

Bow Valley High School alumna named finalist for provincial association's engineering award

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Howard May

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Cochrane's Hannah Thompson, a Bow Valley High School alumna, is making her mark in Alberta's engineering community.

Glass and roads don't normally go together in a good way, but a Cochrane engineering technologist has found a way they might be mixed together beneficially – and as a result, been recognized for her innovative approach.

Hannah Thompson, a Bow Valley High School graduate from the class of 2018, is already making her mark in her chosen profession. She's just been named as a finalist for the Capstone Project of the Year Award, a provincial honour given out annually by the Association of Science and Technology (ASET) Professionals of Alberta.

Thompson, along with fellow Lethbridge College team member Tyce Daniells, is up for the award, recognizing their research into an experimental project they designed when they were students there.

The former civil engineering technology students were recognized for their efforts to determine if the addition of glass fibers to hot mix asphalt would improve its performance. Their idea was that glass fibers would bond with the asphalt and create elastic-like properties within it. This would result in less wear and tear on the asphalt.

The project was concluded this past spring, and Thompson said she and Daniells were both pretty shocked to hear in July they'd been named as finalists for the award.

She said if any other organizations – like asphalt producers or government transportation departments – happened to be interested in pursuing the glass fibre idea further, she'd be interested.

Thompson was the only woman in her class at Lethbridge College, but doesn't give much thought to the stereotypical gender imbalance of her chosen field.

“Growing up in general, I just got along better with boys than girls,” she said.

“I always kind of got my hands dirty and stuff more than the average girl would,” she added with a laugh.

She helped her dad finish the basement in their house in Bow Ridge, and he suggested she might like civil engineering technology. He was right.

After graduating, Thompson was hired by an engineering firm in Lethbridge, where she now designs infrastructure like roads and underground utilities, and does construction inspections.

The glass fiber idea adds a bit of flexibility and strength to road surfaces.

“Think of it as a spider web, how that sticks to things. Adding the glass fiber makes the asphalt last longer, and prevents potholes, flooding, that kind of stuff,” she said.

Glass fiber is glass that has been drawn into long, thin strands and then processed into various other materials (e.g. cloth and rebar) or mixed with resins to be moulded into various shapes, such as boats, doors or car hoods.

It’s low-maintenance and has a high tensile strength with a melting point of approximately 1,135°C, and a softening point of 845°C. Given the immense impact borne by roadways when vehicles travel across them, the former teammates sought to confirm that the glass fiber additive would decrease the amount of stress at the point of contact between the wheel load and the asphalt pavement, and distribute that stress more evenly.

During lab experiments, the former teammates varied the glass fiber content throughout three asphalt mix designs. They ultimately concluded that hot mix asphalt combined with five per cent glass fiber content does improve the asphalt’s stability.

However, if the glass fiber content exceeds five per cent, the performance worsens.

“The former Lethbridge College team’s project may, like asphalt, seem simple on the surface, but it has significant value and depth,” said ASET CEO Barry Cavanaugh. “Any research that makes more resilient something as fundamental to our daily lives as asphalt is a huge win for everyone, not just the former students who conducted that research.”

Cavanaugh said the awards highlight what can be achieved when talent and creative thinking collide.

“They emphasize the innovation that’s brought about by the combination of education and these fertile young minds,” he said.

The ASET CEO said he’s neither a technologist nor an engineer, but that doesn’t keep him from being amazed by what Alberta students come up with every year.

“It’s always fascinating,” he said. “I love looking at these Capstone projects, because of what it reveals about how these young people are thinking. It’s astonishing.”

The former Lethbridge College team's project is one of nine finalists for the 2023 ASET Capstone Project of the Year Award. The winning project will be announced at the end of October.

The Capstone Project of the Year Award was established by ASET in 2017 in response to overwhelming member interest in stories about Capstone Projects undertaken by teams of engineering technology students from NAIT, SAIT, Red Deer Polytechnic, and Lethbridge College as part of their end-of-program requirements.

ASET is the professional self-regulatory organization for engineering technologists and technicians in Alberta. ASET currently represents approximately 17,000 members, including full-time technology students, recent graduates and fully certified members in 21 disciplines and more than 120 occupations across a multitude of industries.