

## **FACT SHEET**

### **Tunnel Boring Machines**

The Toronto Port Authority is building a pedestrian walkway across the Western Gap to Billy Bishop Toronto City Airport (BBTCA) that will allow passengers and airport users an alternative, efficient access point. The walkway will be completed in Spring 2014.

Construction will utilise the latest in tunnel and construction technology. The walkway roof will be arched and comprise seven smaller, interlocking tunnels (six feet/1.8 metres) designed to reduce the potential for water ingress during construction. These tunnels will be constructed to form an arched roof for the walkway. Three of these tunnels will carry city mains to the Toronto Islands. The small (drift) tunnels will be created using tunnel boring machines.

#### **What is a tunnel boring machine?**

A tunnel boring machine (TBM) is a circular machine used to excavate soil and rock when constructing tunnels.

#### **Key Facts**

- The pedestrian walkway is the only tunnel in the Toronto area built using drift tunnels as a canopy for the main structure.
- Two Canadian-made TBMs dubbed Chip and Dale will be used to create the drift tunnels
- The TBMs were built specifically for the project at Billy Bishop
- The TBMs were built by Technicore, a leading tunnelling company based in Newmarket, Ontario
- The TBMs are 6.5 feet (2 metres) in diameter and 36 feet (11 metres) long
- Each TBM weighs 198,416 pounds (90 tonnes)
- The TBMs are made of steel, hydraulic cylinders and pumps, electric motors and have carbide cutters
- One TBM excavates 39.3 to 49.2 feet (12 to 15 metres) per work day
- The TBMs that will be used for the pedestrian walkway project can bore through soft ground, shale and limestone
- The cutter at the TBMs' head turns at a variable speed
- The TBMs cost \$2 million each