

Clayton Community Centre

Open design process meets high performance and needs of users

By Melissa Higgs

Located about 10km east of the Surrey City Centre, Clayton Heights is transitioning rapidly from a predominantly agricultural community to an increasingly urban one. Designed to feel like it is part of the surrounding forest, the Clayton Community Centre focuses on meeting the current and evolving needs of residents, with social gathering spaces that help foster wellness, connection and resilience.

The 7,000 m² (76,000sf) Centre combines four aspects of the City of Surrey's community services - recreation, library, arts and parks — in a seamlessly integrated facility. Previously accustomed to operating out of their own separate buildings, the four programs pooled space and resources during the design process, maximizing the potential for positive impact on both the community and their own operations.

The social fabric of the surrounding context has informed a design that addresses the needs of young people, while providing key gathering spaces to support the development of overall community connections. The unique mix of spaces combines arts and culture programming including music studios, recording studios and a community rehearsal hall, with recreational activities including a gymnasium, fitness centre, and a branch library.

1. The Clayton Community Centre is designed to fit into the surrounding forest as the area transitions to a more urban community.
2. The façade is a rainscreen assembly in which the flutes in the cladding allow the air to move from top to bottom without interruption.



PROJECT CREDITS

ARCHITECT hcma

OWNER/DEVELOPER City of Surrey

STRUCTURAL ENGINEER RJC Engineers

MECHANICAL ENGINEER Integral Group

ELECTRICAL ENGINEER AES Engineering

LANDSCAPE ARCHITECT Hapa Collaborative

COST CONSULTANT BTY Group

CIVIL ENGINEER Aplin & Martin Consultants

ARTS & CULTURE FACILITATOR Paul Gravett Consulting

SURVEYOR Murray & Associates

TRAFFIC Bunt & Associates

ACOUSTIC CONSULTANT RWDI

TREE SURVEYOR Arbortech Consulting

WAYFINDING + SIGNAGE hcma

PHOTOS Andrew Doran: photo 1; Ema Peter: photos 2 and 6; Doublespace Photography: photos 3, 4 and 5

PROJECT PERFORMANCE

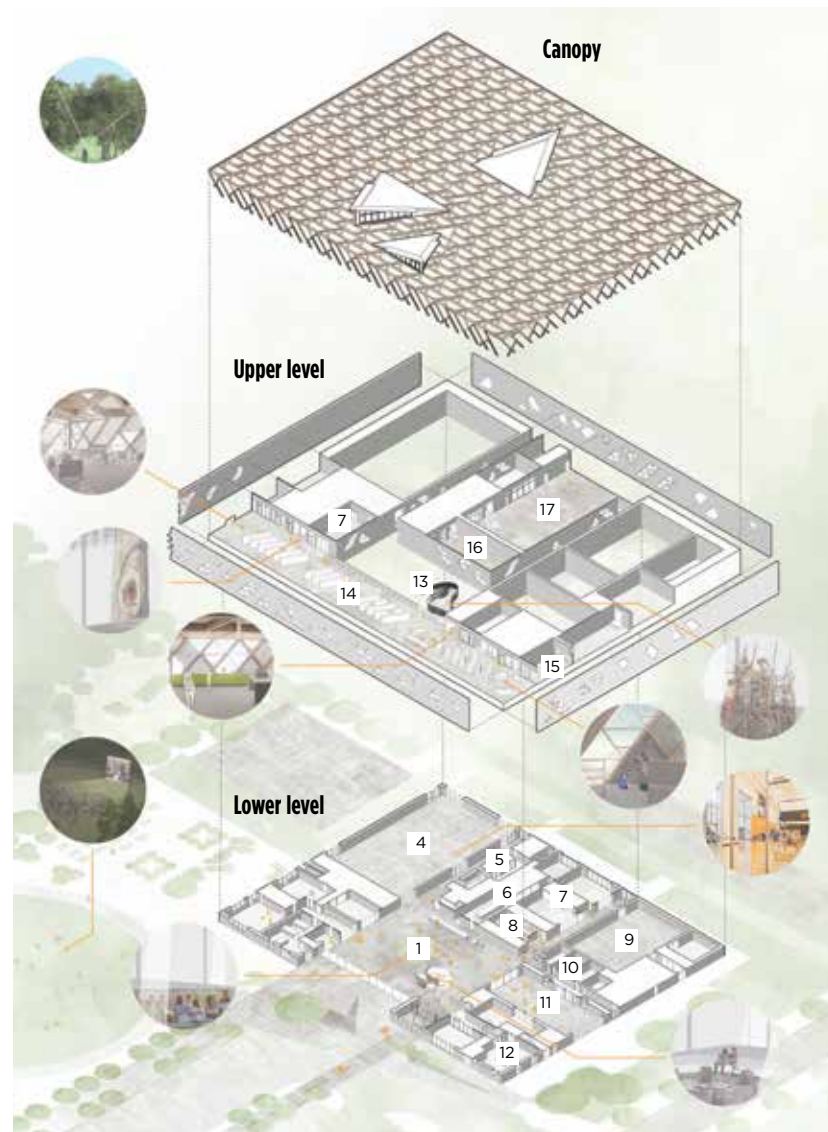
Reduction in energy consumption relative to reference building = 72%

(Source: American Society of Heating, Refrigerating and Air-Conditioning Engineers - ASHRAE)

Reduction in carbon emissions relative to a gas heated reference building built to code = 98%

(Source: <https://buildingbenchmarkbc.ca/>)

3. View along the front façade. A full-scale mockup was built to optimize and confirm the construction sequencing to meet air tightness performance requirements.



Upper floor

- | | |
|----------------------|--------------------------------|
| 1. Library | 6. Computer learning classroom |
| 2. Silent study | 7. Fitness studio |
| 3. Meeting room | 8. Fitness centre |
| 4. Multipurpose room | 9. Spin studio |
| 5. Workroom | |



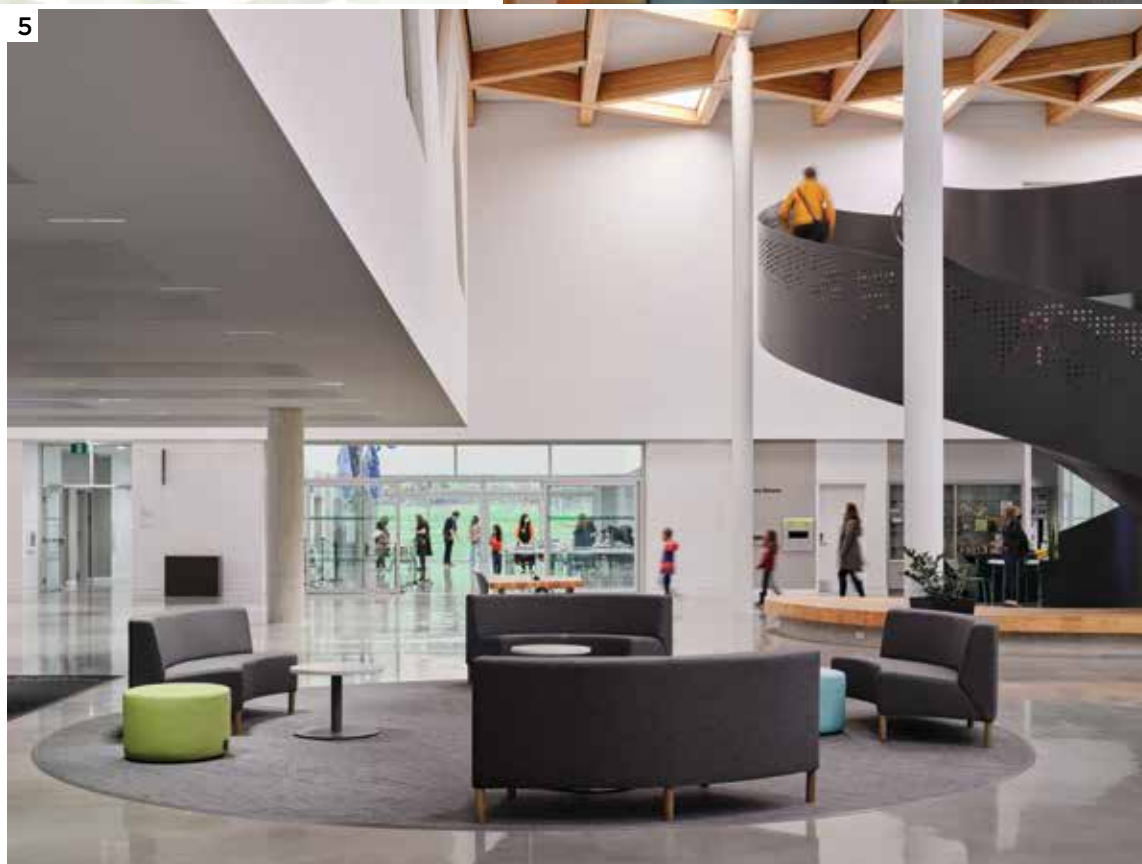
Ground floor 

- | | |
|------------------------------|---------------------------------|
| 1. Lobby/shared social space | 10. Music studios |
| 2. Community kitchen | 11. Visual arts |
| 3. Pre-school spaces | 12. Workshop |
| 4. Gymnasium | 13. Feature stair |
| 5. Universal change room | 14. Library |
| 6. Administration offices | 15. Computer learning classroom |
| 7. Multipurpose rooms | 16. Fitness studio |
| 8. Universal washroom | 17. Fitness centre |
| 9. Performance hall | |

4. The library on the second floor. Glulam, steel and concrete make up the main structural components.
 5. The shared lobby and social space. The architectural team invited people into the early design stage process to shape the development of the project.
 6. The feature stair in the lobby with a view of the glulam roof structure supported on steel columns.

Floor plans: Axonometric 

1. Lobby/shared social space
2. Community kitchen
3. Pre-school spaces
4. Gymnasium
5. Universal change room
6. Administration offices
7. Multipurpose rooms
8. Universal washroom
9. Performance hall
10. Music studios
11. Visual arts
12. Workshop
13. Feature stair
14. Library
15. Computer learning classroom
16. Fitness studio
17. Fitness centre



These services are supported by a range of shared social areas and a unique mix of supplementary spaces, imagined and developed in close collaboration with the community, and designed to allow for community-led programming. Clayton Community Centre initially opened its doors in February, 2021 with reduced programming due to COVID-19 restrictions, before opening fully in the summer of that year.

Community engagement played a crucial role in the design development. Rather than simply informing neighbouring residents of the building's progress, the architectural team invited people into the process to shape its development. In the absence of a recognized independent standard, **hcma** created its own social impact framework based on principles of equity, social inclusion, sustainability and adaptability. Clayton Community Centre is the first building to have been completed using **hcma's** framework from start to finish.

From the start, the project was aiming for ultra-low energy performance and ultimately Passive House certification. As most of the Passive House projects completed in North America have been in the residential sector, there are few completed non-residential projects from which to learn. By designing complex non-residential buildings, design professionals are charting new territory.





Natural ventilation patterns



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7. Interior spaces were arranged according to their usage, requirements for natural light and views, spatial connectivity and operational needs, with consideration given to ideal solar orientation.

Designing to Passive House standards had a major influence on both the design process and the final design of the building. A typical Passive House building gets up to one third of its heating demand through solar gains, and the unique compact form of Clayton Community Centre serves to minimize the surface area of the floor, walls, and roof, relative to the volume needing to be heated and cooled.

In addition, the spaces within Clayton Community Centre were carefully arranged according to their usage, requirements for natural light and views, spatial connectivity and operational needs, but with consideration given to ideal solar orientation. Additional shading was carefully designed where necessary to balance solar orientation and solar gain against other key drivers.

DESIGN PROCESS

From the outset of the project, team collaboration was critical for success. Working closely with the City of Surrey, the design team invested significant time in the discovery phase to understand the building's occupancy patterns. From the number of visitors anticipated during operating hours, to the energy use of the equipment in each room—all had to be considered to calculate the building's proposed energy use. (For a more complete account of the challenges presented in the design of this project, see *Charting New Territory in Passive House* in the spring 2019 issue of SABMag.)

The detailing and construction of the building was also a departure from the norm, and demanded a high-level of on-site communication and accountability to achieve the quality assurance needed to realize the exacting Passive House air tightness requirements. The envelope, along with many other details, required greater precision in construction than for a more conventional building. The team, led by EllisDon, built a full-scale façade mockup to optimize and confirm the construction sequencing required to hit the necessary targets. The quality of work was confirmed with air tightness tests at key stages of construction to confirm the envelope met the rigorous performance requirements. By following Passive House criteria, Clayton Community Centre has reduced energy consumption by 98% compared to the average performance of similar existing buildings in British Columbia and reduced carbon emissions by 98% compared to the same building built to ASHRAE standards.

As a design firm we are committed to looking outside ourselves for answers to the rapidly-changing needs of people and spaces. And while it definitely took professional expertise and technical rigor to realize the City of Surrey's bold vision for this project, we saw the value in opening up the design process to end users to discover the path together. The end result — thanks to the input of these diverse voices, is richer than anything we could have imagined.

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