

Homestead Apartment Renovation, Homestead, PA

Homestead Apartments is a public housing complex of four 12-story buildings that was originally constructed in the 1950s. This apartment complex is located just outside of Pittsburgh in Homestead Borough, an historic urban neighborhood that suffered economically from the dismantling of the steel industry in Western Pennsylvania decades ago. The existing buildings and site were in great need of updating and revitalization both functionally and physically.

Through the partnership formed between the Allegheny County Housing Authority and Trek Development Group, this senior affordable housing complex received a much needed makeover. Hope VI and LIHTC funded the project. The team recognized the need to stabilize housing in the community as part of the commercial revitalization efforts of Homestead's waterfront district, built on a reclaimed mill site. The owners sought to address the quality of living for residents of this development and improve the overall look and environment of the buildings and site as they related to the community as a whole. The project team goals were to decrease density of apartments, increase the quality of life, provide spacious living areas and modern amenities, update building systems, meet present codes, update to present Handicap and hearing and visually impaired needs, increase storage, create exterior resident usable space, promote resident activity (in the buildings, outside and in the community) and provide improved interconnection between the community and the residents.

Because the Project Team felt a responsibility toward environmental stewardship, they did not want to renovate the 50-year old buildings in the standard construction fashion, nor demolish the structures and begin anew. They wanted a green, sustainable, energy-efficient and cost-efficient design and construction. This sustainable design would also extend the life expectancy and reduce operational costs. Thus the team worked together toward Silver LEED certifications for buildings A & B.

The development of the project was done in phases.

Towers A, B, C: Significantly reduced in density to provide more storage and community areas within the existing towers. Rehabilitation aims to improve density, create interior and exterior common spaces, and to develop a strong services component with in-house, fully staffed facilities. Tower amenities include: lobby, reading room with fireplace, computer teaching room, game room, conference room, leadership meeting room, laundry each floor, maintenance workshop, 240 person community/campus emergency assembly room, kitchen, exercise room, recycling and trash station each floor, security cameras, 49 person theatre and lounge, native landscaping, courtyard with lit fountain, pergola and picnic areas.

Life Center: A 19,214 SF Community Senior Services Center operated by UPMC. This licensed community senior services center offers: physical therapy, medical care, adult day care, meals, rehabilitation and wellness services, social activities, educational services and community bus transportation. The goal of the center is to enable seniors to continue to live and participate safely within their community by providing quality elderly services at Homestead Apartments.

LEED Design Aspects: Status- Registered and Submitted for Silver Certification (Results expected soon)

Site:

Site Selection-No Farmland, above 100-year flood plain, no threatened or endangered species habitat, not near wetlands and not parkland.

Erosion & Sedimentation Control- Erosion & Sedimentation Control measures implemented.

Development Density- Site in Urban Density Area

Alternative Transportation- Mass Transit with in close proximity. Reduced Parking lot size & provided Car pool system & provided Bicycle facilities on site. Community Bike path planned for future. Site serviced by Life Center van/bus service for community transportation.

Site Disturbance- Paving areas were substantially reduced and the site restored to over 50% with Native and Adaptable vegetation that would provide habitat for wildlife. Also added birdhouses & feeders. Green space was established to remain green space for the future.

Storm water Management: Storm water was substantially reduced due to the deletion of large areas of paving and improved grading and added vegetation.

Heat Island Effect- The thermal gradient differences of the developed areas are reduced by use of an Energy Star white reflective roofing system.

Light Pollution- Reduced light pollution by the following methods:

- Deleted existing building up lights and parking lot flood style lights and existing globe style lights that do not meet shield requirements to reduce uplight (night sky) and glare pollution.
- New Architectural or landscaping lighting was not used.
- Removed existing large site lights and replace with matching style smaller, lower wattage, fully cutoff site luminaries to reduce energy, over lighting and glare.
- Recycled the removed lights, which are semi-cut off lights, by using them in the parking lot where bright lighting is necessary.
- All exterior luminaries are shielded and house side shields were used to prevent light pollution on to adjacent properties.
- Light sensors were used to insure lights are off when not necessary.
- Interior lighting extending outside was held to recommended levels.

Water Efficiency

Water Efficient landscaping- The need for landscaping irrigation was avoided by the selection of climate appropriate native & adaptable plantings thus reducing water usage requirements.

Energy and Atmosphere

Commissioning- An independent Engineer reviews design; verifies installation; observes start-up, training and testing; Sampling; witness an elaborate functional testing to insure all building systems are functioning correctly and efficiently and produce a report presenting their findings. The commissioning process is done to optimize energy efficiency, indoor air quality and occupant comfort and set stage for minimal operation and maintenance costs. This agent is hired directly by the owner to insure the end product is meeting the Energy and Atmosphere goals of the owner for the building. See commissioning report and article done by the agent.

Minimum Energy Performance- The Building was design to comply with ASHRAE minimum energy requirements.

CFC Reduction- The building does not use CFC-based refrigerants in HVAC&R systems

Optimize Energy Performance- Reduced energy usage by 30% as discussed in the commissioning report and article.

- Energy star lighting and appliances used
- Energy efficient and comfort controlled HVAC system used. See article for details.
- Energy water heating system.
- Restricted thermostat controls used
- Motion detectors used for interior lighting in public areas.
- Site lighting is controlled by sensors and computer programmed controls system that allows for reduced or no lighting when not required.

Additional Commissioning-Verify and ensure the entire building is designed, constructed, and calibrated to the operate as intended. Review submittals, O&M Manuals, and provide a manual to the owner.

Materials and Resources:

Storage & Collection of recyclables- Provide dedicated areas for recycling and recycling plan

Building Reuse-Reused the existing building's shell

Construction waste-Divert construction and demolition waste from landfill by reuse or recycling.

Recycled Content-Use products with Recycled content to reduce impacts resulting from extraction and processing of new virgin materials.

Regional Materials-Use products manufactured within a 500-mile radius supporting the regional economy and reducing the environmental impacts resulting from transportation.

Indoor Environmental Quality:

IAQ performance-Meet minimum requirements of voluntary consensus standard ASHRAE ventilation for acceptable indoor air quality.

Environmental Tobacco Smoke Control- Prohibit smoking in public areas and provide separation from apartments to public areas.

Construction IAQ management Plan-Prepare and follow a plan to avoid indoor air contamination during construction and pre-occupancy phases of the building. Protect HVAC systems for dust and moisture contaminations and bldg materials from moisture.

Low Emitting materials-Provide Carpet, adhesives, paints and sealants with low VOCs and formaldehyde.

Indoor chemical and pollutant source control-Design to avoid exposure to potentially hazardous chemicals that

adversely impact air quality.

Vents in Janitors area and walk on mats.

Controllability of Systems-Occupant Controlled windows, lighting and temperature controls in occupied areas.

Daylight and views-Provide bldg occupants a connection between indoor and outdoors through the introduction of daylight and views into the regularly occupied areas.

Innovation in Design

Recycling and LEED education –Educate residents in recycling and LEED aspects of building.

Pro-Press solderless pipe joints-The plumber used a tool call pro-press that press copper pipe joints instead of using soldered joints.

LEED Accredited Professionals-5 LEED Accredited Professionals were assembled on the project team.