



## The Challenge

To ensure that gunshot residue moves away from the shooter, it is recommended that airflow travels in a laminar fashion at a velocity of 50 to 100 feet per minute (fpm) across the firing range.

## The O'Dell Solution

To accomplish this, ventilation air was delivered by a pair of vertical direct-fired make-up air units from ICE Manufacturing. It was distributed from the back of the range, behind the shooter via a semi-circular fabric duct supplied by Prihoda. Using fabric duct in this application provides great flexibility in design and complete customization of the distribution pattern, optimizing indoor air quality and distribution. The fabric duct was designed and modelled by Prihoda using computational flow dynamics (CFD) software to achieve the desired air pattern and air velocity at the firing line.

The exhaust for the range was provided by a pair of mixed-flow efficient silent inline fans (ESI) from PennBarry. These intake approximately 30% of their total volume 15 feet down range of the shooter and the remaining 70% volume above the bullet trap. The exhaust air passes through a high-efficiency particulate air (HEPA) filtration system before being discharged to the outdoors in order to reduce the concentration of airborne contaminants prior to release. While not required by code, this feature was provided upon recommendation by the engineering firm who provided the system guidelines as a good engineering practice.

O'Dell worked with a design-build contractor to provide the ventilation requirements for Urban Tactical, a firing range in Brantford. Ventilation in firing ranges is critical to ensure that the lead discharged from guns is not inhaled by users.



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**Toronto:** 416-613-9947  
**Burlington:** 905-681-3901  
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