

## The Revitalization of Millers River Apartments – Case Study

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The Millers River Apartments and Community Building were built in 1974 in Cambridge, Massachusetts. The 19-story, high-rise apartment tower was constructed with a combination of precast and post-tensioned, site-cast concrete. This robust structure almost completely lacked thermal insulation but was well built and in good shape. The original residential unit heating system was designed as electric resistance and converted to hot water baseboard, but no cooling was provided. The major building systems, unit interiors, and common spaces had been maintained over the years but had all reached the end of their useful life. Likewise, the single-story community building was in need of substantial upgrades and renovations. The Cambridge Housing Authority, who owns and manages the building, approached the revitalization of Millers Rivers Apartments with an eye well into the future. The project plan set ambitious goals for building energy performance and set up the site for continued growth and development over the coming years.

### *Project Goals and Strategies*

**Modernize the existing apartment high-rise:** Through extensive investigations and project planning, it was concluded that a complete building renovation was warranted because of the scale of work associated with major building systems replacement, hazardous material abatement, and unit reconfiguration. To improve unit layouts and maximize usable space, balconies were enclosed and studios became one-bedroom apartments. Special attention was focused on designing for aging in place. Units include layouts with increased spatial clearances for mobility, and fixtures that are universally accessible, and accessories that double as grab bars.

**Provide an income stream to support the redevelopment of the high-rise building:** It was decided that the construction would be phased to maintain continued resident occupancy of the building. This would maintain an income stream while reducing the initial financial impact of construction. Each floor was stripped back to bare building structure and rebuilt while the rest of the building remained occupied. Work started at the top of the building and worked down on four floors at a time, gutting the interior and re-cladding the exterior simultaneously, all while residents remained in place below the construction. Once an upper level floor was completed, residents moved in above the construction area, and the process continued down to the next floor.

**Incorporate sustainable design practices to minimize operating costs and improve habitability:** The phased occupancy of project was facilitated by the construction of a new boiler room, electric rooms, and chillers on the roof while the existing systems continued to operate in the basement. During renovation, the new building systems would gradually take over as the existing building systems phased out. The plan to replace the building systems concurrent with residential unit reconfiguration and the reconstruction of the building envelope meant that the high-rise could be redesigned as a high-performance, energy and water efficient building. What's more, new features were added to improve livability and comfort with cooling, dedicated in-unit fresh air ventilation, reduced air leakage, and increased resident thermal control. Additionally, a roof-mounted tri-gen system was installed to produce on-site electricity, and additional heating and cooling.



Millers River Community Center, Cambridge, MA



A master plan image showing high-rise additions and new street frontage.

**Create new affordable housing units:** Through the master planning process, configurations of additions, new buildings, and new public and private open spaces were considered for the 1.6 acre urban parcel. It was determined that the position of the existing single-story community building on Cambridge Street prevented future multi-story, street-front development on busy Cambridge Street. To rebuild the community center toward the center of the site would make space for a substantial addition to the high-rise, increasing the availability of affordable housing units in the city. An additional new apartment building was also planned for the north west corner of the site atop structured parking. The plan was created to be phased to facilitate flexibility in its deployment.

**Optimize the site by incorporating complementary uses to contribute to the ongoing development of the neighborhood:** The move of the community building to the center of the site also made room for future growth directly on Cambridge Street, a busy thoroughfare in the city. Mid-rise development in this highly desirable location could provide future revenue to support the Housing Authority through commercial leasing. More importantly, development of the urban streetscape would prove continued investment in the neighborhood's vitality.

**Provide common space for community interaction:** The reconstruction of the community building gave the CHA the opportunity to custom build it to better meet the residents' needs as a multi-use, highly energy and water efficient design. The new community building incorporates building management offices, a commercial kitchen, community meeting spaces, and a fitness center organized around a corridor that is bathed in sunlight from skylights above. The roof ties into the apartment tower at the third floor level offering an occupiable vegetated roof terrace as "found outdoor space" in the tight urban site.

## Conclusion

The renovation of Millers River Apartments is just the first step in a master planned renovation of an urban site that can considerably contribute to both the quality and quantity of affordable housing in Cambridge. Throughout the master planning, design, and construction process focus has remained on improving the quality of the living experience for the residents. We worked closely with the tenant organization through the Study and Master Planning phases of this project to better understand the concerns, needs, and desires of the tenants through community meetings and a comprehensive tenant survey. This has helped us to form a relationship with the tenants that makes them feel heard during a time of uncertainty and discomfort as their homes undergo many changes. In the end, substantial efforts have been made to transform an aging apartment tower into a high-performing, environmentally sustainable home for residents to age-in-place, and enjoy the city they call home.

