

TRCA Headquarters

Toronto, ON, Canada



Integral Group is providing mechanical engineering services to the new Toronto and Region Conservation Authority Headquarters facility at 5 Shoreham Drive in Toronto, Ontario. The 4-storey mass timber structure building will strive for Zero Carbon status and be an operationally efficient building that stays within the project budget.

The building must provide a flexible intelligent design that supports a collaborative environment while also being a healthy place that features universal design and is a great place to work.

TRCA is a leader in Toronto and intends to demonstrate that creating an energy efficient and healthy work space is achievable and in so doing will positively influence others to set similar high water mark goals.

Some of the key features of the building will include flexible and adaptable spaces including movable partition walls, PassivHaus principles (high performance envelope with minimal leakage and thermal breaks), solar optimization for daylighting.

The PV panels will generate up to 5% of the total building energy with capacity to add as technology improves and costs reduce for PV panels.

The building mechanical HVAC systems will include a plant consisting of air source 4-pipe heat pump that can also produce domestic hot water via a desuperheater component. The heat pumps will be connected to a geo-exchange system to allow for seasonal storage.

The plant will connect to compartment units on each floor that feed an underfloor air distribution (UFAD) system. Fans on the compartment units will have high efficiency motors with variable speed drives. All pumps will also have variable speed drives.

The fresh air for the building will be provided by energy recovery ventilators (ERV's) that provide central fresh air to the compartment units as required to maintain acceptable CO2 levels for healthy indoor air quality. Exhaust from washrooms, telecom rooms and general exhaust will be routed the ERV's to capture waste heat or cooling to reduce energy costs. Energy from data centre cooling will be captured and reused for heating during winter months.

The plumbing systems will include rainwater harvesting for irrigation and toilets/urinals as well as low flow plumbing fixtures throughout the building.

Domestic hot water will be generated from both the heat pumps and solar thermal with a possible electric backup to maintain zero carbon goals. A building automation system (BAS) will be provided to monitor and optimize mechanical systems in the building.

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Climate Zone: Koppen DFB; ASHRAE 6A

Client: TRCA (Toronto and Region Conservation Authority)

Architect: ZAS Architects and Bucholz McEvoy Architects

Project Size: 85,000 sf

Construction Value: \$60 M

Completion: 2021

Sustainability:

LEED Platinum

WELL Silver

Zero Carbon (CaGBC Pilot Program)

TGS V3 Tier 4 Design

Mass Timber

Services Provided:

Mechanical Engineering

