

# Builders stand behind new concrete, galvanized steel

The two conventional technologies have a role to play in net-zero

**BY LISA BOONSTOPPEL**  
*Ontario Farmer*

**F**arm builders are aiming to lower their carbon footprint on farm buildings by taking advantage of new concrete technology and galvanized steel.

“Concrete suppliers will work with raw material suppliers, chemical admixture suppliers and mix design optimization to supply low-carbon concrete mixes, reducing CO2 emissions on your projects” said Lucas Bromerchenkel of Concrete Ontario, who is in charge of the Approved Quality Program for ready-mixed concrete facilities.

Bromerchenkel was speaking at the Canadian Farm Builders Association annual conference and general meeting held April 23 in Stratford.

Low carbon concrete is a goal many builders are striving towards and Bromerchenkel said there has been an evolution towards low carbon concrete since January 2017 when Concrete Canada first released its Environmental Product Declaration. The first low carbon concrete specifications were released in October 2021 before a roadmap to net-zero concrete was released in November 2022.

The industry hopes to achieve a measure of carbon reduction by 2030 with net-zero carbon concrete in 2050.

Low carbon concrete refers to concrete produced with a lower carbon footprint than traditional mix designs. “We still need it to meet all relevant performance requirements such as strength, permeability and durability,” explained Bromerchenkel.

One of the goals is to use lower carbon impact materials

such as switching from general use (GU) cement to general use limestone (GUL) cement which contains less clinker. “That’s a straightforward way to start,” said Bromerchenkel.

In Ontario, slag can be used as a supplementary cementitious material to reduce the amount of cement needed. This also reduces the carbon footprint.

Builders can also optimize the strength of concrete used. Bromerchenkel recommends choosing the lowest-strength concrete that meets all performance specifications, explaining that this also reduces the carbon emissions when compared to using a higher strength concrete, if not required by the structural engineer.

Reducing the carbon footprint in the concrete and building industry won’t be easy, admits Bromerchenkel. Concrete content is highly dependent on where it’s made because once in a truck, “you can only drive for 90 to 120 minutes” so “concrete becomes a high local material, dependent on what raw ingredients you have around your jobsite.”

To help builders figure out how to meet low-carbon goals, Concrete Ontario provides Type II EPD industry average reports with Ontario raw material measurements.

As it stands, changes to carbon and concrete are not yet applicable to agricultural work. They are being introduced to certain applications, such as low, mid and high-rise construction. Bromerchenkel said several municipalities, including the city of Toronto, Mississauga and Caledon have started implementing low-carbon construction specifications.

Farm builders have a longer time frame and more research to prepare for the year when it will apply to agricultural projects.

Bromerchenkel encourages



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farm builders to start talking with concrete suppliers about their low-carbon solutions. “Get ahead of the curve and prepare for the upcoming changes,” he said. He also encouraged them to familiarize themselves with the 2050 net-zero action plan.

Also speaking on the topic of reducing carbon in farm construction was Hellen Christodoulou, the executive vice-president of engineering, sustainability and business development with Corbec Inc. Corbec Inc. is a hot dip galvanizing company in Canada with 57 years in business.

They have five plants across the country with their Hamilton location started production in February of 2022.

Christodoulou provided a lot of history and explanation about the galvanizing process before explaining that hot dip galvanizing of steel is highly sustainable. “Corrosion costs the country \$52 billion a year and all that maintenance and cost affects the carbon footprint,” she explained. “Galvanizing protects steel. The zinc works as a coating and both materials, separate and together, are fully recyclable.”

To defray any worries of

steel lasts for 75 to 100 years. When repairs happen, “it is easy to strip off the galvanizing and re-galvanize,” she said.

While offering hardness across the surface of steel, galvanizing also provides a barrier to penetration to prevent corrosion. Christodoulou said that building with galvanized steel reduces a builder’s carbon footprint in a full-cycle analysis which includes the product stage, a construction stage, a use stage and an end-of-life stage.

“Most carbon use is not only in the front, during the mill and fabrication process,” said Christodoulou. “It’s in the actual construction, transportation, through use and end of life.”

A building that is painted has to be repainted every 10 years, for instance. That is part of the carbon footprint of a project.

“We (Corbec Inc) are part of the low carbon solution as a sustainable coating product,” she concluded.

strain-aging and embrittlement, Christodoulou said research and testing have created a strong product and effective galvanizing techniques. In addition, improvements by using ventilation holes during the galvanizing process minimizes distortion. She said galvanized



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**AALP alumni Teresa Van Raay checking out the silent auction items at the recent Advanced Agricultural Leadership Program Dream Gala and Auction (PHOTO BY SHARON GROSE)**

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