

Federal Reserve Bank of Dallas: indoor pistol range ventilation

A complete ventilation and air conditioning system for the law enforcement unit's indoor pistol range: laminar airflow down the range, HEPA-filtered recirculation, and humidity control that reheats with recovered condenser heat.

Dallas, TX

Federal Reserve Bank, Law Enforcement Unit range

14,400 cfm

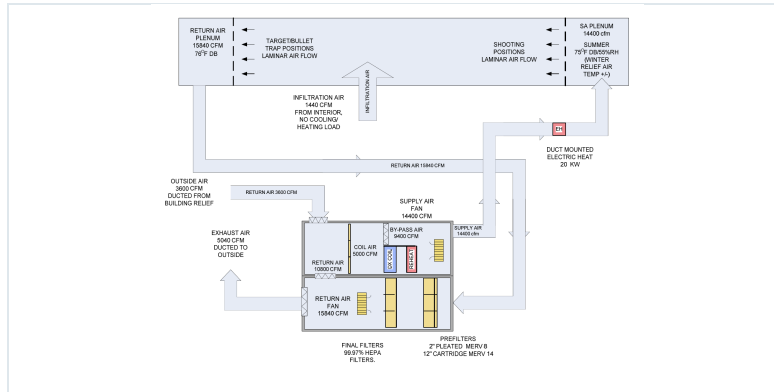
Laminar supply air down the range

99.97% HEPA

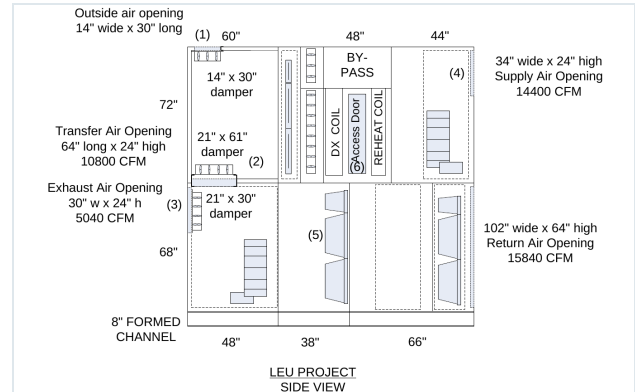
On all return air before recirculation or exhaust

\$87,900

Equipment, 2012, federal project under GSA Schedule



No photos were permitted inside the bank. The system as submitted: laminar supply at the shooting positions, return at the bullet traps, HEPA filtration, and a coil bypass with hot gas reheat.



The stacked air handler: supply deck above, HEPA return and exhaust deck below; 106 in. wide, 152 in. long, shipped in six sections.

THE CHALLENGE

A pistol range must sweep clean air from the shooters toward the bullet traps, carry lead and residue away from the line, and stay negative to the building. Inside a secure, occupied bank building, the air leaving the range must be clean and the range must hold 75°F and 55% RH in summer. Security shaped the job: the equipment had to arrive on a dedicated truck, and no photographs were allowed.

THE SOLUTION

For range builder Action Target and mechanical contractor Carey's Heating and Air Conditioning, Sensible Equipment Company engineered and furnished the package: a custom stacked McQuay air handler, an Addison air-cooled condensing unit and a duct heater. Return air passes MERV 8 and 14 prefilters and **99.97% HEPA filters** before it is recirculated or exhausted. Only 5,000 cfm passes through the DX cooling coil, where it is dried deeply; the other 9,400 cfm bypasses the coil. A **hot gas reclaim reheat coil** then warms the supply with heat the condensing unit would otherwise throw away. Outdoor air comes from the building's conditioned relief air; a 20 kW duct heater handles winter.

THE RESULT: SYSTEM AT DESIGN

Airflow	
Supply air, laminar down range	14,400 cfm
Return air from the bullet traps	15,840 cfm
Outdoor air / exhaust air	3,600 / 5,040 cfm
Range held negative by	1,440 cfm
Cooling, dehumidification and reheat	
DX coil, 5,000 cfm to 59.4°F / 55.7°F WB	13.3 tons
Air bypassing the coil	9,400 cfm
Hot gas reclaim reheat, no new energy	39 kW
Winter heat, SCR duct heater	20 kW
Air handler	
Supply / return-exhaust fans	20 hp / 30 hp

From the approved submittal (SEC 12-018, July 23, 2012) and purchase order (September 17, 2012). Reheat: 134,400 Btu/h at 14,400 cfm.

Why it carries over to government work. Federal, military and police ranges all need laminar airflow, HEPA filtration and humidity control in one package.