



The Tower Building

Rockville, Maryland

Project Type: **Commercial/Industrial**

Subcategory: **Office Building**

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PROJECT TYPE

The Tower Building is a Class A speculative office building in suburban Rockville, Maryland, ten miles (16 kilometers) northwest of Washington, D.C., along the I-270 high-tech corridor. Completed in 2001 and designed before the release of U.S. Green Building Council Leadership in Energy and Environmental Design (LEED) standards for commercial projects, the ten-story, 276,000-square-foot (25,640-square-meter) Tower Building demonstrates environmental innovations in the speculative office sector.

SPECIAL FEATURES

- Environmentally sustainable Class A office building
- Design and engineering innovations
- High-tech materials and systems

PROJECT ADDRESS

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OWNER/DEVELOPER

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GENERAL DESCRIPTION

The Tower Building is a Class A speculative office building in suburban Rockville, Maryland, ten miles (16 kilometers) northwest of Washington, D.C., along the I-270 high-tech corridor. Completed in 2001 and designed before the release of U.S. Green Building Council Leadership in Energy and Environmental Design (LEED) standards for commercial projects, the ten-story, 276,000-square-foot (25,640-square-meter) Tower Building demonstrates environmental innovations in the speculative office sector. It is a stepping-stone project on the pathway to environmentally sustainable development, and a “learning case” for the application of such principles in the variable forces of the marketplace. Most notable among the developer’s achievements are the use of green power to meet 25 to 50 percent of the building’s energy needs, and utilization of advanced air treatment and distribution systems for occupant health.

With the development of the Tower Building, the Tower Companies sought to create a premier corporate office environment for the booming high-tech market. The Tower Building was planned as a cutting-edge office facility within a mixed-use, high-tech campus called Tower Oaks. But Tower Companies partner Jeffrey Abramson wanted the building to be more than that. With a strong personal interest in protecting the environment, Abramson saw an opportunity to develop a “learning building” that would embody environmentally responsible development principles and enhance worker productivity and well-being. He achieved many of his goals, and lessons learned from this project have informed the organization’s subsequent projects.

The Tower Companies is a three-generation, family-owned development and management company with more than 3 million square feet (almost 280,000 square meters) of commercial and residential properties in the Washington, D.C., metropolitan area. The organization took a definitive step toward environmentally advanced building and construction with this project. In 2003, the Green Power Partnership—comprising the U.S. Environmental Protection Agency, the U.S. Department of Energy, and the Center for Resource Solutions—honored the Tower Building and its developer with a Green Power Leadership Award. In 2002, the project received a Green Office Building of the Year award from the Apartment and Office Building Association, and an American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Outstanding Achievement Award for application of innovative technology. In 2003, the Tower Oaks plan was awarded the Maryland Vision Award for Best Comprehensive Plan by Governor Robert Ehrlich. The Tower Building is designed to be Energy Star compliant.

SITE DESCRIPTION AND HISTORY

The Tower Companies has owned the 200-acre (81-hectare) Tower Oaks site since 1963. Strategically located in Montgomery County on the I-270 corridor northwest of Washington, D.C., the former farmland site is characterized by varied wooded terrain with many oak trees, including a tract of old-growth oaks at the center of the property. Cabin John Creek runs southeast across the land.

Tower Companies founder Albert Abramson purchased the Tower Oaks site at a time when residential development in the area was expanding at a rapid pace. The development patterns in Montgomery County during that period were emblematic of the suburban development boom taking place around Washington, D.C., and other U.S. metropolitan areas. Abramson foresaw a need for top-of-the-line office space and an opportunity to attract new corporations to affluent Montgomery County.

In 1985, the Tower Companies applied for and received approval for a mixed-use comprehensive development plan for a campus that would comprise office buildings, homes, hotels, restaurants, and recreational facilities in an environmentally sensitive park setting. The plan called for a total of 2.5 million square feet (232,250 square meters) of development, with two-thirds of the campus set aside as preserved woodland and open space. During the late 1980s and early 1990s, the developer focused on infrastructure development. In 1997, the Tower Companies completed a 136-unit townhouse development called Villages at Tower Oaks.

In fall 1998, the Tower Companies began plans for the Tower Building, which was to be the flagship commercial building at Tower Oaks. Montgomery County’s high-tech sector and the metropolitan area’s energy and

government contracting sectors were booming. Vacancy rates in suburban Maryland were at a low 8.5 percent. This market profile, however, would change dramatically within just a few years, following the collapse of the technology sector, changing the tenant base for the project.

Completed in 2001, the Tower Building occupies a 12-acre (4.9-hectare) parcel in the northwest quadrant of the Tower Oaks site, defined generally by I-270 running north/south along its western boundary and Cabin John Parkway to the east. Villages at Tower Oaks is visible through a canopy of trees to the northeast, and Wootton Parkway, which runs east/west through the middle of the Tower Oaks campus, defines the site to the south. The Tower Building's elliptical shape, reminiscent of an intergalactic ship or a space-age football, makes it an unmistakable landmark along I-270.

DEVELOPMENT PROCESS

The Tower Companies initiated planning for the Tower Building in September 1998, and construction began the following November. With the land secured, 300,000 square feet (27,870 square meters) permitted, and a comprehensive plan already in place, the Tower Building team was well along in the public approvals process. Tower Companies partner Jeffrey Abramson chose a seasoned development professional, Bernie Sanker, as the project executive, and a younger green building expert, Charles Segerman, as the project manager. Architects Kishimoto Gordon Dalaya, PC; engineers TOLK, Inc.; and general contractor Sigal Construction, all of whom had previous relationships with the Tower Companies, rounded out the team. Sigal Construction had solid experience with environmentally sound construction, and this proved most valuable to the team.

The development team's mandate from Abramson was to build not only a distinctive, high-tech office structure, but also one that would raise the standard for commercial design and construction, especially for environmental performance and occupant comfort. "I'd been working in real estate and construction for over 35 years," says Sanker, "and I don't ever recall receiving a mandate from the owner to achieve the environmental and sustainability goals I was charged with."

Team members recall feeling both invigorated and challenged by this mandate and looked for practical, innovative ways to meet the three goals of environmental sustainability, energy efficiency, and occupant health. They found that some aspects of the green development process were aligned with traditional good practice, while others required original research and untried approaches. "I'd always brought my contractor on board early to control costs and assess constructability, but up to that time I'd had limited experience with environmentally advanced systems, and all those eco-friendly products," says Sanker. "We called a lot of people," recalls another team member.

In the city of Rockville, project review involves schematic plan approval and detailed site plan approval with public hearings before final building permits are issued. Approvals are determined not only by the planning board but also by the mayor and city council. Even the area's most seasoned development professionals consider it a daunting process. The team undertook extensive outreach to neighboring community associations. Sanker credits this and the quality of the building's design with the team's successful navigation of the approvals process. Neighboring community associations all provided letters of support. Reviewers responded positively to the overall site context and the project's pioneering environmental program. In total, the approvals and permitting process took nine months.

PLANNING AND DESIGN

The Tower Building covers three-fifths of an acre (one-quarter of a hectare) of the 12-acre (3.9-hectare) lot, with infrastructure taking up another four acres (1.6 hectares). Half of the lot is preserved as woods and open space. The Tower Companies took several measures to minimize the building's impact. The developer placed the structure at the southwest corner of the site, leaving a buffer of trees and varied terrain, including a streambed, between the ten-story Tower Building and its residential neighbors. Project engineers dealt with the steep, varied topography by building extensive retaining walls and by using it to advantage to minimize the presence of parking. The building's 930 parking spaces are stacked in a 235,000-square-foot (21,832-square-meter) garage structure at the northeast edge of the building. Two hundred sixty-six spaces are immediately visible at entry level; 664 are

hidden on three levels below grade.

When combined, these strategies had the added advantage of increasing the visibility of the Tower Building for the 250,000 commuters traveling along I-270 who pass the site daily. Because the structure is within 200 feet (61 meters) of the interstate, team engineers soundproofed the building skin to buffer its occupants from traffic noise. Air quality measures taken were also, in part, a response to these site conditions.

Commuters and visitors approach the building by car via the winding Tower Oaks Boulevard off Wootton Parkway. Exits to the south and north of the Tower Building site on I-270 offer access to the parkway. The building is a five-minute drive from the interstate. Although the Tower Building is not in a walkable commuter environment, the county provides a shuttle bus to two nearby Metro stops.

Entry through a pleasant, central common space was important to Tower Companies partner Abramson, who wanted to create a sense of arrival and inspiration in the building. The Tower Building can be entered from ground-level parking through an airy, two-story lobby on the east side that mirrors the building's elliptical form. People parking on the lower garage levels have the choice of entering the lobby via a dedicated elevator or conveniently located stairs. Six traffic-adaptive elevators whisk building occupants to their offices while helping to conserve energy.

The Tower Building contains 276,000 square feet (25,640 square meters) of core and shell office space. Its futuristic design incorporates a sweeping "sail wall" that perforates a ten-story solid elliptical mass, suggesting both solidity and dynamic motion. The elliptical office core offers occupants 180-degree views and lets in an abundance of natural light. A typical floor plate in the Tower Building measures 25,000 square feet (2,323 square meters), with high ceilings, minimal columns, and generous windows ranging in height from six to nine feet (1.8 to 2.7 meters). An occupant at the center of the office environment is within 40 feet (12 meters) of a source of natural light, and most are much closer. The floor plan allows for maximal flexibility and openness, features that are highly valued by corporations with continually changing space requirements.

Tenants have access to a café, a fitness and exercise room, a meditation/stretching space, and an automatic teller machine (ATM). Original art hangs in the lobby. Dogwood Park, with its open fields and hiking and biking trails, is only a five-minute walk from the structure's main entrance. In addition, the company is in the process of developing its own hiking and biking trails around the Tower Oaks site.

Environmental design innovations in the building include energy conservation measures; high-efficiency equipment; the use of healthy, low-impact materials; and attention to indoor air quality. At each planning and design stage, the development team reviewed its decisions in light of the overall goals of environmental sustainability, energy efficiency, and occupant health. Specific design and engineering choices for the Tower Building included the following:

- Building orientation and form to maximize natural light;
- Exterior curtain wall with high-efficiency, low-e, double-glazed windows;
- Quiet, highly efficient central HVAC system that produces and circulates chilled water;
- Variable-speed fans, pumps, and motors to effectively respond to changing building loads;
- Advanced, three-step outside air filtration;
- Ventilation system with air exchange rate exceeding ASHRAE 62 standards by more than 25 percent;
- Readily accessible, cleanable air-handling units;
- High-efficiency fluorescent lighting;
- Light occupancy sensors in the lobby hallway and fitness room; and
- Low-impact building components and materials, including recyclable green-label carpets and low-VOC (volatile organic compound) built-ins, finishes, paints, and adhesives.

The team conducted wind and energy modeling exercises to determine material requirements for the curtain wall and lighting requirements in occupied spaces. They thus were able to reduce the amount of steel used in the building and create well-lit environments.

The decision to install a centralized mechanical HVAC chiller system took a lot of effort. "Conventional wisdom said that it's uneconomical for buildings under 300,000 square feet [27,870 square meters], and it did cost us about \$70,000 more upfront than a conventional multipackage system, but it was an important environmental strategy," says Sanker. The centralized system is about 30 percent more efficient than comparable standard package systems, and the team minimized the cost premium through savings on smaller motors, piping, ductwork, and electrical wiring.

The building's sophisticated ventilation and air filtration system delivers a 100 percent exchange of outdoor air to the building every hour. Outdoor air is filtered at the central plant in a three-stage process comprising media filtration, charcoal filtration, and a third stage utilizing potassium permanganate filters, a technology developed to remove airborne chemical pollutants on submarines. The "scrubbed" air then is filtered once more before it is released into occupant spaces.

The team conducted ambitious research on various materials and components. "Sometimes we had to convince our contractors that we were choosing the right ones," says project manager Charles Segerman. "Take Marmoleum. It's a great nonvinyl product that is durable and attractive. But we had to demonstrate that it was industrial grade before they would put it in. We did the research and were able to show that it would work." Similarly, the team specified low-VOC paints, carpets, and other components. The Tower Companies does not own the carpets used in the building; rather, it leases them from the Atlanta-based Interface Corporation, the world's largest commercial carpet manufacturer, which will take them back and recycle them in five to seven years.

Abramson and his team concur that a lack of immediately accessible green-building standards and information necessitated much of their upfront work. They held extra meetings to review design decisions and ensure their proper implementation. "The process was much easier on our next project, Blair Towns, for which LEED commercial standards were available," he said.

FINANCING

The Tower Companies put up 30 percent equity for the project as well as the land. The developer self-financed the predevelopment and design activities as well as the first year of construction. Wachovia Bank financed construction after the first year through a floating three-year construction loan and also provided financing for tenant buildout. With 75 percent leasing achieved in late 2002, Abramson negotiated a permanent loan package, with Massachusetts Mutual as the lead lender.

Abramson and Sanker estimate that the green building measures undertaken at the Tower Building cost an additional \$700,000, or 1.2 percent of the total development budget. These expenses included \$75,000 for the advanced ventilation and air filtration system, investments in high-quality recyclable carpets and variable frequency devices, a \$0.50-per-square-foot (\$5.40-per-square-meter) face area premium on glass, and soft costs such as energy and wind modeling and organizational education.

The Tower Companies estimates a payback of about \$50,000 annually in energy cost savings at the Tower Building. "But we didn't do this for the money," notes Abramson. "We did it because we wanted to demonstrate environmentally responsible building and planning and wanted to show it could be done." Abramson points to studies done by the Snowmass, Colorado-based Rocky Mountain Institute and others that show that occupant well-being and worker productivity are the real paybacks to owners and tenants of green buildings. "If you want to monetize the benefits, just consider health care costs," he says. The Tower Companies received no tax credits or rebates for incorporating environmental measures in the project. The team may have considered adopting wind and solar energy strategies if incentive programs had offset the high upfront costs for these energy technologies.

CONSTRUCTION

The Tower Companies started construction of the Tower Building in November 1999 and completed the project in August 2001. Before initiating site work, the company hired a tree preservation consultant, who explained how to save existing old-growth trees by transplanting them into a nursery during the construction phase and then

replanting them later. The company also followed strict guidelines to limit the use of lime on site to prevent contamination of runoff water and damage to trees.

Sigal Construction was an active participant on the team before and after site work started. Particularly valuable to the Tower Companies and other team members were model green construction specifications made available by the contractor from previous projects and the firm's own research. Sigal made major contributions to green building choices as well as through continuing feedback on constructability and pricing.

Construction innovations at the Tower Building include the unitized exterior curtain wall, which was snapped together on site, and windows sealed with sound-minimizing gaskets instead of caulking for energy conservation and soundproofing. The team explored options for construction waste management, but found the manpower requirements and lack of delivery systems prohibitive.

MARKETING

The Tower Companies began marketing the Tower Building in October 1999. The focus of the marketing campaign was the building's technological and environmental innovations, as well as its flexible, occupant-friendly space. Leasing efforts before the building's completion did not prove effective, but in 2001, the company attracted the interest of Bank of America and, in early 2002, the U.S. Department of Health and Human Services (HHS). Suburban Maryland's office vacancy rate was still a respectable 11 percent, but the sector that the Tower Companies had targeted for the Tower Building—the high-tech, dot.com industry—had taken a big hit, and neither lead tenant came from this sector.

By the end of 2002, the Tower Companies had leased 75 percent of its office space to HHS, Bank of America, and the consulting firm Booz Allen Hamilton. In 2003, Booz Allen Hamilton and HHS expanded their space and the Tower Companies secured leases with Telenor, a global maritime communications company based in Oslo, Norway, bringing the total leased space at the end of that year to 98 percent. Buildout continued into 2004.

Rents at the Tower Building range between \$31.50 and \$34.50 per square foot (\$339.25 and \$371.55 per square meter). All of the building's current tenants are highest credit-rated. Marnie Abramson, the Tower Companies' director of investments, thinks the move to the Tower Building by such high-end tenants represents the "flight to quality" that occurs during declining market periods, when companies with staying power seek out high-quality products and building owners who can weather the financial storm. Tenants have shown some interest in the building's environmental features, but the primary draws of the Tower Building are its high visibility and overall quality.

Lease agreements entitle tenants to buildout by the owner at a cost of \$30 to \$35 per square foot (\$323 to \$377 per square meter) to the Tower Companies, with flexible buildout options available to tenants. Leasing agreements include specifications for energy conservation and the use of environmentally friendly materials. Tenants are strongly urged to use clear-story partitions to allow for the distribution of natural light. Three out of four tenants have incorporated these recommendations. Jeffrey Abramson attempted to initiate electrical submetering of individual tenant spaces to encourage continuing energy conservation, but all tenants chose a gross-leasing structure instead.

Tenants' relative lack of interest in environmental measures has been one of Abramson's frustrations. He observes that developer education for green commercial building needs to be matched with tenant education, especially that of decision makers. "The same individuals who make empowered consumer choices in their personal lives, such as buying healthy food and energy-efficient appliances, are not empowered to ask for healthy work environments. We spent a lot of time on education."

MANAGEMENT

The Tower Companies retains ownership of the Tower Building and manages the property. The firm uses a remote, on-site monitoring and management system, with two building engineers on site from 6:00 a.m. to 6:00 p.m. The Tower Companies takes pride in its customer-focused approach, with quick response to tenant needs.

The building costs \$9.83 per square foot (\$105.87 per square meter) annually to operate. Utility costs run about \$500,000 at 98 percent occupancy. This translates to \$1.75 per square foot (\$18.85 per square meter) in annual energy costs, as compared with \$2 or more per square foot (\$21.54 or more per square meter) for comparable buildings, or about \$50,000 annual energy savings. The Tower Companies pays for all utilities during the first year of tenant occupancy. After that, tenants are responsible for their prorated share of utility increases.

In 2003, the Tower Companies entered into an agreement with Pepco Energy Service, the regional power utility, to buy \$1.7 million worth of renewable or "green" energy for all of its Washington-area buildings. This energy purchase will meet 25 to 50 percent of the Tower Building's energy needs.

The building's environmentally friendly operations include the use of nontoxic cleaning products, recycling facilities, and extensive personnel training on maintenance of the building's ventilation and air filtration system. Air-handling units are easily accessible for cleaning. Filters are tested before they are changed to prevent unnecessary replacement. Copiers and printers are housed in special rooms with dedicated exhaust systems.

Eric Harris, the building engineer, proudly notes that he gets few complaints. "The air in the building is especially good," he says. "People notice that the air is clean, and they have less dust." Daylighting in the building is so effective that the Tower Companies has turned off one out of every three bulbs in each two-by-four-foot (0.6-by-1.2-meter) fluorescent light fixture. Many occupants turn off overhead lights in their offices. Tenants do not have direct temperature control, but engineers are able to respond readily to temperature change requests via the computerized management system.

EXPERIENCE GAINED

- The owner's leadership and commitment to an environmentally sensitive agenda were key to the building's success. Development team members with varied levels of experience with environmentally sensitive development developed a sense of shared purpose and became personally engaged in the process.
- Experience with the Tower Building has enabled the developer to move on to more ambitious and rigorous sustainable development projects.
- The participation of a general contractor with environmental expertise proved very helpful.
- A lack of measurable environmental standards such as the U.S. Green Building Council's LEED standards made the planning and design process more difficult. Higher levels of environmental performance could have been achieved had these been available to the team.
- A lack of public incentives made investment in innovations such as solar and wind technologies impractical.
- The project's innovative program drew positive attention from municipal officials and the media, benefiting the developer as well as the project.
- The developer's experience points to a need for broad education among tenants and brokers on the benefits of green office environments.
- The gross leasing structure does not support energy conservation.
- Daylighting strategies have produced excellent results, allowing for even greater energy conservation than expected. Motion light sensors in the lobby hallway and the fitness room could have been installed in all common areas.

- Local systems for construction waste recycling are necessary for its implementation on sites.

PROJECT DATA

LAND USE INFORMATION

Site area (acres/hectares): 11.94/4.83
Gross building area (square feet/square meters): 289,166/26,864
Net rentable area (square feet/square meters): 274,468/25,498
Number of parking spaces:
Surface: 266
Structured: 664

LAND USE PLAN

Use	Square Feet/Square Meters
Office tower	25,575/2,376
Garage structure	58,641/5,448
Paved areas (including surface parking)	175,320/16,287
Landscaping/open space	260,618/24,211
Site total	520,154/48,322

OFFICE INFORMATION

Percentage occupied: 98
Number of tenants: 4
Average tenant size: 67,245 square feet/6,245 square meters
Largest tenant size: 119,513 square feet/11,103 square meters
Annual rents (per square foot/square meter): \$31.50-\$34.50/\$339.25-\$371.55
Average length of lease: 10 years

DEVELOPMENT COST INFORMATION

Site Acquisition Cost: \$10 million (land value)

Site Improvement Costs (On and Off Site): \$3,573,000

Excavation/grading: \$1,134,000
Sewer/water/drainage: \$493,000
Paving: \$290,000
Curbs/sidewalks: \$298,000
Landscaping/irrigation: \$523,000
Other miscellaneous expenses: \$835,000

Construction Costs: \$29,111,000

Superstructure: \$16,910,000
HVAC: \$2,831,000
Electrical: \$1,813,000
Plumbing/sprinklers: \$486,000
Elevators: \$1,153,000
Fees/general conditions: \$2,700,000
Finishes: \$1,411,000
Graphics/specialties: \$159,000
Other: \$1,648,000

Tenant Improvements: \$10,501,000

Soft Costs: \$8,815,000

Architecture/engineering: \$1,322,000
Developer's fee: \$1,418,000
Marketing: \$358,000
Legal/accounting: \$216,000
Taxes/insurance: \$518,000
Construction interest and fees: \$1,944,000
Other: \$3,039,000

Additional Costs Associated with Green Building Features: \$700,000 (Included in totals above. Includes premiums for high-performance glass, advanced air filtration system, variable frequency devices, high-quality materials and finishes, consulting costs, and staff time investment.)

DIRECTIONS

From Ronald Reagan Washington National Airport: Take George Washington Parkway north for 11.4 miles. Merge onto I-495 north toward Maryland for 4.3 miles. Merge onto I-270 north (exit 38) toward Rockville/Frederick. Take I-270 local toward Montrose Road. Take Montrose Road west (exit 4B) and go 0.4 mile. Turn right onto Seven Locks Road and go 0.6 mile. Take a right onto Wootton Parkway; the road will wind around to the building.

Driving time: Approximately 30 minutes in nonpeak traffic.

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