



How stainless steel drainage made a difference at the Orleans Parish Correctional facility



isn't just for bars

On August 28, 2005, Katrina – then a Category 5 hurricane with winds exceeding 125 mph – hammered the coast of Louisiana, with devastation dealt most severely to the communities of New Orleans, Mobile, Ala., and Gulfport, Miss.

In the wake of the storm, 1,836 people lost their lives. The cost of repair, which still is largely incomplete, is approaching \$90 billion. The greatest number of deaths occurred in New Orleans, where overwhelmed levee systems failed to contain surging seawaters.

Ultimately, 80 percent of the city and large tracts of neighboring parishes, some of them several miles inland, were flooded with sewage-rich seawater containing pollutants, animal and human carcasses, buses, cars boats and rotting, septic debris.

One of the key challenges faced by the swelling floodwaters was an emergency need to evacuate thousands of prisoners from the downtown Orleans Parish prison system. Making matters worse, inmates were not in a single jail facility, but rather 12 buildings: central lock-up; the Community Correctional Center (“CCC”), Conchetta; Fisk work release; the House of Detention (“HOD”); Old Parish Prison, South White Street; and Templeman buildings I through V.



structures were erected to meet the need and, in one area, 800 lower-risk inmates still are doing time in a makeshift tent city behind chain link fences fortified with razor wire.

Is it any surprise that the Parish of Orleans' enigmatic Sheriff Marlin Gusman seeks not only new and sturdier buildings to contain inmates, but also a state-of-the-art facility to prepare and store meals? After all, there's no "food fight" like a culinary crisis within prison walls. "We're now moving beyond recovery and into rebuilding," says Gusman, who was at the helm of the Orleans Parish Criminal Sheriff's Office when Katrina forced a mass relocation of inmates.

Today, as construction of permanent, greatly more storm-resistant buildings is underway, several temporary jail facilities have answered the need to maintain the district's prisoner population.



As the hurricane bore down on New Orleans, it was an immense and frantic effort to get the prisoners out of the rapidly flooding facilities. In the end, all the buildings were overrun by floodwaters, with most tagged as "totally destroyed" in the hurricane's wake.



Avoiding culinary crisis

Today, as construction of permanent, greatly more storm-resistant buildings is underway, several temporary jail facilities have answered the need to maintain the district's prisoner population. Pole buildings and pre-cast

The Parish's correctional complex crown jewel is a 164,000-square-foot three-story, \$80 million building modeled after new food preparation and storage facilities in Los Angeles. Started in March 2010, the new kitchen/warehouse facility is the first building to inaugurate a new, safer, more secure and efficient jail complex for Orleans Parish.

Slated for completion in late 2012, the central power plant will generate eight mega-watts of emergency generator power. Its 40,000 gallons of stored diesel fuel make it sufficient for five days at full power. The facility, served by multiple centrifugal chillers equaling 6,000-tons, also provides cooling for the entire complex.

Gusman authorized construction of the commercial kitchen and food

processing facility, a building that also includes large refrigerated and freezing warehouse space, and a power plant to serve the new jail complex. The facility has the capacity to feed 25,000 meals every 12 to 14 hours if needed. It also can preserve prepared meals in its freezer for up to 45 days.

Stainless makes the grade for hi-temp plumbing

One of the most unique facets of the new facility's construction was the specification for 8,000 lineal feet of stainless steel drainage piping, chosen because of the resilience, durability and thermal characteristics of the material.

"Properly treated stainless steel has an incredibly smooth and hard, non-porous surface that guarantees excellent hygiene," says Jamey Logrande, VP and senior project manager with Metarie, La.-based Huseman & Associates, a design engineering firm with correctional facility experience.

Huseman & Associates was responsible for design of the building's electrical, mechanical, plumbing and fire protection systems. Its role at the facility won a 2009-2010 regional ASHRAE technology award. "Due to its hardness and very low porosity, bacterial growth is greatly reduced," Logrande says. "And, of course, the very nature of this building – within the harshest of environments – is to assure permanence and durability."

Stainless steel also is a strong, pressure-, corrosion- and chemical-resistant material, with a life expectancy of six to 12 times that of steel in a commercial kitchen setting. Due to the excellent material properties, the weight of a drainage system can be reduced by more than 20 percent compared to cast iron, which contributes to ease of installation.

The material chosen by the general contractor, New Orleans-based Woodward Design-Build, was stainless steel pipe supplied by Blücher, a Watts Water

BUILT FOR THE AGES

Built in 1929, the Old Parish Prison is the oldest of the Orleans Parish Prison (OPP) buildings. Designed to house from 400 to 450 people, the number of prisoners held there increased dramatically over time.

In order to deal with the increasing population, other OPP buildings were constructed. In 1974, OPP had a population of about 800 prisoners. Three decades later, OPP's capacity had increased more than tenfold to approximately 8,500 prisoners.

Before Katrina, OPP housed nearly 6,500 inmates on an average day. Although New Orleans is only the 35th most populous city in the United States, this made OPP the ninth largest local jail. OPP housed even more people than the notorious Louisiana State Penitentiary at Angola ("Angola"), which at 18,000 acres is the largest prison in the United States.

Technologies company. Blücher is a global manufacturer of stainless steel commercial drainage systems, including standard and customized floor drains, drainage pipes and drainage channels.

"We needed a plumbing system that could routinely move liquids at temperatures of up to 250 degrees to 260 degrees Fahrenheit because of the multiple 300-gallon steam pressure cookers dumping into the waste system," Logrande says.

Though space heat for the entire complex is provided by several, fully-condensing boilers with a combined capability of up to 60 million BTUs, two 300 HP Hurst steam boilers are dedicated exclusively to kitchen heat for

cooking and dishwashing. In the kitchen, a bank of 300-gallon kettles, two 60-gallon kettles and a 1,000-gallon cook tank – wrapped in jackets of steam heat – are used to cook food.

"Stainless steel gaskets are rated for use at temperatures of up to 390°F," Logrande says. "And we needed to exceed the rated maximum temperatures for cast iron couplings and gaskets – just 210 degrees Fahrenheit – so stainless became our choice of the best material for the job."

The sometimes super-high temperature of heavy, semi-fluid, cooked goods was a key concern, but so was the weight and volume of the mass being drained in the large steel pipes used to transport soups and stews to packaging machines. "We knew of the need for massive dumping of hi-temp fluid on a regular basis and, with very expensive, very temperature-sensitive food storage spaces below the kitchen, we knew there'd be no room for error," Logrande says. "We couldn't afford a leak; the result would be catastrophic."

"Initially, Jamie [Logrande] was considering specialized, acid-tolerant iron piping, but the focus for waste drainage eventually turned to stainless steel because of its much lighter weight, tolerance to high temperatures and ready availability," says Mike Billingsley, VP of New Orleans-based Billingsley & Associates, manufacturer's rep for Watts Water Technologies and Blücher. "A key advantage to the stainless steel is its greater tolerance for transportation of fat, and with most of the drainage piping emptying into a 10,000-gallon grease trap, it's clear that there's an expectation for loads of the stuff which, as it cools, quickly congeals and can become a very tough obstacle to fluids in the pipeline."

Logrande says there are two independent greasy waste systems. The primary system – which dumps immediately into a 400-gallon automatic grease removal unit by Highland to



One of the most unique facets of the new facility's construction was the specification for 8,000 lineal feet of stainless steel drainage piping, chosen because of the resilience, durability and thermal characteristics of the material.

mechanically remove grease – was built to handle the heavy grease load. The secondary system will manage the rest of the kitchen (sinks, dishwashers, etc.). All kitchen drainage dumps into the 10,000-gallon, three-compartment, underground Highland trap.

At several points in the grease waste piping, automatically timed flushes with hot water assure clean drainage

within the entire piping network. “This is to be sure that no residual grease, rice and pasta, are trapped,” Logrande says. “The hot water flushing is activated several times a day by the building automation system.”

Metairie, La.-based Gallo Mechanical was contracted to install all plumbing and mechanical systems for the facility. Philip Chauffe, project manager for

Gallo, says that transportation of fatty liquids to and through the giant grease trap is the key advantage to the stainless steel pipe, used in 2-inch to 8-inch sizes.

“About half of the stainless steel pipe is heat-traced with an electric cable heat element that was attached to the entire length of the pipe wall and then wrapped with 1-inch fiberglass insulation,” Chauffe says.

It was determined that, with anticipated heat loss – if cast iron drainage would have been used – the risk of fat collection and “coagulation” and clogging along pipe interior walls would be high.

“There’s far less risk of that with stainless steel,” Chauffe says. The heat-tracing was added as a relatively low-cost insurance plan.

Hydronic masterpiece

With 60 to 70 installers on the job at any time, Gallo crews, led by Bruce Lawrence, installation supervisor, also are installing all central plant heating and cooling systems, other drainage and water service lines and hydronic pipe. With a jobsite that calls for 36-inch condenser water lines, 24-inch chiller lines and 18-inch heating lines, it’s easy to see why – even at a 250-person, all-commercial plumbing and mechanical contracting firm – they call this project “large-scale.”

Greater infrastructure = greater security

Orleans Parish’s kitchen/warehouse facility is located along the Interstate 10 corridor, a prominent, urban property. The key component of the plan is the ability to manage expansion with smart infrastructure systems at the central plant in the kitchen/warehouse facility.

Says Ken Ball, a corrections specialist with the sheriff’s office, “They can now operate the food service, central warehouse and mechanical systems for all the other structures from that framework. It’s an opportunity rarely seen by a large, urban correctional system.” ■

John Vastyan is a freelance writer who covers the federal and commercial construction markets. He can be reached at cground@ptd.net