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JOB SCOPE

PIPING • PLUMBING • AIR CONDITIONING

FOR KEY FIELD AND OFFICE PEOPLE IN MECHANICAL CONTRACTING • Fall 2007

A year after Superbowl victory Indianapolis to get a new airport fit for a champ

By Don Doherty

The tragic events of Sept. 11, 2001, profoundly altered the way airports handle passengers and baggage. Six years later, 9-11, as it turns out, has also transformed the way future airports are designed and built. The new Indianapolis Airport is the nation's first major airport constructed since 2001. As you might expect, security concerns have influenced everything from parking to passenger screening. Inside the terminal are more electronic surveillance systems and access control devices; outside there are no parking areas within 300 feet of the terminal, and most jet fuel will now be stored miles away and pumped underground to the airport's refueling depot.

Have the mechanical systems and equipment also changed? Not much, really.

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The view from inside the new 1.2 million-square-foot terminal structure on a space between existing runways that continue operating during construction.

The new Indianapolis Airport is the city's largest development, at $1.1 billion, containing a new terminal, hotel, parking areas, control tower, and direct access ramps to adjacent Interstate 70. When it is opens in the Fall of 2008, it will replace the existing airport on 7,700 adjacent acres, using the same runways.

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The new Indianapolis Airport still has lots of large indoor spaces needing heating and cooling. That hasn't changed.

International Piping Systems, Inc. (IPS) is the lead mechanical contractor for the $1.1 billion project, which began in 2005 and should finish in the Fall of 2008. The city's largest-ever development initiative will include a new control tower (third tallest in the U.S.), new terminal and boarding gates, new hotel, more parking lots, and new interchange ramps on adjacent Interstate 70 providing direct airport access. The new terminal will completely replace the old one, located on 7,700 adjacent acres. Nestled between two runways (rather than far off to the side, as was the case before), the new terminal should significantly reduce the amount of time and fuel airplanes spend moving to and from the gates.

IPS Vice President Gregory Maus explained that the installation of piping systems followed construction of three main buildings. The terminal building rose first, branching out on two sides into Concourse A and Concourse B. Between the concourses, the terminal has 1.2 million square feet on four floors. Administration and operations offices share the top floor with the main mechanical room. Ticketing, check-in and other passenger spaces are at Level 3 where passengers enter the terminal; Level 2 (at ground level) is reserved for storage; and Level 1 is dedicated to baggage handling. Both of the 1,300 feet x 100 feet concourses — each with 20 gates — connect with the terminal at Level 3. Passengers will arrive or depart the terminal on two levels where cars may stop along the 500-foot frontage.

The IPS field supervision team members and UA representatives (left to right): Philip Boor,IPS Safety Manager; ,Jim Zitka, IPS Project Supintendent; Gregory Maus, IPS Vice President; Curtis L. Cade, UA International Representive;Tom Hott, IPS General Foreman; David Posey, Indianapolis UA Local 440 Business Manager; Joesph Borgia, IPS Sr. Project Manager; and John Beaman, Indianapolis UA Local 440 Business Agent

IPS installed a total of 39 air handlers inside nine mechanical rooms in the terminal and two concourses. The main mechanical room, on Level 4 of the terminal, houses the most air handlers, in addition to the system's heat exchangers, pumps and expansion tanks. There are two smaller mechanical rooms on the second level and three in each of the two concourses, Maus added.

Set between runways, the new terminal will decrease the amount of time and fuel airplanes use to reach or depart the gates.

The airport's upgraded central utility plant can furnish 9,100 tons of chilling capacity and 231,000 lbs./hour of steam generation. An underground utility tunnel connects the new terminal to the central plant. Along their mile-long journey the 24-inch diameter chilled water mains pass underneath one runway and two taxiways.

First in

IPS's contract included heating and cooling systems inside the new terminal, beginning at the point where the chilled water and steam supply lines from the central plant enter the building. The contractor made it their goal to be ready to move in and begin hanging their pipe as each section's structure became ready. Tom Hott, Jr., IPS general foreman, explained that it was a matter, first, of getting right to work in completed areas and, second, carefully coordinating their path through spaces where the potential for conflict existed, for example, with other utilities or baggage conveyors. An airport's baggage handling system, Hott explained, presents another complication for pipelines and another layer of coordination. The conveyor lines are as lengthy as the pipe and often run parallel through the same area.

This artist's conception shows the Plaza area inside the terminal which will use solar heat and a radiant heating and cooling system for comfort.

Because they are so critical to an airport's operation, baggage conveyors command top priority wherever space must be shared.

"We had to go to numerous coordination meetings to work it out in advance with everybody," Hott said Once everyone signed off on a particular area, there usually wasn't a problem. The engineer would review the plans and send them back. "Then we would start."

Hott said it wasn't long after the outside of each building was up that 80 to 90 percent of the large-bore pipe was in place. The next task was hooking up the air handlers. The majority of the 39 air handlers were set in the mechanical rooms in the terminal and concourses. Eight of the air handlers were assigned to the baggage handling area, below ground, for ventilation. A couple additional units handle electrical supply stations.

"It was a process to get them all in," Hott said. The air handlers were brought inside the building before all the walls were up. Then the crew used a combination of

methods to move them laterally into position. "Once they were at that point, we hooked up four chain falls and used them to slowly work them into place," he said.

On their way to the boarding gate, travelers will pass through the new terminal's Civic Plaza, a large indoor gathering and concession space underneath a 200-foot diameter skydome. The transparent, 60-foot high ceiling will permit sunlight to illuminate the park-like floor space with benches, trees, grasses and other fauna between concession stands. Solar heat will supplement the Civic Plaza's separate radiant heating and cooling system. Because of the small (1/2-inch) piping "cones" arranged in triangles underneath the floor, the concrete Terrazzo-coated slab came last, not first, inside the Civic Plaza. IPS installed the multi-zone radiant system's piping cones and 20 manifolds (one for each zone). Assisting IPS with the radiant system was WBE subcontractor Lanham & Sons.

The new terminal will have four levels housing administrative offices, baggage handling and storage areas in addition to passenger spaces. Passengers will enter or leave the terminal one two levels where 500 feet of frontage are available for arrivals and departures. Indoor air will be serviced by a total of 39 air handlers in nine mechanical rooms.

Extending its reach

While International Piping Systems has a suburban Chicago headquarters (since 1979), the contractor has extended its reach far enough into the Indiana construction market to open a branch office in 1993 in Merrillville, Ind., in the Hoosier state's northwest corner. They recently opened a third office in Indianapolis. This will shorten the commute of IPS staffers like Jim Zitka, piping superintendent at the airport job, who has made the 100-mile trip from his home near Chicago more times than he can remember.

The IPS strategy was to be ready to be the first to move into each completed space, and begin hanging their pipe right away. It enabled them to install large-bore pipe early in the project

Zitka is a member of Local Union 501, Aurora, Ill., but the bulk of his pipe fitter crew (including Tom Hott), which numbered 48 at its peak, belong to Plumbers, Steamfitters and HVACR Service Technicians Local 440, in Indianapolis.

Assisting IPS with the airport's concourse mechanical rooms was MBE subcontractor Sexson Mechanical, located in Greenwood, Ind. Poynter Sheet Metal from Bloomington, Ind., handled all the HVAC ductwork for the project. The piping insulator was Young Insulation, from St. Louis, Mo.

The new airport project's safety partnership with OSHA and Owner Controlled Insurance Program (OCIP) underscored the emphasis on job safety at the site. Philip Boor Jr., IPS's full-time safety manager at the project, said every worker received at least two safety orientations: one from the GC and another from IPS. "The safety out here is very stringent," Boor said. "Safety helmets, glasses, tieing yourself off: it's all strictly enforced." There are daily walks of the site to check safety equipment and weekly toolbox talks every Monday morning.

The IPS project management team at the new airport is led by Sr. Project Manager Joesph Borgia, a Chicago Local 597 member. Assisting him is Project Manager Terry Baker, an Indianapolis Local 440 member.

Air handlers had to arrive inside the terminal before the walls were up. They were set around the building using various processes.

Workers install the transparent roof panels inside the terminal's Civic Plaza area. This area's final phase was installation of radiant heating and cooling piping cones on top of the subfloor. Once tested and approved, the multi-zone system was covered with a concrete slab and Terrazzo coating.