAC REQUIREMENTS
- SHARED MEETING ROOMS, BIKE STORAGE OR STORAGE
- ADDITIONAL UTILITIES ROOMS NEEDED FOR RESIDENTIAL USE

CASE STUDY 5

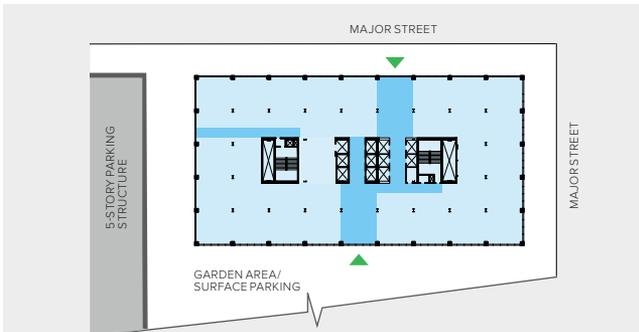


EXISTING CONDITIONS

CONSTRUCTED	1971
BUILDING USE	Offices with retail at ground floor
PARKING	Adjacent parking structure
APPROX. FLOOR AREA	25,000 sf
HEIGHT IN STORIES	24
TOTAL SF	600,000 sf
CONSTRUCTION TYPE	Steel frame
ZONING	[Q]C4-2-0 – Commercial
HISTORIC PRESERVATION	Eligible for consideration

PROPOSED RENOVATION

UNIT TYPES	1BR, 2BR
NO. UNITS / FLOOR	18
TOTAL NO. UNITS	180 (on 10 Floors, Office Floors 1–14)



STREET-LEVEL FLOOR AND SITE PLAN



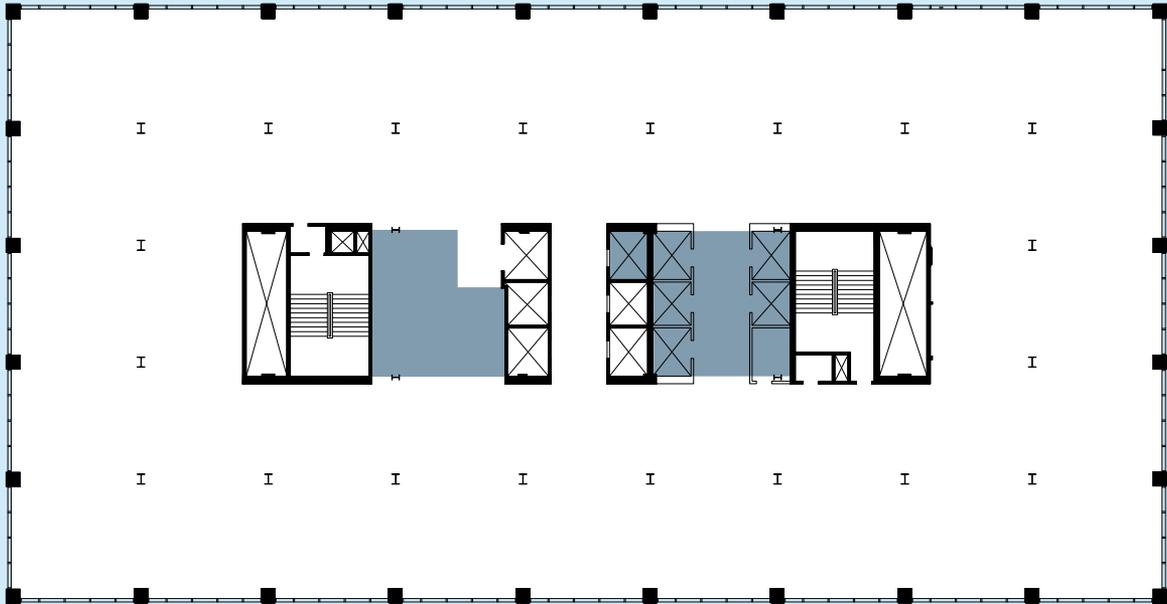
Top: Alchemy by Alta; Bottom: 99 Rausch

THE STORY

Mirroring the mixture of building types in Westwood, this modern office tower presents an intriguing opportunity for a **mixed-use building**, converting only the upper floors of an existing modern office building into housing. With panoramic views on all sides, rooftop terrace and expansive landscaped entry plaza for residents on the southern side, this building would house exceptional residences in a neighborhood with a university, museums, shopping, dining, offices, transit access and major vehicular access.

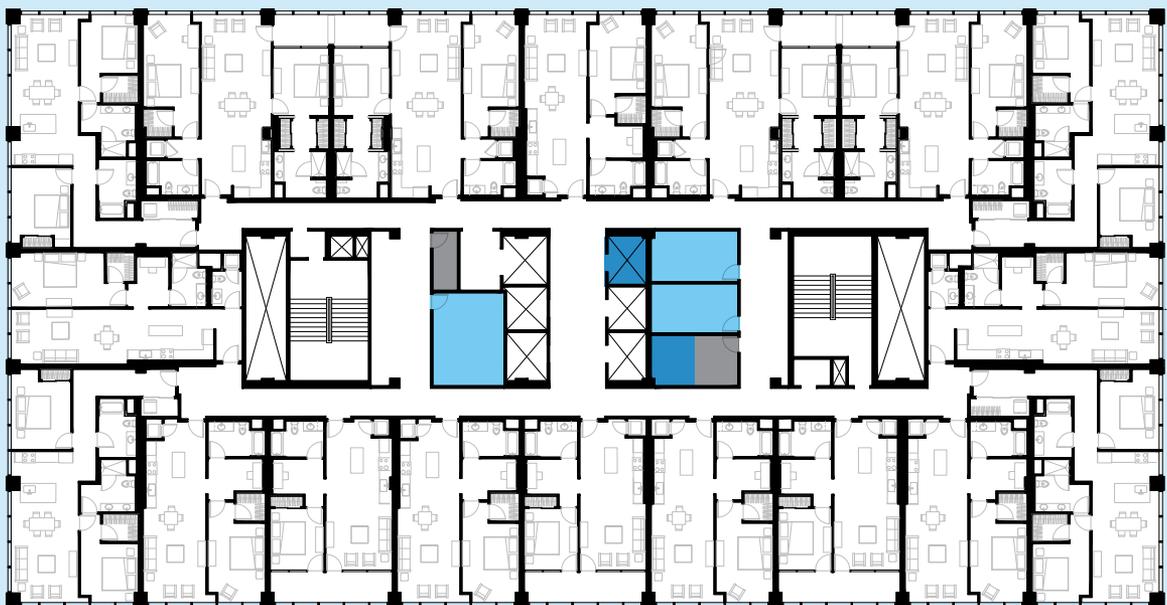
THE DETAILS

- **Separate entrances**, lobbies and elevator banks – one serving office floors and another for residential floors – create different experiences and identities for each use.
- 12' ceilings and expansive windows create distinctive units.
- Steel buildings of this era are less likely to require structural but MEP/Life Safety systems require replacement.
- Occupying lower floors during construction would be challenging.
- As illustrated on the following pages, the strong and clear architectural design presents a backdrop for **façade modifications** that could further identify the upper floors as residential.



EXISTING CONDITIONS

■ Reclaimed square footage for residents' amenities



RENOVATION POTENTIAL

KEY

- Reuse elevator shafts for residential HVAC requirements
- Shared meeting rooms, bike storage or storage
- Additional utilities rooms needed for residential use



EQUINOX

WILSHIRE

Refresh

FAÇADE OPPORTUNITIES

People care about the way their home looks, whether it's a ranch house or a high-rise condo. Location may be prime, but appearance is a close second.

Historic buildings often come with distinctive identities and landmark protection. Newer office buildings may not have the same qualities, but they offer more **opportunities for modification and branding**. Windows, balconies, lighting, entrances, lobbies, landscape and materials are all important signifiers for residential structures.



Existing conditions

The diagrams on the right illustrate a few of the options available to transform a drab office building into a fashionable residence.

Case Study 5 (existing conditions above) offers a relatively neutral canvas for design experimentation. The rendering at left illustrates the impact of adding projecting linear balconies to a standard curtain wall. With animated lighting, this mixed-use building would have a unique and memorable presence on the cityscape.

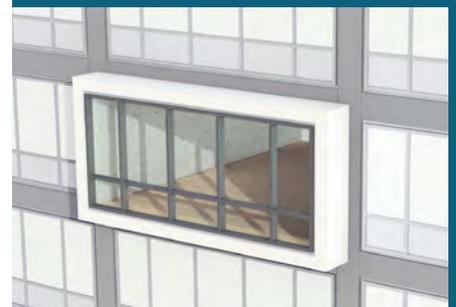
FAÇADE COMPONENT OPTIONS



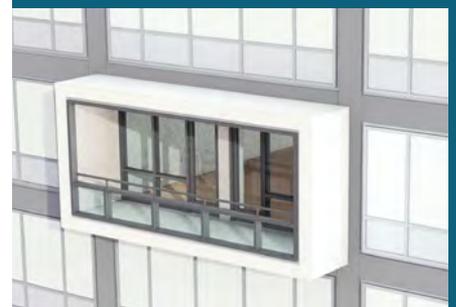
0. Existing Windows



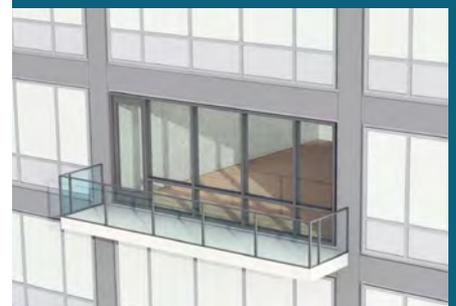
1. Recessed Balcony



2. Projecting Bay Window



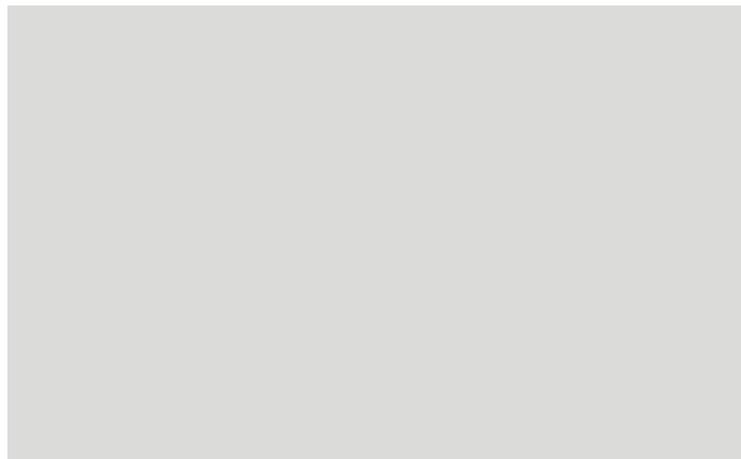
3. Projecting Balcony



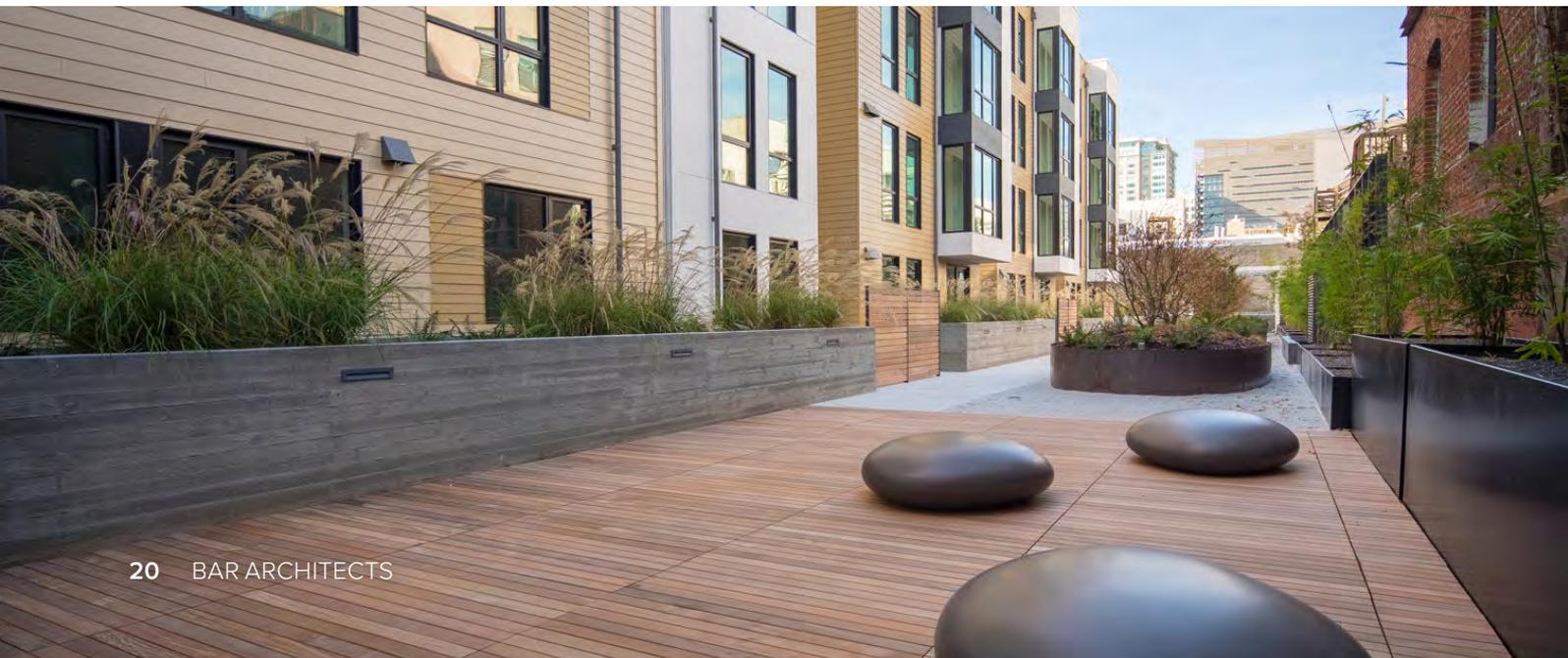
4. Projecting Slab Balcony

Approvals, Construction and Funding

- **Zoning/Occupancy** changes can be complicated, but it is almost always easier to get approvals for renovating an existing building than creating a new structure that can cast new shadows and block neighbors' views.
- With the 1999 enactment of the **Adaptive Reuse Ordinance (ARO)**, Los Angeles established an expedited framework for converting office space into residences. Although other California cities are lagging behind in creating similar ordinances, many commercial zones also permit residential by right.
- The **Historic Building Code** permits exceptions to some codes, allowing performance-based alternatives to some new construction requirements.
- Building renovators should always expect the unexpected, but the process can **reduce construction time** if properly planned.
- Tax credits may be available for affordable housing, especially if the project is in an opportunity zone.
- For historic renovation projects, **Federal Historic Tax Credit (HTC)** programs allow participants to claim Federal Tax credits of 20% for eligible improvement expenses.
- In California, the **Mills Act** reduces property taxes for owners of historic structures. The terms vary from city to city, but Los Angeles, San Diego, San Francisco, San Jose and 75 other cities in California have Mills Act programs.



Top: Alta Buena Vista; Bottom: 99 Rausch



Consider the Cost

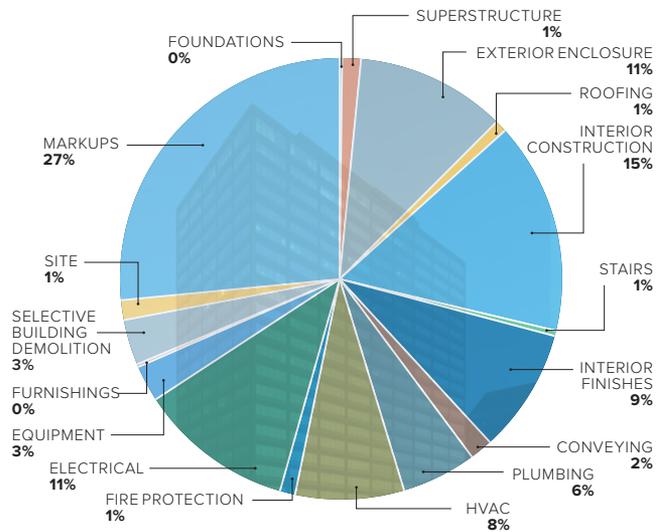
Although costs vary from project to project, our cost models for the Five Case Study examples found that renovating existing buildings to housing can be **significantly less expensive** than new construction.

- The primary difference in costs for renovation and new construction are related to **structure and building envelope**.
- In **newer buildings** with fewer modifications to the structure or skin, renovations may **save up to 30%** of the cost for new construction.
- If extensive upgrades to the structural system and exterior envelope are required, the savings for renovating an **older building** new may be reduced to approximately 15%.
- System upgrades **increase** both the project cost and the **value of the units**.

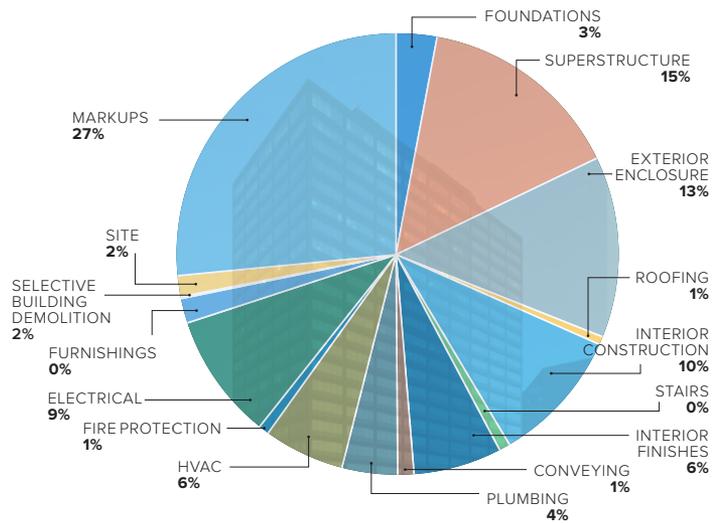
Depending on the historic status of the existing building, **tax benefits**, façade easements and other funding mechanisms may make renovation an even more attractive option.

For an apples-to-apples comparison, our analysis studied construction costs only. Land costs, financing, fees and other soft costs are not included.

RENOVATION COST

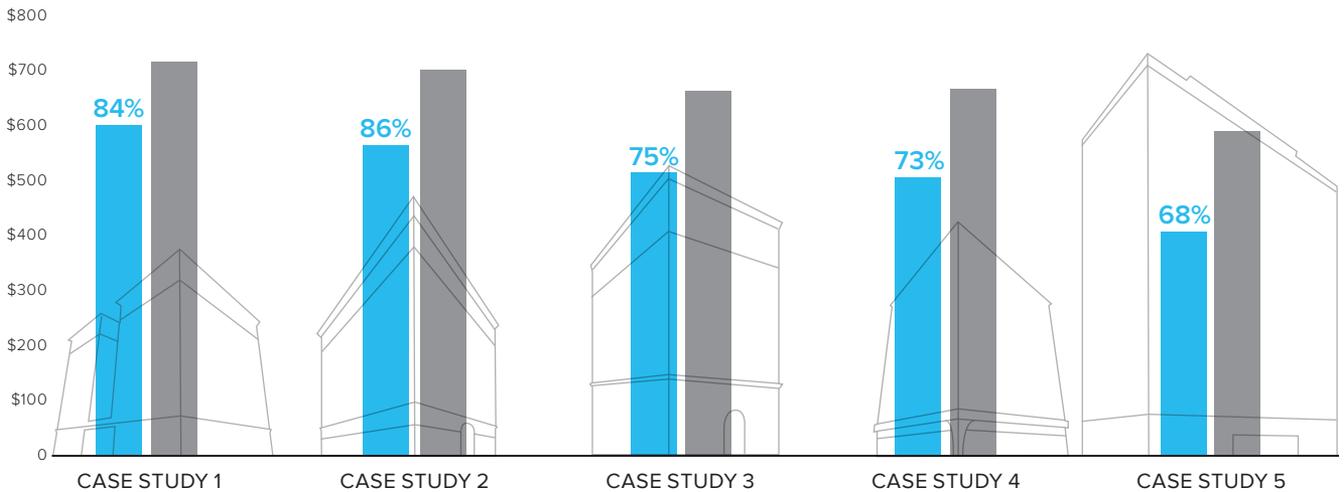


NEW CONSTRUCTION COST



CONSTRUCTION COST COMPARISON RENOVATION VS. NEW CONSTRUCTION

■ RENOVATION
■ NEW CONSTRUCTION



Making It Real

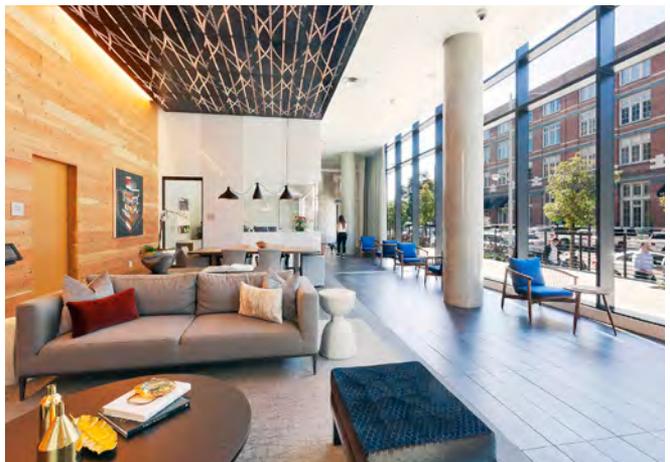
OFFICE TO HOUSING – IT MAKES SENSE

- **New ways of working will continue to reduce the demand for office space, but housing needs continue to grow.**
- **Reusing existing resources is the most sustainable response to the housing crisis.**
- **Although each building is unique, renovation costs can be significantly less than new construction.**

FINDING THE OPTIMAL RESOURCES

Although each office building will have its unique opportunities and challenges, these characteristics define the best candidates for Office-to-Housing conversions:

- **Location** – Proximity of transit, workplaces, retail and other amenities are always important.
- **Architecture** – Buildings of all styles and any vintage bring unique qualities:
 - Older buildings can establish a **distinctive building identity** and residential character.
 - Newer buildings have fewer restrictions and offer more opportunities for new **identity-defining modifications**.
 - Floor Plates – Relatively **thin buildings** allow natural light and ventilation to penetrate dwelling units.
 - Existing Windows and Structure – Unusual or irregular column layouts may shape units with unique layouts and **features that increase market appeal**.
 - Vertical Dimensions – Greater floor-to-floor dimensions typical in office buildings will allow **higher than usual** and adequate soffit space for new utilities in housing.
- **Energy Performance** – Existing exterior walls and windows will likely not meet current energy code requirements or residents' expectations. Integrating Passive House measures (added insulation and high-performance glazing) can dramatically reduce energy costs, produce a more comfortable home and lower long-term operating costs.
- **Structure** – Newer buildings are less likely to require costly seismic upgrades.
- **Mechanical, Plumbing and Electrical Systems** – Adapting office space to housing will likely require all-new systems.
- **Approvals** – Jurisdictions with ordinances to streamline conversions will minimize the time for approvals.
- **Parking** – Existing parking provisions for office space may satisfy or exceed the parking requirements for housing.
- **Retail** – Existing retail or amenities at street level bring added revenue to the building owner and amenities to residents.
- **Cost** – Newer buildings with better seismic performance may provide the greatest cost advantages when compared to new construction.



Left and right: One Henry Adams



THE BAR TEAM

We're ready to use our expertise in evaluating opportunities and realizing projects for you.

BARarchitects

BAR Architects, based in San Francisco and Los Angeles, specializes in multifamily, mixed use and affordable housing projects as well as building renovations. BAR is committed to creating well-designed, sustainable and memorable places for clients and communities. For this study, BAR assembled a team of creative collaborators, each with extensive housing experience and building reuse expertise. bararch.com

Holmes Structures pioneers new structural engineering standards and technologies in a wide range of projects including renovations and unreinforced masonry building upgrades. holmesstructures.com

Holmes Fire uses a collaborative approach to advance fire safety design. holmesfire.com

Interface Engineering is a progressive mechanical and electrical consultancy. They develop innovative solutions for high-performance projects, providing technical expertise through design, construction and operations. interfaceengineering.com

TBD Consultants offers a comprehensive range of project and cost management services to public and private owners, architects, engineers and contractors for a broad range of project types. tbdconsultants.com

Plant Construction is known for the quality, integrity and service brought to each project. Plant has unparalleled expertise in bringing modern techniques and materials to the inherently unpredictable environment of existing buildings. plantconstruction.com

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