

ENGINEERING ENABLES LIFE CARE CENTER UPGRADES TO SUPPORT A THRIVING SILVER COMMUNITY - 3 PART SERIES

Author | Charles B. Kensky, PE
Executive Vice President | Market Leader - Life Care

According to the 2020 U.S. Census, 1 in 6 people were over the age of 65. By 2030, that will be 1 in 5 as the baby boomer population in elder care swells to form what the industry is calling a “Silver Tsunami” of life care need. Surveys have shown that the housing supply will be at a deficit by 2025. Effectively housing this population, and providing a location that a modern senior will thrive in, depends on massive building and facilities improvements at Continuing Care Retirement Communities (CCRCs).

This population is living longer, healthier and much more active lives than previous generations. Current CDC life expectancy is 76.4 years, which will grow to 85.6 by 2060. They are tech savvy and independent, and are demanding that the industry keep up, and even lead with new technologies and services that will support their lifestyles. These are not your knitting and pinochle playing seniors. Grandma could easily be preparing for a marathon while grandpa is spending most afternoons cleaning up the competition on the pickleball court or on the golf course. The baby boomers are once again changing the world. This time in life care.

In preparation for this massive population spike, developers of new and existing facilities are facing numerous challenges. These communities range from independent living, assisted living, and memory care to skilled nursing. Each has unique requirements for comfort and safety. Many existing facilities need major system and space overhauls to successfully compete with new facilities. While new communities have to offer the latest, newest campus amenities to entice seniors to destigmatize leaving their homes in the first place.



Developers and facilities management need to project out 10-20 years to see the infrastructure needed to support active senior communities. The technologies and physical space will need to be flexible and adaptable to future changes, or emergency situations such as Covid, while at the same time be visually appealing. A location that a modern senior will thrive in. All of these considerations present engineering challenges that require expansive knowledge of applicable codes and systems due to the diverse nature of these facilities. Solutions must meet the challenge of designing large energy efficient systems while at the same time avoiding an institutional feel.

In this series we will be exploring prominent life care trends and the ways where MEP, fire protection, structural and technology engineering are enabling developers to modernize the entire life care industry.



PART ONE

THE PERSONAL LIVING ENVIRONMENT

Previously, senior facilities were sterile, dormitory-like accommodations that had more in common with a hospital room than a home. It wasn't a place that a person wanted to live, and also was not a location that families wanted to visit. That is no longer the case.

Life care facility designers have stepped back to look at the entire environment - from in room/apartment amenities to the full design of a campus landscape. One of the biggest areas for significant upgrades are the addition of "smart home" features including remote lighting and independent heating/cooling, digital home access and security systems, automatic shades/draperies, and induction appliances that never get hot and shut off automatically. These amenities are fairly easy to incorporate once the proper electrical and technology infrastructure has been added. Gone are the days of the "clapper" to turn your lights on/off. More smart systems are being deployed for room operations and HVAC comfort.

The HVAC designs of the past, utilizing through the wall PTAC heat pumps with electric heat are not as efficient as newer HVAC technology and may not meet the new energy codes. These units are noisier also take up more floor space. For use in these facilities, the HVAC systems need to be independently controlled from the rest of the spaces so that the resident is not locked into heating or cooling based on a limiting central plant design. One resident may want their rooms cooler than their neighbors so the mechanical systems need to be flexible.

Power systems are more demanding as they require generator backup power for shelter in place, command center operations as well as life safety and nursing care requirements. The shelter in place designs require food service functions as well as HVAC environmental systems to be operational for the duration of the event.

Newer codes being enforced are adding challenges to designs by increasing outside air ventilation rates and increasing system operational efficiencies while requiring lowering operating power costs. These newer code requirements also necessitate more safety measures in the homes for electrical and fire alarm systems.

Bala has been at the forefront of the COVID mitigation designs. We published several white papers and provided presentations to clients while developing options for HVAC system upgrades for clients. If you have concerns for COVID and other airborne viruses, Bala can help you plan your HVAC approach.



TECHNOLOGY SYSTEMS

The new residents are much more technologically savvy and want the ability to conduct video calls with loved ones, place food orders for delivery or pickup, schedule appointments, sign up for activities and reserve rooms/courts. They want to be able to see what is on the menu in the bistro and café and what entertainment and activities will be provided this week. All of this is completed electronically via in-room kiosks and facility applications on smartphones and tablets.

This technology needs to be designed and integrated into the spaces and will require a full network of servers, routers, switches and cabling throughout the facility, including Wireless Access Points (WAP). WAPs are actually remote sending/receiving data devices that are wired to the IT network, the coverages and spacing needs to be considered and coordinated with the building



SERVICE REQUEST PLACEMENT & TRACKING

Work order automation has been revolutionized across the spectrum and can have a significant impact on staffing productivity and responsiveness in life care facilities. Incorporating in-room kiosks for placing work orders, such as bulb replacement, plumbing issues and basic repairs, allows for automated tracking of order placement, scheduling and completion reporting. This gives transparency for residents and the opportunity for facilities staff to optimize order processing and gain efficiencies across the facility for maintenance operations. This not only benefits the residents but also facilities by more affectively managing the maintenance staff, tracking work and coordinating work orders that are in the same vicinity for optimum efficiency of staff.



FACILITY NAVIGATION

Everyone who moves into a new home has an adjustment period. For seniors, many have not moved in decades and navigating new spaces can be especially disorienting and even scary. Wayfinding technologies and message boards help to alleviate this associated anxiety. Frequent, well-placed directional information helps new residents settle into new routines faster, decreases instances where a person can feel isolated and helps visitor navigation. All positive experiences during a stressful time. Providing interactive digital signage and wayfinding helps residents easily get to where they want but also easy access to events and schedules. Digital signage can easily be updated centrally via the IT network and software platforms.



COMING UP IN PART TWO

The next series edition will focus on the creation of a campus of activities for an active senior population and the infrastructure challenges that can arise in their development.

Want to know more now? Reach out to Chuck Kensky at cbk@bala.com or 610.574.2780

PART TWO PROVIDE FACILITIES WITH TRAILBLAZING AMENITIES

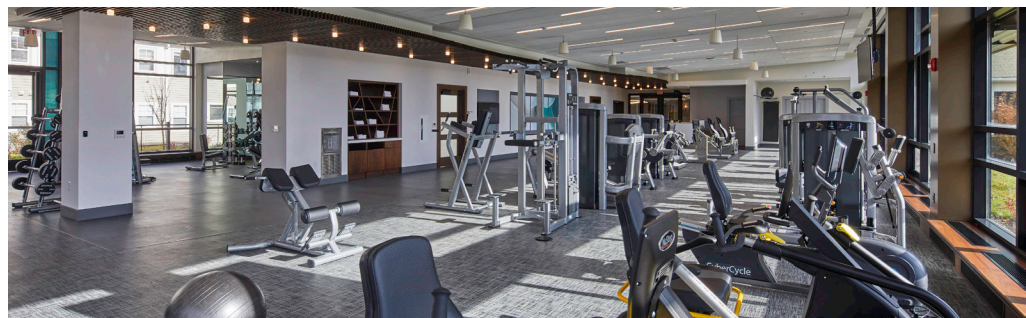
With an active, healthy population also comes the need to provide facilities that support wellness activities. Today's senior population are just as fitness center savvy as they are with technology. They expect all of the equipment and exercise classes they have grown used to.

Additionally, to create an all-in-one experience for residents, life care facilities have added on-site medi-spa, physical therapy, dental and salon components. All of which can be conveniently scheduled via the same in-room kiosks used for work orders! Residents require activities ranging from art classes, swimming, exercise rooms, yoga, gaming, hiking/walking and other outdoor activities. Facilities are expanding their activity offerings, including beauty care, dental, rehabilitation and doctor's suites, not to mention spa treatments. The MEP and technology systems need to be tailored for these specialty rooms and uses in order to provide comfortable and healthy environments.



Physical activity is important, but social interaction is just as important. Having the opportunity to participate with group activities, or just hang out casually, can have a huge impact on the successful transition to senior living. In addition to communal dining halls, many facilities are creating flexible gathering spaces that can be changed by group/day/function. This is raising the bar on space design. A bistro could be converted to an afternoon cooking class and then a bar for evening entertainment with individual wine lockers, billiards and cards games. All are excellent, engaging activities, but also present engineering challenges for accommodating such a wide array of space uses.

These spaces need to be flexible and the MEP and technology systems need to accommodate small and large gatherings. The HVAC systems need to be flexible and scalable in their operation and capacity, as well as their outside ventilation air quantities. This can be achieved via larger VAV type systems or DOAS and VRF systems. The older technology of PTAC through the wall units, will typically not meet the needs of the spaces and newer ventilation and energy codes. Due to COVID, Bala has helped facility manager mitigate virus transmission using new HVAC technologies and converting some rooms/suites to isolation suites with negative pressurization.



COMING UP IN PART THREE

So far in our life care series we have covered the in-home environment and external facilities and in part three of the series we will take a deeper dive into the practical need of protecting the health of a senior population.

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PART THREE ENVIRONMENTAL HEALTH & PATIENT WELFARE

During the COVID era we all learned the critical need for managing indoor air quality, air transfers, and in-house healthcare for senior facilities. Facility designers and engineers are taking those learnings to create equipment maintenance and upgrade protocols that can be escalated in case of emergency situations. Increased air filtration, higher outside air quantities, Bi-Polar Ionization systems, all help to improve the air quality in the spaces, in addition to proper and frequent cleaning of common spaces. These are some of the design considerations required for senior living facilities. Specific requirements for isolation rooms and patient rooms need to be followed for all of the MEP and technology systems and designs. Bala has been a leader in COVID HVAC mitigation designs and we can help your facility improve spaces via using the latest HVAC solutions.



Many senior communities are also introducing sophisticated cognitive care facilities which require patient wander care technologies, and detailed patient interaction tracking while avoiding the feeling of being in a locked down environment. This is a delicate balance to achieve. Open, yet secure, spaces where there is freedom to participate in activities, such as music therapy and gardening, that make residents feel stimulated have been very effective but also require the use of less invasive monitoring technologies. This is all on the cutting edge of life care technologies and requires engineering foresight to accommodate future use cases.

ONE STOP FOR ALL ENGINEERING

Over this series we have explored exciting innovations that are reshaping senior community living to better reflect the dynamic and challenging requirements of baby boomers. Within just five years, the senior popu-

lation is projected to grow more than 30% and in many regions of the U.S., there are vast gaps in housing accommodations that will need to be addressed, when they get there. This is an opportunity for innovation and defined market expansion that is rare. It is important for architects and facilities owners to work with engineering partners who fully grasp the complexities of new life care facility development and the requirements of effectively upgrading/expanding existing properties. Their ability to navigate the breadth of services, preferably within one firm, can bring efficiencies and repeatable strategies that can be incorporated across senior care facilities nationwide. Being able to provide not only MEP/FP designs services but also technology (IT, AV and security), structural engineering, commissioning and sustainability services is an advantage that Bala provides.

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