

**SALUS CLEMENTINE**

# Legalettt contributes to success of Salus Clementine

STAFF WRITER – The Ottawa Construction News Special Feature

Legalettt has applied its unique applications and solution based support to Salus Clementine, the four-storey, 42-unit affordable housing project for men and women living with severe mental illness.

National sales manager Ken Williams says Legalett was specified to the Salus Clementine project early on because of site soil challenges and the company's unique engineered ICF GEO-Passive Slab combined insulation and forming solution. "The water table was within six inches of the base so footings and bearing capacity were identified as challenges."

Williams says the GEO-Passive Slab allows greater flexibility to projects, without necessarily requiring site remediation. "Our slab insulates the underside of the concrete to isolate it from the surrounding earth avoiding moisture issues, and it spreads the bearing load across the surface allowing the slab to also act as a footing."

Calling the Salus project a new frontier, he says the Legalett team was able to adapt its processes, and the design, as the Salus plans evolved. This effort provided both new insights for Legalett, which it will use in future applications, and provided a unique solution to suit Salus' Passive House requirements.

"We do not normally add a membrane between the insulation (an expanded high density polystyrene foam – EPS) and concrete as the EPS itself provides a building code compliant moisture barrier but Passive House (PH) standards have a higher specification so a 15ml poly that was taped and sealed was used to ensure there were no penetrations through the poly, and we sandwiched the membrane between the EPS layers to avoid accidental punctures from the rebar-chairing system laid prior to concrete placement."

The resulting solution met both the foundation and footing support required, and also the PH requirements specific to this project.

Another unique aspect was the elevator. To meet the unit's structural requirements, a floating raft slab on the same insulation type as the main slab was constructed below the main slab to hold the elevator and the entire unit was then connected to the main slab after it was constructed. "We pride ourselves on being able to come up with innovative, structurally engineered solutions that are creative and that solve complex questions. This was a good example."

With its head office in Long Sault, its manufacturing facility in Vankleek Hill and its EPS suppliers across North America, Legalett has been serving the North American market with these kinds of unique insulated slab and foundation solutions for more than 25 years, with more than one million sq. ft. of Legalett systems successfully installed.

Williams says the company has supplied its unique slab to buildings including a Hindu temple in Utah, projects constructed on isolated island locations and others requiring materials delivery by ice roads in northern Ontario. "Some of our up and coming projects include a 25,000 sq. ft. Passive Certified manufacturing facility in the Haliburton region, a subdivision north of Ft. MacMurray, a golf course club house and a variety of First Nations' housing, as well as many frost protected slab foundations for everyday housing."

Williams says Legalett's solutions can fit many building types, particularly where low bearing soil capacity exists, or where a building would not normally require a full basement. He says the product is competitive with traditional insulated slab-on-grade for normal soils, but excels in both cost and time savings where soil issues would normally require remediation.



Click here to view the Salus Clementine Passive House LEED Project Time-Lapse Video

"With our product, buildings can be constructed on aged landfill sites without all the time and effort that would normally be expected. Our product also allows for the preservation of mature tree growth because we are not digging into and disrupting root systems."

Williams says the Salus project provided Legalett with insights into the growing Passive House industry, and highlighted the current lack of existing mainstream technologies, ideas and support within the North American supply chain. The company has identified a need for a higher level of expertise and more products for PH as well as the forthcoming net-zero energy standard and has already begun to use its extensive experience to fill that need.

"We'll now be taking on a more active role, representing products specifically for PH and net-zero construction in North America. Our first product line is Stego membranes and tapes based on a direct need we encountered with the Salus project."

Choosing to specify a Legalett floor slab also offers the option of adding a proprietary, closed loop air heated radiant floor system. Besides being suitable for PH, Williams says the product perfectly matches with the Wynne government's proposed energy bill because the floor is super-insulated and as an option is capable of solely using electricity for its heating unit.

For more information about Legalett, visit <http://www.legalett.ca>.

**Here are some fun facts about the Salus Clementine project:**

- 7,343 cu. ft. (208 cu. m.) of EPS
- 180 m. (235 yards) of concrete
- 9.4 tons (8.5 tonnes) of steel
- 6,208 sq. ft. (577 m<sup>2</sup>) area of the slab
- 16 man-hours to hand level the site
- 240 man-hours to install the GEO slab (not including concrete placement)
- 58 imbeds
- Penetrations included one elevator shaft, two cisterns, 172 base plate anchors, 10 plumbing stacks, 14 drains, three hydro stacks
- R52 (RSI 9.1) below the slab
- R46 (RSI 8.1) value at the slabs edge
- 13 in. (330 mm.) concrete thickness
- Heaviest point load 805 kN (181,000 lb.) earthquake and 510 kN (115,000 lb.) gravity
- 65 kPa (1,350 PSF) soil bearing capacity
- Water table was lowered up to 740 mm. (29 in.)
- After lowering, the water table is now 200 mm. (8 in.) below the underside of the EPS
- Elevator pit base is below the water table and was waterproofed using Soprema



- ✓ Passive House / Passivhaus
- ✓ Net-Zero ~ LEED
- ✓ FPSF
- ✓ Over 30 Years' experience

Designed for comfort, engineered for simplicity. Made in Ontario, shipped everywhere. **GEO-Passive Slab & Stego tapes & membranes** are ideal slab-on-grade solutions for Passive House or any foundation where expansive, clay or variable soil loadings such as aged landfill sites exist. Great for normal soils too!

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