

## **Category: Places of Work**

935 First Avenue is a four-story, 104,000 square foot Class A commercial office building.

### **Building location description, with respect to local and regional resources**

This Green office building has frontage on the Pennsylvania Turnpike at Exit 24 (Valley Forge), and is convenient to all major access-ways including Routes 422, 202, 476 and the Schuylkill Expressway. Nearby destinations include the King of Prussia Plaza and Court Mall, Valley Forge National Park, Valley Forge Convention Center, Scanticon Conference Center, Sheraton Park Ridge and Valley Forge Radisson hotels. Public transportation accessibility includes Septa (Southeastern Pennsylvania Transportation System) within walking distance. The project has been registered for LEED™ certification.

Regionally, King of Prussia is less than 30 minutes from Center City Philadelphia, Philadelphia International Airport, Amtrak's 30<sup>th</sup> Street Station and bridges to New Jersey. Wilmington, Delaware is less than 45 minutes from this location as well.

### **Key Sustainable Design Features**

- Building constructed with environmentally safe and recycled, recyclable and / or renewable materials. Unused demolition debris was sent to various recycling centers.
- Concrete from existing site and structure was crushed and re-used for parking lots and building pad.
- Building structure made from 90% recycled steel.
- Glass is slightly tinted to allow only natural light to enter, thus filtering out a high degree of infrared light and limiting the amount of air conditioning required.
- Highly efficient, multi-compressor, multi-speed air conditioning units monitor carbon dioxide levels, and filter approximately 65% of dirt particulates (almost twice that of average unit performance). The system provides the ability to direct make up air to areas of the building that require it most, and a charcoal air filter removes most air pollens. A night purge will be programmed to flush the building with fresh air and remove any lingering harmful gases.
- All building finishes were selected based on their qualities for being recycled, recyclable or renewable with low or no VOC's, including wall coverings, wood, fabrics, paint, carpeting and adhesives.
- Plumbing fixtures are low-water consuming and sinks are motion-sensored for water and energy conservation.
- All lighting is highly-efficient and building insulation is above standard.
- All landscaping materials are native species or hybrids of native species for improved drought tolerance, requiring no irrigation system, thus conserving water.

## **Relationships between the formal, programmatic, and high-performance design strategies and the site**

The site selection of 935 First Avenue was based several facts that made it ideal for re-development as a new Class A office building, and incorporating sustainable design with quality architecture. The site is in the core of a mature suburban region of Philadelphia, which is a key location for office, retail, tourism and hotels, as well as all major roadways. The existing 118,000 square foot, 40 year old manufacturing building was aging and underutilized, and prime for increased density redevelopment to a 208,000 square foot office project.

The design layout responds formally to the parallel relationship of First Avenue at its front, and the Pennsylvania Turnpike on its back, and also to the project as two buildings align perpendicularly with their corners almost touching to create a shared public entrance courtyard and adjacent shielded service loop. Parking is distributed evenly around the site providing access to each of the building's three entrances: 1) the front formal courtyard entry with steps that discourage use by delivery trucks; 2) the main entry on the back; and 3) the end service entry. Each entry is given democratic importance and, while only the front parking is visible from the street, the remainder is screened by drought tolerant, non-sprinklered native species landscaped berms. The retainage basins are necessary because the high limestone strata does not allow water to recharge without creating sinkholes, and is discretely but expensively handled by underground basins. Site lighting is carefully designed to prevent zero direct lightbeam and to minimize any amount of reflected light leaving the site perimeter, thus avoiding night sky glare. Fifty percent of the building's roof surfaces are white to avoid the heat sink effect upon the atmosphere. True to the nature of speculative office developments, only the first of two 104,000 square foot buildings is built, pending the determination of market acceptance. However, the first phase building alone is strikingly competent residing solo on the site.

## **Building program and program specific features**

In conformance with LEED™ certification standards, 935 First Avenue incorporates sustainable green building design features in the five categories of Site (as noted above), Water Efficiency, Energy, Materials, and Indoor Environmental Quality. In addition, two LEED™ certified designers, the architect and consulting engineer, lead the process. Interior water usage is 30% more efficient than typical buildings, due to the use of low-flow plumbing fixtures and infrared sensor vales, and the drought-tolerant native species landscaping, which do not require use of potable water or sprinkler systems.

Commissioning was performed to confirm that all HVAC systems are functioning and interacting with the sophisticated computer control systems, and that the building is 30% more energy efficient than an average building of the same size. In addition to higher insulation values and a thermal cushioning attic, the glass on the hot sides of the building is solar selective, but appears identical to the more typical thermal glass on the other sides. The central rotunda, with its pyramidal skylight, is not only spatially inspiring, but naturally contributes to its own illumination. The specially designed Carrier roof top equipment incorporates multi-staged compressors, variable frequency fans, demand ventilation as signaled by CO2 sensors, and smart usage of exterior air when deemed appropriate by comparative temperature and humidity. Not only was 75% of the construction waste recycled, including the demolition and salvaging of the existing building, but recycled materials, such as 90% recycled steel, were utilized.

Regionally specified materials were also used even though less expensive materials imported from Brazil were available and affordable.

Indoor air quality is ever critical and many features address this concern, including the use of low to no VOC paints, adhesives, and carpet. In addition, careful construction management, post construction flush out, 65% particulate filters and carbon filters, and an HVAC monitoring system sensing CO2, temperature and humidity were all steps taken to respond to this important aspect.

## **Building gross square footage**

104,000 gross square feet

## **Performance Data**

935 First Avenue just recently completed construction and inspection process. Data cannot be accurately tracked until the building is occupied.

## **Design intentions and methodological approach**

From the inception of this project, the building owner, Brandywine Realty Trust, maintained a goal with the design and construction team, to create a superb example of both ethics and architecture. This required an investment of personal time far beyond that required of a typical office development project, in discussing the design and green building options, comparative costs, and in establishing achievable priorities. It was acknowledged initially that this type of careful design and incorporation of green technology features would cost a bit more in design fees and construction costs. The architectural design is not only impressive, inspiring and timeless, but its emphasis on sustainability, indoor air quality, resource responsibility and energy efficiency has been achieved, doubling its success and raising the standard set for quality speculative office development projects.