



# Chief Engineer



Official Publication of The Chief Engineers Association of Chicagoland for over 75 years

SEPTEMBER, 2010

PRSRT STD  
U S Postage  
PAID  
Pontiac, IL  
Permit No. 592

COLUMBUS POLICE ACADEMY



## COLUMBUS POLICE

Turn Tough Job Over To  
Crack Mechanical Firms

Doorways Keep Energy  
From 'Wastin Away'

Heating/Cooling Plant  
Replacement  
A Big Success

Standard 90.1 Featured  
In Fall ASHRAE Courses

dedication to law is the  
foundation for a great  
city and holds together  
the changing nature of  
our society



*A view of the Columbus Police facility from the courtyard. The facility was quickly recognized as being among the finest of its kind worldwide.*

---

## Columbus Police Turn Tough Job Over To Crack Mechanical Firms

**P**olice work, like military duty, is filled with uncertainty. Though there are few things they can take for granted, members of the force and officers in training in Columbus, OH can rely on comfort systems installed in one of the country's newest and most contemporary facilities of its kind. It replaces a much smaller facility, built in 1964 and considered inadequate a decade later.

The new \$27 million, 166,000 s.f. circular building opened in December 2004 to its first class

*CONTINUED ON PAGE 22*

# FEATURE FEATURE FEATURE FEATURE

## **POLICE ACADEMY CONTINUED FROM PAGE 21**

of 67 recruits. It's an architectural marvel with many specialized functions that officials say were needed to prepare officers for an increasingly complex job.

"There's not another like it," stated architect Patrick Allen. "This building is truly an expression of what the Columbus Police Division needed, and what its training is all about."

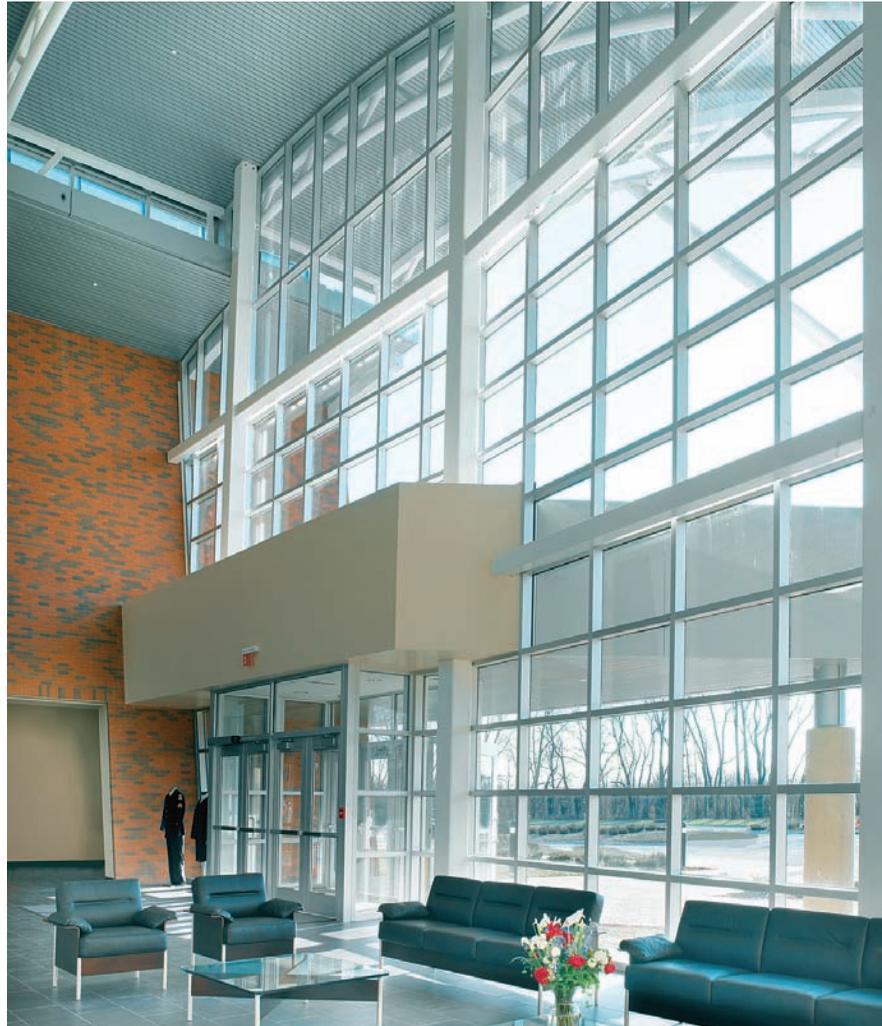
The facility was quickly recognized by police professionals and facility designers as among the finest of its kind worldwide. And a visit within tells why. From its gleaming forensics classroom, to the well-appointed weight training and aerobic-conditioning rooms, cadets and trainers alike now have at their disposal one of the best facilities of its kind.

So unique is the building that it has already attracted police agencies from across the nation. According to Commander Larry Rod, this will generate revenues to help cover the costs of training the city's officers.

The building's most distinct architectural feature, found immediately within the large, open lobby, is a glass-and-brick tower which permits natural light to stream down onto a Hall of Honor where officers killed in the line of duty are memorialized. The building's circular design has within its center a nearly 1-acre, open-air courtyard that can be used for class formations, receptions and graduation ceremonies.

Other amenities include a gymnasium; an indoor pool for exercise, injury rehabilitation and dive team training; fully-padded defensive tactics rooms; a 300-seat dining hall; a 300-seat auditorium; lecture hall; several classrooms and a computer lab.

**CONTINUED ON PAGE 23**



*A spectacular glass-and-brick tower lobby permits natural light to stream down onto a Hall of Honor where officers killed in the line of duty are memorialized.*



*The lobby of the Columbus Police Academy is just an introduction to what lies inside, including forensics classrooms, a pool for exercise and injury rehabilitation, defensive tactics rooms and a computer lab.*

# FEATURE FEATURE FEATURE FEATURE



*A view from the outside of the building hints of the distinct architectural design that can be found within.*



*Bill Bosaw, field superintendent, Fox Mechanical, (left), performs a combustion air reading of one of the Pennant systems, while another Fox employee inspects one of the boiler's pull-out control panels during startup, confirming that the control sequence is working properly.*

## **POLICE ACADEMY CONTINUED FROM PAGE 22**

Another key facet of the job, though less visible than its many architectural amenities, were the building's complex mechanical systems. When the general contractor and planners for the building settled on the mechanical installation firms, they chose two Columbus-based firms. Fox Mechanical, Inc., was tapped to do the substantial heating job, and Aggressive Mechanical was chosen to handle the domestic water system. Both companies are union shops and specialize in commercial and industrial work.

The contract for Fox, which encompassed an extensive heating system, HVAC, controls, and system insulation exceeded \$2.5 million, putting them on the jobsite for 11 months. Aggressive stayed on the job a few more months to complete the domestic water system for the new building.

"This was about an 18-month project, overall," said Michael Hann, project manager for Messer Construction Co., the commercial and industrial general contracting firm chosen by the city of Columbus to build the new facility. Messer Construction Co. is a regional general contractor and commercial construction firm specializing in complex building construction projects throughout the Ohio, Kentucky, Indiana and Tennessee region.

"There definitely were some unique aspects to the mechanical systems at the Police Academy," added Hann. "We chose Fox and Aggressive because of their experience with jobs on this scale, and because they were eager to take on the uniqueness of the project."

One of the more unique aspects of the mechanical job was tied to the shape of the building. "The geom-

**CONTINUED ON PAGE 24**

# FEATURE FEATURE FEATURE FEATURE

## **POLICE ACADEMY**

**CONTINUED FROM PAGE 23**

etry of the building created the need for a lot of offset piping," said Hann.

"To complete the heating loop system, we'd make a five degree angle welds in the black pipe to accommodate the curvature of the building," explained Joe Fox, president of Fox Mechanical. "To say the least, this was very time-consuming. We had three [2-man] welding crews working non-stop on the primary loop for four months."

According to Fox, the primary loop's large-diameter piping network - in the 2-1/2" to 8" sizes - was black pipe. Anything 2-inches or less was run in copper.

"The building is heated hydronically, entirely by hydro-air," added Fox. "We built the heating system around 11 primary water-to-air heat exchangers that ranged in capacity from 3,500 to 18,500 cfm per unit." But there are an additional 170 VAV boxes, one per zone, and 14 fan coil units that serve some of the hallways and stairways where ducting of the hydro-air isn't feasible.

"All of these devices permit fine-tuning of zoned temperatures," continued Fox. "Each of the remote units is separately piped with supply and return lines."

The mechanical room is spacious and intelligently designed. At its center, set like crown jewels, are four stacked, 2 million BTU Pennant boilers by Laars Heating Systems - two sets, two high - that provide 16 stages of firing.

The low NOx, fan-induced boilers are available in both hydronic and volume water versions, and may be installed either indoors or outdoors. All models are designed for staged firing to meet required heating loads. Pennant boilers and water

**CONTINUED ON PAGE 25**



*Larry Fast (left), journeyman, and Jim Buyko, foreman, Aggressive Mechanical, complete connections to both of the 2,020-gallon Laars storage tanks.*



*Bill Bosaw, Fox Mechanical field superintendent, is taking a differential reading across a balance valve. This reading indicates the volume of water going to the boiler.*

# FEATURE FEATURE FEATURE FEATURE



*Aggressive Mechanical Journeyman Larry Fast (left), Todd Holcomb, journeyman, and Jim Buyko, foreman, complete the installation of two, stacked boilers.*



*Hanse Cromer (left), manufacturer's rep with Steffens-Shultz, discusses system start-up with Bill Bosaw (center), performing a combustion air reading of one of the Pennant systems.*

## **POLICE ACADEMY CONTINUED FROM PAGE 24**

heaters offer the building owner six different operating control programs to best match the type of installation in each building.

Jim Buyko was the foreman on the job for Aggressive Mechanical. For a year, he led their installation efforts at the facility. "While installing the domestic water systems, we faced many of the same piping challenges that Fox Mechanical dealt with because of the unique shape of the building," said Buyko.

"Our crews installed 41 showers in one area, and tap fixtures throughout the facility. To heat and store the domestic water, we installed two stacked, one-million BTU Laars Pennant volume water heater systems, controlled in lead-lag fashion to feed hot water to two, 2,020-gallon Laars storage tanks," said Buyko. "The storage tanks are the largest we've installed. It was a challenge getting tanks of that size in place, but they piped-up very nicely and definitely add to the facility's energy efficiency."

Between the tanks and the many plumbing fixtures, Aggressive installers connected miles of one-half inch to four-inch copper pipes. "The domestic water system was engineered to go from 'zero to sixty' on short notice," added Buyko. "It was sized to meet the needs of the entire cadet force, hitting the facilities all at once after a rigorous workout."

Now, when winter winds lash at the academy's recruits, out for a run, they'll return to comfortable temperatures inside, and plentiful hot water for showers. Or a swim in the heated pool. Surely, their jobs will be tough enough, too soon. No need to rush it. ■