



Reclaiming buildings: building on a solid foundation

What got us thinking...

You've heard the saying "everything old is new again." One key example of this philosophy is fashion. However, when it comes to the office furniture industry, a shining example is the renovation of old buildings. When making the decision to renovate instead of embarking on a new construction project, organizations must consider many factors, such as cost, timing and sustainability.

Renovation allows architects and designers to take advantage of the natural benefits that an old building holds within its core design, such as ample natural light from high windows and ceilings. The challenge lies within creating effective work spaces for the employees and organization, while at the same time preserving the character of the building.

With careful planning and informed product selection, renovating existing buildings can yield more flexibility, cost and timing advantages compared with new construction. Considerations like environmental impact, sustainability and historic preservation can help you to choose between new construction and renovation. Ultimately, each unique situation — the location and structure of the building, the particular business needs of each company — will drive this decision. And more and more, it makes sense to reclaim existing buildings.

A peek behind the walls: What's involved in renovation?

When it comes to extreme makeovers, not much can top reclaiming a tired building. While the structural grids of some buildings may prevent cost-effective renovation, many “obsolete” buildings can be successfully upgraded for contemporary use. Upgrading these buildings can support sustainability efforts, improve indoor air quality (IAQ), allow for future interior flexibility and provide life-cycle cost savings. The renovations also may qualify for U.S. Green Building Council Leadership in Energy and Environmental Design (LEED) certification credits for environmental performance. Using intelligent renovation and flexible build-out strategies, savvy design teams and building owners can cost-effectively turn outdated structures into thriving centers of work and commerce.



Building renovations certainly have some basic similarities, but each project is unique. The individual location; original building materials, design and purpose; and vision for renovation all affect decisions for each renovation.

“A lot of old buildings with natural materials, natural lighting and high ceilings can be refurbished very successfully, if you can get the infrastructure up to speed,” said George Weller, senior principal engineer, Steelcase Inc. When weighing the pros and cons of refurbishing an existing structure, first determine the financial feasibility of doing so. Look at the existing investment in the building: depreciation schedules, capital improvements, debt ratios, operating costs, revenues and tax liabilities. Additionally, a thoughtful review of the following factors can help define the suitability of renovation:

- Cost
- Timing
- Sustainability

“Refurbishing existing buildings is such an art, and one that is heavily informed by science.”

— George Weller, senior principal engineer, Steelcase Inc.

Fact pac

The AIA Architects and Climate Change report states:

- Approximately 5 billion square feet of new construction and 5 billion square feet of renovation occur in the U.S. each year.
- Annual energy consumption in the United States is projected to increase by 37 percent over the next 20 years. However, buildings can be designed to operate with greatly reduced energy compared with current usage through material selection, daylighting strategies and natural heating, ventilation and air conditioning (HVAC) systems.

Benefits of continued use of existing structures:

- Cost to rehabilitate buildings is typically less than for new construction
- Cultural heritage is preserved
- Disposal and waste costs are reduced compared to new construction
- The existing design of historic buildings, which includes energy savings through passive ventilation and daylighting, is leveraged

— Fourth AIA Roundtable on Sustainable Design findings

Fact pac

Historic buildings have great potential to handle today's frequent churn and technological advances, due to their more open vertical spaces and structural integrity.

—2002 Carnegie Mellon School of Architecture

Avoidance of environmental quality failures and long-term obsolescence are possible through modular, reconfigurable and expandable:

- Lighting
- HVAC
- Voice and data
- Power

—2002 Carnegie Mellon School of Architecture

A raised floor for HVAC and modular power and networks provides:

- Connectivity
- HVAC access
- User comfort
- Ease of reconfiguration
- Energy cost reduction

—1999 Soffer Tech Office Building case study

Modular wall systems eliminate drywall contributions to the waste stream.

—1999 Soffer Tech Office Building case study.

Once you've made the decision to renovate, the next step is deciding how to renovate. Business and design objectives should drive the strategy and methods for interior fit-out. And costs, timing and sustainability all contribute to those objectives. If, for example, the renovator is also the sole tenant of the building, tax considerations may be a key concern. If the renovator is hoping to occupy the space to meet business deadlines, the speed in which the renovation can be completed may be the driving force. If the developer intends to lease space after renovation, long-term flexibility (economic sustainability) may be the top priority.



“When you look at renovation, each building is different, and what each client wants to do is different.”

— George Weller, senior principal engineer, Steelcase Inc.

Cost

A less taxing option

Who wants to pay more taxes than necessary? When choosing personal property improvements over capital improvements, look for significant tax savings.

In a major renovation, improvements to the site, structure and skin are considered capital improvements. For example, new roads, building additions, new skylights and doors, and a new facade require a 39 1/2-year depreciation cycle, according to the U.S. Internal Revenue Service. Some improvements to services, such as new HVAC and new plumbing, are also capital improvements.

But in the interior fit-out phase, plenty of improvements to services and the space plan can be accomplished with modular elements like movable walls, raised access floors and modular cabling. These elements can qualify as moveable personal property, so you can depreciate them over a seven-year period in the U.S. Here are a few examples of products that can be depreciated in seven years:

Method

Because each building renovation is unique, qualitative research forms the basis for the methodology in this compilation. Case studies and Steelcase product development experts also provided data to support these findings.



- Plenum housing, if designed to be mounted, removed and remounted elsewhere
- Floor, wiring and carpeting, if designed to be installed, moved and reinstalled elsewhere
- Walls, lights and other interior trim, if designed to be positioned, adjusted and repositioned

Codes and circumstances vary, but in almost every U.S. state, eliminating major portions of interior architecture from the property assessment and annual taxes can be a real financial advantage.

If you plan your renovation to minimize capital improvement costs and maximize personal property costs, tremendous tax savings can result. Even older, vacant structures that cannot be profitably renovated and leased may be candidates for reclamation as new interior fit-out strategies emerge and life-cycle costs are evaluated.

Cost control

Building investment strategies typically come in a couple of different forms: first costs or life-cycle costs. Reducing first costs for a renovation can free cash for other initiatives. And concentrating on life-cycle costs can mean a lower cost over the life of an investment. How does that work? By factoring maintenance, reconfiguration and depreciation rates into the total cost of ownership.

Modular interiors are competitive with the first costs of traditional construction. But they offer substantial benefits and savings over the life of the installation. For example, the initial cost of providing power, voice and data distribution may be higher when using a raised access floor compared to core drilling through structural slabs. But life-cycle costs are much lower for access floors. This is due to their flexibility during churn and their tax benefits through accelerated depreciation.

Additionally, continued use of core drilling to support a “poke-through” technology infrastructure can, over the lifetime of a building, create serious structural integrity issues that may threaten the investment. In other words, multiple holes can cause a Swiss cheese effect in a building’s infrastructure. Access floors greatly reduce this concern.

When looking at design and construction expenses, keep in mind that it can cost as much to renovate a building as it does to build a new one. But renovation can have very attractive life-cycle cost advantages:

- With phased interior construction and use of modular infrastructure and architectural components that are built off site, businesses may be able to occupy space as it is renovated, resulting in net occupancy cost savings.
- When rising raw material costs are factored in, it is frequently more cost-effective and time-efficient to renovate than to build.
- Renovating inexpensive multi-use or light commercial space and converting it to quality office spaces will command rents that are four to five times higher than previous rates.
- Local governments may offer tax abatements or cash incentives to businesses willing to renovate buildings in areas targeted for revitalization.

Timing

Frequently, timing is the most pressing reason to renovate. In the time it takes to secure land, complete a site analysis and develop preliminary architectural plans for a new building, an entire renovation could be done. And when it comes to local zoning issues, renovation is often the most time-efficient option because of the delays that can accompany the zoning approval process. (That's especially true if appeals are involved.) Another consideration is the wrecking ball — if demolition is needed prior to new construction, renovation may make even more sense.

“Any existing building can be refurbished very successfully if you can get the infrastructure up to speed.”

— George Weller, senior principal engineer, Steelcase Inc.



Well thought-out renovations with modular interior fit-out strategies can really help move projects forward. With careful planning and design, and off-site manufacturing of architectural elements, the construction phase is like a sophisticated assembly project. Major phases are completed, often concurrently, in quality-controlled, cost-efficient factories. Unlike traditional construction methods, this approach minimizes on-site time. So, it allows occupancy of areas of the building during renovation.

Keep in mind, the modular approach doesn't eliminate the need for professional guidance and skilled labor. Projects still involve all or most of the traditional players: architect, general contractor, interior designer, carpenters, plumbers, technicians and painters.

Comparison shopping

Here's an example of the cost comparison between traditional and modular systems for a 47,000-square-foot, two-story building. Initial costs are lower for traditional hardwired electrical circuits and home run cabling routed within the ceiling plenum and accessed through core drilling. However, life-cycle costs are significantly lower with modular power and zone cabling beneath an access floor. For example, at a 30 percent churn rate, the average costs associated with a move that incorporates a flexible infrastructure were about 90 percent less than with conventional construction. Depreciating the flexible system as personal property (at a combined tax rate of 44 percent) provides a tax benefit over three years that's almost 14 times more than that for fixed construction..

A bright future

Created to provide the ultimate learning environment for its graduate business students, The University of Connecticut's Graduate Learning Center is a blend of space and technological innovation. The Center blends college classrooms, a research lab and an actual working business into one experiential learning experience.

Research conducted by Steelcase, University of Connecticut, Schoenhardt Architecture + Interior Design and BKM Total Office demonstrated that the proper use of space, and the incorporation of technology, was a key design aspect for this project. Easy installation of the technology was essential, but functional use of the space was also important to foster a better learning environment for the students and faculty.

Examples of how space and technology work together at the Center:

- Pathways Floors and Wiring, and Pathways Technology Wall were chosen for their design, sturdiness and ability to handle the large amount of technological challenges.
- PolyVision Impulse LTX whiteboards were installed in each classroom, allowing digital archival of notes.
- Ellipse tables (wired for power and data) were used create the illusion of a tiered classroom.

Sustainability

Environmental and economic sustainability — the methodology of using resources without depleting them — is important to any business that wants to thrive now and in the future. The benchmark for building renovation is how the potential quality and performance of the building compares with new construction. While maintaining charm, character or other aesthetics, the building also has to support the present and future goals and objectives of the company, its people and their work. Adequate thermal and IAQ control, sufficient electrical capacity and quality, and ample telecommunications connections are critical to the successful operations of a building's occupants — and they also support sustainability goals.

“You can almost think of it as ‘big furniture’ ...if the tenant owns the property, it can move wherever the tenant goes.”

**— Richard Benoit, program manager,
Architectural Solutions, Steelcase Inc.**

Sustainability practices are being rewarded with recognition in the form of a credit system. The voluntary, consensus-based LEED for Existing Buildings (LEED-EB) certification process through the U.S. Green Building Council (USGBC) “provides the opportunity for building owners and operators to meet their sustainable operations goals and to reduce the impacts of their buildings on the environment and occupant health over their entire life cycle,” according to the USGBC.

Many buildings built before the advent of electric lighting and mechanized ventilating systems in the 1930s are actually great candidates for renovation, which, in itself is a form of sustainability. Because they relied on windows for illumination and ventilation, these buildings have more daylight, smaller floorplates and greater floor-to-floor heights than many modern structures. In addition, mechanized HVAC services were added to older structures as retrofits, so these services aren't deeply embedded in the building structure, which makes renovations easier.

Modular components work very well in these older structures, since they can be configured to fit within the unique space of existing buildings. In addition, moveable walls, raised floors, modular wiring and zoned cabling are meant to be moved, whether during churn or relocation, which adds to the overall flexibility and sustainability of the systems.

Additionally, by using modular components that can be rearranged as an organization changes, layers of physical details, such as hardware, will not contrast with one another. “With modular components, all of the details stay the same,” Benoit said. “They just move. This is one way you can make a renovation sustainable, because you don't have to completely start over to change the configuration.”

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A quick summary: Everything old is new again

Choosing between renovation and new construction involves many factors, and even more decisions. But ultimately, knowing your options will help you make the best choice for your situation. If you decide that renovation is the way to go, you'll want to evaluate your building project's life-cycle costs, timing considerations and sustainability goals. Emerging strategies and solutions for the interior fit-out of an existing building carry potential advantages in each of these areas.

With thorough analysis, careful planning and design strategies that incorporate flexibility, even century-old buildings can become state-of-the-art, adaptable workplaces. These older buildings have a lot of potential, once you really look at the options. They can provide barrier-free accessibility, ample telecommunications infrastructures, and enhanced indoor air quality. They can feature cost-effective, reconfigurable, expandable and integrated building infrastructures like modular cabling, raised access floors and movable walls.

When you weigh the pros and cons of reclaiming an existing building, you might be surprised to realize just how many pluses there are. More and more, it just makes sense to renovate.