

# The Office Building of the Future



Hickok Cole Architects



Gensler

## Going Well Beyond the Business Needs of Tenants



The Miller Hull Partnership



Pickard Chilton



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## Going Well Beyond the Business Needs of Tenants

**“Work. Something we do. Not someplace we go.”** That adage, ascribed to Cisco Systems, turns out to be only half true. Yes, social forces and advances in communications technology are driving changes in how and where we work. The corner offices and cubicle farms of the Baby Boomer generation are giving way to workplaces that reflect the preferences of the coming generations. The continuing migration to transit-oriented, pedestrian-friendly urban areas is replacing long commutes by car. But office buildings are not going away. Rather, the Office Building of the Future will offer workers a new richness of experience, a kind of Mixed-Use 2.0, almost infinitely flexible, with uses coexisting under the same roof.

The winners of the NAIOP Office Building of the Future competition identified several common themes that will drive change in how we will “office” in 2020. Perhaps the biggest driver for change is **personal technology, which has created untethered workers, capable of completing service and information-based tasks wherever they choose.** An individual with a laptop can work from home or at a Wi-Fi equipped spot like a coffee shop or library. The advantage of the office of the future is that it will provide an array of flexible spaces — options not just for focused, individual work, but also workspaces for collaborative groups, team projects and social interaction.

**The upcoming generation of knowledge workers places a high value on work/life balance and quality of life.** The office building will support the productivity of these highly sought-after individuals, with flexibility and personal comfort, as well as a variety of amenities and entertainment experiences. For example, the structures will accommodate passive activities, such as cafes and meditation rooms, but also physical activities such as bike riding and soccer.

**The office building itself will also be expected to be productive.** As a result of advances and cost reductions in construction materials and systems, a greater degree of sustainability will be attainable and become more financially feasible. Net-zero buildings will meet the corporate demands of tenants as well as the improved building performance sought by building owners and developers.

The decade ahead will contain a surplus of obsolete, under-performing office buildings across North America. Generational differences, personal mobility preferences and desires among individuals and businesses to move toward environmental sustainability will

impact both new and existing office buildings. **The successful developer is called on to create buildings targeted to the innovative businesses of the future and the kind of environments in which they will prosper.**

The four compelling visions that follow show the way forward. **This article is based on the concepts that the winning architecture firms described in their design submissions.** Each demonstrated a unique, deeply thoughtful and stunningly detailed vision, coupled with a well-grounded understanding of how to harness the technologies and materials of the future to meet, and exceed, the needs of tenants and owners. Kudos to these winners of the 2012 NAIOP Office Building of the Future competition.

**Congratulations to our winners:**

**Hickok Cole Architects**

**Gensler**

**The Miller Hull Partnership**

**Pickard Chilton**

**During the spring and summer of 2012, NAIOP conducted an inaugural design competition, seeking concepts for the Office Building of the Future.** An independent panel of judges evaluated the submissions against an objective set of criteria. The panel selected concepts that promoted the most efficient and welcoming environments for tomorrow’s office tenants and met space utilization trends of the future. **Presentations made by the four winners of the Office Building of the Future competition will be available at [www.naiop.org](http://www.naiop.org).**

# Hickok Cole Architects

## The Vision

“Form follows performance,” not just function, in Hickok Cole’s Office Building of the Future. Businesses demand ever-increasing levels of productivity, both from employees and the buildings in which they work. According to the submission, “Worker productivity increases due to a focus on the health and well-being of employees.” Monotony is replaced by variety and visual stimulation, with smaller, narrower floorplates that allow natural light and outside views for all. No one is tied to a desk, and there are ample opportunities for diverse work environments and “third-places,” such as:

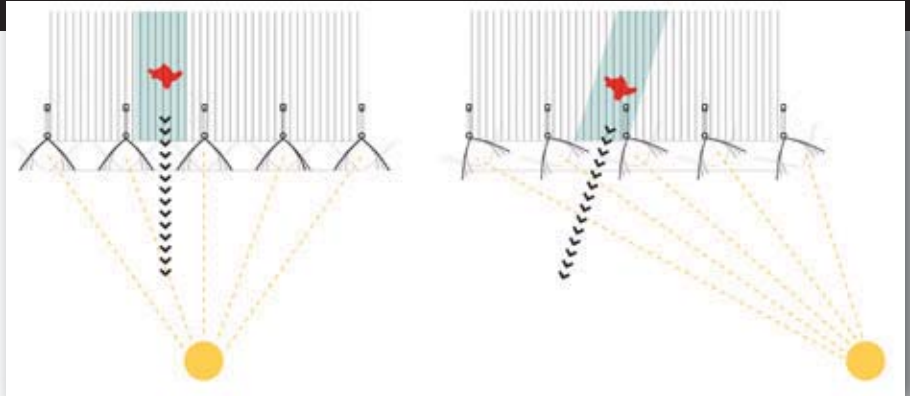
- Lounge work areas
- Communal table areas
- Benching areas
- Hive configurations for the duration of a project
- Individual workstations for focused tasks
- Shared office amenities, like cafes

The office building must accommodate employers seeking multiple, smaller office locations, closer to their workforce and rapid transit. **“This trend will not mean an overall decline in office demand, but will result in a reduction of the average size of any individual office location.”**

Today’s center-core building footprint will stretch into an “H” configuration, organized around two- or three-story, public third spaces, some outdoors and some conditioned. Tenant areas will be column-free, clear-span, with toilet rooms, elevators and mechanical spaces located in the expanded center.

## The Elements

At the heart of this human performance-enhancing environment are Hickok Cole’s advanced mechanical and electrical systems, plus new construction materials and fabrication techniques.



“Up to 30 percent [of energy] is lost through the distribution lines of the power grid.” **The Office Building of the Future will house two electrical distribution grids: direct current (DC) in a ceiling grid and alternating current (AC) in a floor or wall grid.** The DC will be able to power all non-plug loads.

Capitalizing on the natural tendency of airstreams to flow downward or upward when cooled or heated, **a buoyancy-driven heating, ventilation and air conditioning (HVAC) system will use chimney-like building elements as pathways for passive or mechanically assisted airflow.** Wind turbines will utilize a vertical-axis helical shape, requiring only a two- to three-meter footprint. Shrouds and supporting structures around the turbines will also support photovoltaic panels to generate additional energy.

Key to the building’s performance is the “Smart Strand,” which behaves like intelligent double skin. **The inner thermal surface tightly wraps the occupied tenant space and the outer skin employs a dynamic, polymer-based, adaptive shading system, which is activated by the sun, expanding and contracting to filter direct sunlight.”**

Futuristic materials and factory robotics will transform the construction phase of the project, leveraging modular construction to increase speed and quality. Prefabricated modular planks will span the width of the floor without intermediate support. Perforated, trough-shape beams will accommodate mechanical, electrical, and plumbing (MEP) systems running between the webs in the beams.

“Smart strands” on the building envelope are activated by the sun, expanding and contracting to filter direct sunlight. They also follow the sun to provide optimal sun shading throughout the day.



The distinctive H-shaped structure offers optimum floorplans for diverse work environments and “third places.”

Hickok Cole’s Office Building of the Future is flexible and easily adapted to tenants’ evolving companies: **“All new buildings need to support an open system that can change and adjust as demographics and technology change around them. Like the iPhone or iPad, we need to conceptualize a building not as a static object, but an open ‘architecture’ that can accept the new, hot and viral app!”**

# Gensler

## The Vision

Looking to the future, Gensler connects the dots between increased worker mobility, weak demand for backfilling vacant space and a surplus of obsolete buildings. But instead of seeing a full-scale scrape demolition scenario, they envision a vast, sustainable alternative, in what they call “hackable buildings.”

“The rapid influence of technology on how everyday work tasks are completed has decentralized many of the office-centric activities that governed North American office building design,” notes Gensler. **“The universal metric of square-foot per person will continue to shrink as companies and institutions encourage employees to supplement their office space with work locations not paid for by the company** — home offices, neighborhood coffee shops and communal spaces, such as parks and museums in the public domain of the city.”

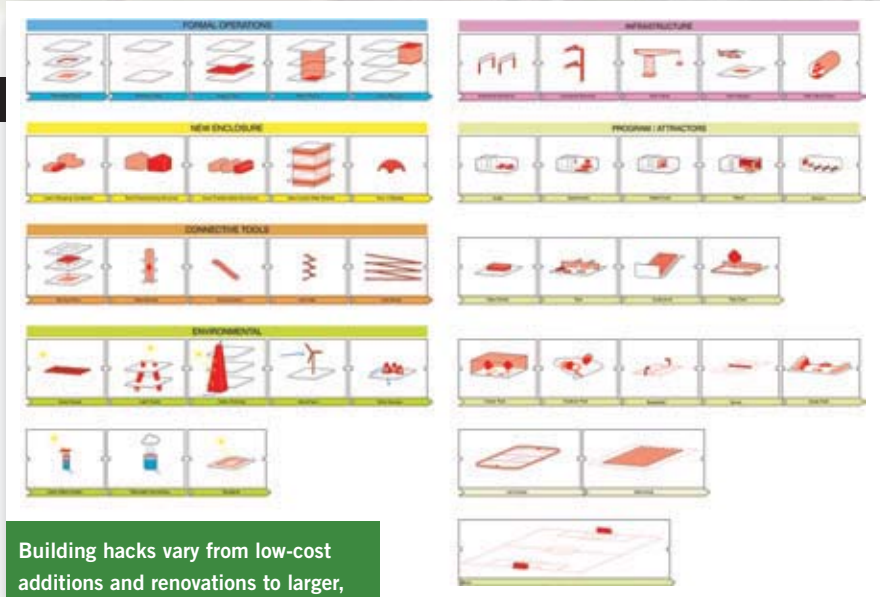
The unique value of an office building to a company is that maintaining an office allows “companies to leverage technology but still maintain that enormous impact of people being together.”

## The Elements

Originally meaning to break into a computer security system, “hack” now has an additional, more positive connotation: to change or improve a product, such as an office building. In Gensler’s concept, **a hackable building is “an existing structure that has been adapted beyond recognition...quickly incorporating a diverse mix of multiple uses within a one.”**

Hacking a building offers speed to market, which can translate to more cost effective and less risky projects because it is quicker to convert a building than to design, document and construct a new building.

**Hacks range from tenant-driven changes to investments made by owners to reposition their asset.**



Large-scale hacks can create spaces beyond standard amenities like cafes and fitness centers to “attractors” — or unique building amenities — like fabrication labs, shared data centers or stadium-sized recreational facilities that can be shared by tenants and the public.

“The building owner can perform hacks as incentives for existing tenants to remain, or as attractors

to entice new and different tenants to the building,” Gensler explains. “The tenants themselves could even perform some of these modifications if their lease agreements give them the freedom to transform their spaces in ways that better meet their needs.”

“Hacking is a culture, not a technology,” according to Gensler. “We believe it represents the most dynamic, pragmatic and sustainable vision for the future of office buildings and the future of work.”



Hacking could transform the J. Edgar Hoover building in Washington, D.C., from a fortress-like structure with huge, inefficient floorplates to a building featuring multiple uses, including office, hotel, serviced apartments, conference facilities, retail and an outdoor park and sports field. Hacking would:

- Penetrate the floors to create better vertical connections
- Create pop-out bays for special spaces that break up the facade
- Design edge atrium space, including glass elevators and escalators
- Incorporate high-performance curtain walls, with breathable “double skin”
- Add retail at the street level and “big-box retail” on the large upper floors

# The Miller Hull Partnership

## The Vision

The b(HIVE) represents “a building that becomes a part of an agile, adaptable business machine, somewhere between a hands-on community and the raw edge of technology.” First, it offers **flexible, raw open space that is fast and inexpensive to build**, to accommodate either individual co-workers or start-up firms that lease space on an as-needed basis. Developers can create demand and higher lease rates by “curating” the office space to ensure the right creative mix of users.

Second, it includes **collaboration space, carefully customized for tenants and easy to reconfigure**, using prefabricated, modular pods outfitted with the latest technology. These spaces could be rented to office tenants as well as to community groups as a neighborhood amenity, based on the zip car model, extending income revenue beyond the 9-5 workday.

Rounding out the (b)HIVE concept is the **retail/third space, on the ground floor, with a diverse mix of uses** such as restaurants, studios, galleries, gyms, theatres, supermarkets, places of worship, medical facilities and community spaces, **as well as innovative combinations of living and working spaces**. “What the next generation wants is variety, choice, activity, action and experience. Go out and find the hottest chef in town. Don’t build out the cafeteria, thinking that you know what everybody wants to eat every day.”

## The Elements

Miller Hull believes that **“Buildings should not be allowed to consume more than they can capture on site**. If zoning were based on measured performance goals, there would be no Floor Area Ratio (FAR), setback, design standard or any other starting point other than what is required to achieve carbon neutrality. Cities should provide incentives to developers who meet these performance goals.”

To maximize its “carrying capacity,” the Office Building of the Future will be:

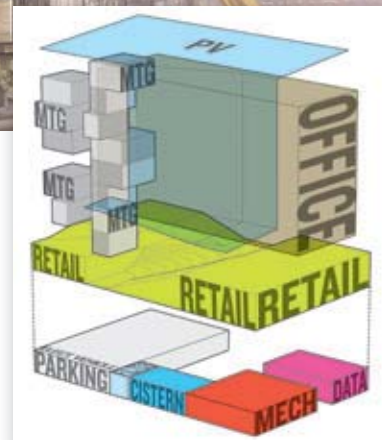


Eminently sustainable, each structural and mechanical system of the b(HIVE) supports measured performance goals and is built to the carrying capacity of the site and a carbon-neutral footprint.

- Located on an underutilized site on the edge of the downtown core
- Accessible by foot, bicycle or mass transit
- Built to harvest all of the water and energy from the site
- Smaller and reconfigurable to the needs of the mobile workforce
- A nexus for the neighborhood with activated retail and green space

In the b(HIVE), **“Each structural component is doing its job most efficiently.”** The foundation and retail space is constructed on a concrete podium to support foundations, an underground water cistern and green roof loads. Meeting pods are prefabricated off site from carbon-neutral, cross-laminated timber (CLT) and hung from the building’s steel structural frame. The open office is also prefabricated from CLT, which “can span up to 40 feet and has been tested up to 20 stories.”

Indoor temperature is controlled in a variety of ways. “Occupants can choose to open or close windows at any time, but guidance on appropriate times will be provided and HVAC systems will be shut off to spaces where windows are open.” Integrated within the triple-glazed glass units, sun-shading is provided by adaptable



The b(HIVE) concept brings together the energy of flexible, raw open office space, with collaborative meeting pods, as well as innovative ground-floor combinations of retail, entertainment and community spaces.

micro-louvers. “On the south-facing facade, the (b)HIVE is covered by an ethylene-tetra-floral-ethylene (ETFE) foil pneumatic pillow system with building-integrated photovoltaic panels.”

**Controlled water use achieves net-zero goals by:**

- Collecting rain water from the rooftop for potable and non-potable uses
- Recycling gray water through a constructed wetland on the podium green roof level and reusing it for landscape irrigation
- Utilizing an underground water cistern, filtering the water and returning it to the building for potable uses

The b(HIVE) concept epitomizes **“Buildings targeted to the creative, innovative businesses of the future and the kind of environment where they thrive.”**

# Pickard Chilton

## The Vision

Limitless in its potential configurations and bound only by imagination, the Office Building of the Future envisioned by Pickard Chilton will embody three distinct principles, centered around human qualities, business objectives and sustainability.

In accommodating human qualities, **the workplace will be healthful and conducive to the productivity and well-being of employees**, with elements such as abundant natural light, access to fresh air, customizable work areas and greater collaborative spaces. Personalized comfort controls at workstations will enhance worker satisfaction and improve productivity.

**Innovative design and construction, efficient floorplates and multipurpose spaces will support the owner's business objectives.** Owners of this future office structure will enjoy substantial economic benefits and tenant satisfaction will increase as a result of working in a more social, mobile and collaborative fashion referred to as "distributed work."

**Sustainability will be a critical component of the Office Building of the Future, which will incorporate an advanced monitoring system to track, measure and display data about building performance.** This real-time feedback will allow potential tenants to make informed decisions about their workplace and enable a high-performance building to stand out in a highly competitive real estate market.

## The Elements

An advanced system of modular building, with a "kit of parts," consisting of structural and enclosure units, is key to the innovative, flexible system that will balance the owner's business objectives with the well-being and productivity of the tenants and the preservation of natural resources. The precast elements will be fabricated off site in a factory setting, where all of the mechanical and electrical systems can be pre-fit. With significantly high-



er ceiling heights, the Office Building of the Future will be organized as a narrow building that maximizes light, air and views, in and through both sides of the lease depth.

The structural floor system or floor module of this future structure will incorporate mechanical, electrical, communications, fire suppression and lighting systems into a single, integrated assembly, measuring 45 by 10 feet, with operable windows on both sides of the lease depth. **Design and construction technologies will allow for thinner, state-of-the-art, integrated floor systems, resulting in reduced floor-to-floor heights yet greater floor-to-ceiling distances.**

**The perimeter structure and facade will be combined in the factory and delivered to the site as a complete single wall unit or wall module.** The columns and spandrel beam that make up each structural bay (30 feet x 1 floor) will be precast as continuous frames that are then in-filled with the latest technology in building fenestration.

Instead of a mundane grouping of spaces relegated to the center of the floorplate, **the core of the Office Building of the Future will function as the heart of the building.** The structure will expand the bracing system into a large open tube of precast concrete lattice-work, surrounding light-filled centralized atriums. Due to the system's inherent "plug & play" flexibility,

**Visible from the outside of the structure, the dramatic precast concrete lattice-work allows for significantly higher ceiling heights, for a narrow floorplate.**

it is intended that **the independence of the structural core will allow for elements of the building to be added or replaced years after its completion, accommodating future repurposing.**

The business case for modularity is strong: **Flexible workspace will allow for cost-effective modifications, easy reconfigurations and multi-functional capabilities to maximize real estate usage, create savings and minimize the risks of space dependency.**



**With advanced modular construction, a quality facility can be built on an abbreviated construction schedule, allowing a faster return on investment.**

# Honorable Mention

## CEI Architecture

To attain a greater degree of sustainability, **CEI proposes building a 40-story office tower out of wood.**

They believe that a vertical office structure constructed from wood will help minimize carbon emissions, and support efforts to reduce global warming. Inspired by Michael Green's *The Case for Tall Wood Buildings* and the British Columbia provincial government's mandate of "Wood First," CEI's concept building would be uniquely iconic, with instant branding potential for corporations, as well as physical attractiveness for prospective tenants. With a **five percent cost savings over traditional concrete construction, rents could be lowered, fit-out costs reduced and ongoing operating expenses minimized.**

CEI would use new, engineered wood building products, such as CREE panels for structural wall and floor systems. Recognizing that a building constructed from 100 percent wood has its limitations, CEI would combine the wood with other materials, in a hybrid fashion. "To exceed the limitations of wood-only structures, we must include systems that minimize concrete and steel to the primary support systems and maximize wood for secondary structural systems."

The wooden structure would offer flexibility, column-free space, human connection with the natural environment, maximum daylight and the ability to interconnect floors. The concept includes raised floors and open ceilings, allowing for easy reconfiguration, reducing demolition waste and increasing the lifecycle of building components.

## KGD Architecture

In KGD's concept building, the floorplates of each tower are rotated both toward and away from each other. This opens up the atrium to light and creates conjoined floorplates at the top (33rd through 40th floors) and bottom (1st through 8th floors) of the tower. By bisecting and separating a traditional deep office floorplate, **the resulting rectangle is the size of a typical residential or hotel floorplate (315 feet x 75 feet), allowing easy conversion/renovation of the space into other uses.**

Believing that a truly sustainable building must be designed to last 50 years or longer, KGD has designed its building for an extended lifespan as a viable space for many tenants, even if usage trends and demands change in the future. Floors could be converted to residential or hotel use or perhaps even an entire tower could be repurposed. The conference center located in the podium could be served by a hotel, occupying floors of one or both buildings. Apartments in one tower could be occupied by office workers of the other tower.

The building's facade is arrayed with horizontal and vertical shading elements that work together to prevent unwanted solar gain and eliminate



In KGD's design, rotating the floorplates of each tower creates a light-filled atrium space and sky plazas that can double the available tenant space on those levels.

glare from workspaces, while maintaining even lighting. The fins on the shading devices harvest solar energy and cleanse the air. The surface area is comprised of a stretchable, durable textile with tiny solar cells woven into the fabric. Said to be easier to renew and replace than traditional solar panels, the fabric also includes a nanoparticle spray intended to neutralize harmful airborne pollutants.



CEI's 40-story, sustainable office concept uses engineered wood products for the structural wall and floor systems, creating an iconic building, with instant branding potential for corporate tenants.

# Honorable Mention

## RSP Architects, Ltd. Ware Malcomb

**Designing the Office Building of the Future, says RSP Architects, will require us to build green, build small, build urban, build linked — to build villages.** Much like the early settlers who created self-sustaining villages, the office place of 2020 will be a thriving ecosystem infused with new technologies, new cultural norms and a variety of spaces that can participate in the larger community, while supporting work and life simultaneously. The office as a sole destination will no longer be the standard. Rather, it will become a resource responsive to a diverse and mobile workforce, driven by technology-rich spaces that create meaningful connection. The work experience will need to support a combination of heads-down, focused work; collaborative environments that are both formal and informal and places for social interaction.

The village concept embraces sustainability as a competitive advantage, incorporating features such as passive solar heat, natural light, green roofs and other building systems. Workers will access the building via multi-modal transport, including the biking greenway (which runs through the building), light rail and freeway hubs. Entering, you will encounter a vibrant community link designed to facilitate connections. The building stands as a dynamic resource containing work parks, community support spaces, and a marketplace offering an ever-changing cafe experience. There will also be outdoor spaces, third place/work cafes, fitness centers and amenities that will draw a diverse group of users. Meeting the needs of a diverse workforce in 2020 will be critical, given the predicted absence of a clear ethnic majority, five generations working together and 33 percent of new jobs generated by women-owned businesses.

To illustrate their Office Building of the Future, Ware Malcomb chose a five-acre parcel in the final phase of a multi-phase, one million-square-foot office development, well situated in a suburban location, with diverse recreational, housing and retail options. **The intention of the concept building is to satisfy the requirements of tomorrow's corporate user, as well as open its doors to the neighboring community. Ware Malcomb takes an urban approach to the typical suburban project, anchoring the corner with plazas, pedestrian spaces, restaurants, retail and sports amenities.** The Fortune 500 target user will occupy most of the development. The mid-rise office component is designed for floorplates of 25,000 to 30,000 square feet, allowing ample flexibility for changing workplace strategies.

**Incorporating the latest space-use trend, Ware Malcomb divided the floorplate into three work zones.** The focus zone is comprised of mainly workstations and is situated along the glass line, for maximum daylight and views. The team and social zones are tucked against the core. An exterior concourse on the first floor extends these zones to the exterior and provides opportunity for the worker to step out of the corporate confines, yet still be on site. The three-story, flex office component can be leased on a

short-term basis for project-specific teaming or could serve as expansion space for individual business units.

Sustainable elements include micro-turbines that act as a second skin for the building and generate power, as well as clean carbon dioxide from the air. Technologies like Conextech allow for lighter structural systems and quicker construction schedules. Integrated photovoltaic panels will provide solar energy and sophisticated designs that can be easily integrated into the building facade. ■

By **Sheila Vertino**, former editor-in-chief of *Development* magazine and a freelance writer based in the Washington, D.C. area.



Ware Malcomb applies an urban approach to suburban development by anchoring the corner of their site with plazas and pedestrian spaces.

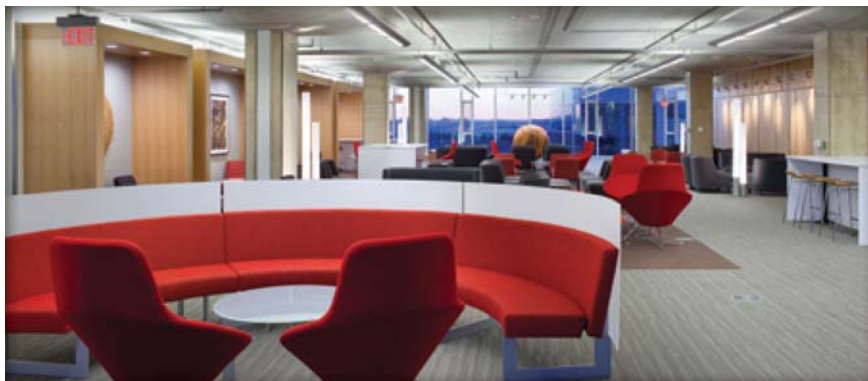


Photo by Tom Arban Photography

RSP's integrated third-place work options support traditional offices, and the open atrium facilitates networking and allows daylight access.