



## Project Profile



### Canadian Pacific tunnel for K+S Potash Canada mine is the first installation using our new bevel reinforcement

A Canadian Pacific (CP) tunnel for the K+S Potash Canada (KSPC) mine in southern Saskatchewan is the first Canadian installation of a Super•Cor Round structure with AIL's patented MSE-reinforced bevels.

#### Innovation saves time and money

This innovation allowed construction of the tunnel's 14.5 m long (2.5H:1V) bevels without the need for internal bracing during the backfill process. This saved time and money compared to the traditional false-work brace method. Our unique design connects heavy-duty welded wire soil reinforcement mats to a series of connection anchor strips that are integrated with the exterior sides.

AIL Mining's scope on this project included the structural design of the Super•Cor tunnel and the cast-in-place concrete collars on the bevelled ends. These collars helped stiffen the ends of the tunnel and facilitate grading of the embankment slopes to the tunnel opening. The tunnel

#### Project at a glance:

**Project Name:** Canadian Pacific Tunnel for K+S Potash Canada Mine

**Location:** Belle Plaine, Saskatchewan

**Owner:** Canadian Pacific

**Design Engineer:** Hatch

**Construction and Geotechnical Engineer:** Clifton Associates Limited

**Contractor:** Kelly Panteluk Construction Limited

**Plate Assembly Contractor:** Connal Enterprises

**Product:** Super•Cor Round with MSE-reinforced bevels

**Dimensions:** Diameter 9.69 m, Invert Length 81.6 m

**Installation Time:** Two months following subgrade preparation



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construction took place in a 13 m deep cut excavation area, as the completed tunnel would run under a two-lane rural road.

## **Mid-construction change required swift action**

Typically, AIL manufactures all Canadian Super•Cor at our Ayr, Ontario, plant. Part way through construction it was decided to lengthen the tunnel by 28.2 m to accommodate a revised site layout. To lessen the impact on the construction schedule, manufacturing of the extension components was shifted to AIL's sister company Big R Bridge. The new Super•Cor components were rushed from Big R's Texas plant to Saskatchewan without severely impacting the schedule. The AIL Group's consistent manufacturing quality control program ensured easy fit-up between the Canadian- and US-produced plates.

## **Pre-shaped bedding and flowable fill save time and money**

AIL Mining offered technical assistance on constructing a pre-shaped pipe bedding and on injecting a cementitious, flowable fill under the tunnel invert once the plate assembly was complete. Using flowable material allowed for a faster and safer fill of any potential voids and saved days of hand tamping gravel below the invert.

## **AIL Mining engineer provided site supervision**

An AIL Mining engineer was retained by the contractor, Kelly Panteluk Construction Limited (KPCL), to be on-site to offer part-time assistance during the plate assembly and on two other multi-day visits to assist with the backfill process, MSE mat layout and shape monitoring. 24/7 technical assistance was also offered over the phone. Both KPCL and their plate assembly contractor, Connal Enterprises, were excellent to work with.

Full-time construction monitoring was provided by the construction and geotechnical consultants, Clifton Associates, including geotechnical engineering, materials testing, shape monitoring and construction field reviews.



## **Early collaboration helped ensure successful outcomes**

This project started years earlier with AIL Mining's early design/specification collaborations with Hatch, the project's Design Consultants. We encourage this type of early design collaboration, as it helps ensure the most successful project outcomes.

Part of K+S Potash's Legacy Project K+S Potash Canada (KSPC) is part of the K+S Group, an international resources company that has been mining and processing mineral raw materials for 125 years. The new tunnel was part of The Legacy Project potash mine, the first new greenfield potash mine built in Saskatchewan in nearly 40 years. The construction of the mine will make K+S the only potash producer with production sites on two continents, extending the worldwide presence of K+S Group and increasing its average mine life.

## **AIL Mining**

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