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Solutions

FALL 2011

PRESIDENT'S LETTER

Winter is fast approaching; don't fall behind on solutions to your facilities energy efficiency and maintenance programs. These areas are often overlooked and can save you money.

This third edition of ESI's newsletter takes a look at how owners can more efficiently utilize space and incorporate additional safety and security measures into their facilities.

With a more defined focus on saving money and refining operations, ESI is assisting clients with alternative fuel options for forklift/reach trucks and pallet jacks, tying in solar panels to offset energy costs, simplifying site security and using cascade refrigeration systems to improve employee and facility safety.

If you're interested in finding ways to get the best return on your investment, call on our expertise. We want to be your trusted design-build partner.



Brad Barke

Protect your good name

Sure, there's a cost to food safety.

But have you considered the cost of not addressing the issue?

Among those keeping track is the U.S. Department of Agriculture, which estimates the cost of food-borne illnesses at \$152 billion per year, up from \$35 billion per year in 1997. That's why Congress passed the Food Safety Modernization Act. Unfortunately, many food contamination investigations have linked cause to faulty facility designs or inadequate construction material practices. For example, peanut butter recalls in 2006 and 2008 were partially caused by roof leaks, which led to Salmonella growth within the facilities.

It's clear that "business as usual" will

not be the same. This especially pertains to outdated facilities that may require extensive plant, mechanical, electrical and control system modifications and/or an update of plant sanitation and maintenance protocols. Meanwhile, many new standards and requirements could overwhelm a plant operator and impact daily plant activities.

ESI can help safeguard your good name. ESI Design specializes in food facilities; we incorporate food safety in every step of design and construction.

Here's an example. One client's main building had everything: raw material storage, production, packaging and a finished goods distribution center. The client ▶

Quality floor saves you more

Cold facility flooring often isn't considered a key element in a successful operation, yet every building needs a firm foundation. Companies who overlook this soon realize how much of a headache it can become if problems arise. The truth is you get what you pay for.

Consider this. One refrigerated ware-

house operator selected a conventional concrete floor for a new, 40-foot clear building. The owner installed racking up to 38 feet high. Soon, he noticed the floor showed faulting as well as cracking in the center of the aisle.

After some investigation, experts determined the slab and sub-grade were ▶

safety

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wanted to move production from the existing building to a new “clean room” processing addition. ESI Design helped establish the expanded site’s layout so it (1) established a clear flow of raw product from the existing building, (2) concentrated all processing and packaging in the new addition and (3) returned finished product to original site without cross contamination.



Boot washing units are used to maintain sanitary conditions throughout the facility.

ESI Design

We recognize daily operations rely on important sanitation steps and programs. ESI knows these include some of the smallest details, such as painted space for rodent protection behind racks at exterior walls, continuous open pits for dock levelers and tight-sealing doors.

There are more ways to design food safety features into sites.

Another popular new example involves walk-on insulated metal panel ceilings.

These ceilings let operators install all process utility piping in the interstitial space. This way, personnel can maintain or install new services without impacting production.

More plants also are converting air handling systems from conventional use (of evaporative unit coolers with makeup and exhaust fans) to rooftop mounted, hygienic air handling systems with micron filtration capabilities. These systems provide exceptional environmental control in production areas and prevent condensation issues through proper use of controls to adequately purge fog during sanitation cycles and to quickly dry out the rooms prior to production start-up.

ESI Design also believes that plant sanitation team members should join pre-construction planning discussions to help develop good construction work processes and coordinate scheduling. ■

By Jack Michler

Jack Michler has more than 30 years of construction experience with an emphasis on food processing, food safety and low-temperature facilities.

What’s next? See our 4th quarter look at Siphonic Roof Drainage.

flooring

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overloaded and the rebar – which would have restricted vertical faulting – was missing. Unfortunately, this building quickly cost the owner much more than the few dollars saved during construction.

settlement, sub-grade modulus, potential water sources, expansive soil potential, etc.

ESI held a “pre-pour” meeting involving everyone – the specialty floor contractor, geotechnical firm, concrete testing firm and related contractors. ESI provided outline

– then it shrinks back just slightly smaller than it started. Thus it translates to less tension than conventional concrete. This facilitates increased joint spacing in SC projects.

Most owners have not heard of SC concrete because it is a specialty. And although they may have heard of hardened floors, they don’t understand SC concrete’s important benefits. These include reduced floor joint maintenance, reduced wheel maintenance



Shrinkage compensated slab on new distribution center dock.

Another example involves a large food distributor whose project included a multi-temp building intended to operate 24/7, 364 days of the year. This ESI project had freezer, cooler and dry storage (racked and floor stack) and many dock doors. Reliable flooring was needed because there is little downtime for joint or crack repairs.

ESI’s experienced architect and structural engineer recommended flooring that features shrinkage compensating (SC) concrete with trap rock. Meanwhile, ESI interviewed the client to fully understand the operation’s racking types and loads – as well as any possible future variations. ESI also investigated the site’s sub-grade ground to determine what kind of load it could take. This analysis considered variables such as

and placement parameters, a quality control test for SC expansion on every pour, as well as testing steps for strength and sub-grade. ESI gave testing firms the authority to accept or reject work or conditions during the pour. ESI also had a consultant on site to test whether the finished floor was indeed flat and level. The end result was an excellent floor slab and a satisfied client.

ESI believes the advantage in SC concrete floors is a reduction of about 80 percent in floor joint length. This is accomplished by spreading the joints to about 100’ x 100’ – instead of the more common 20’ x 20’ spacing of conventional concrete mix. Conventional concrete joint spacing is limited by the shrinkage of the concrete after placement. SC concrete first expands

nance on rolling stock and reduced wear on the floor. That’s because SC eliminates spalled concrete, which turns into a grinding compound embedded in a pallet jack’s plastic wheels.

One of the biggest areas of misunderstanding is that many owners think getting a floor hardened with trap rock is the same as SC concrete. In reality, SC and trap rock are simply different options. In any case, SC floors have special design and placement requirements that cannot be ignored.

ESI recommends owners pick a knowledgeable architect/engineer and floor contractor with a national reputation for SC trap rock floors. ■

By Steve King

Steve King is a regional vice president with more than 30 years of experience in the design and construction of millions of square feet of facilities for the food-service industry.

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Four your CONSIDERATION

Ready to improve site security? Take a fresh look at ...

... **ONGOING PRACTICES / PROCEDURES.** Operators need documented policies and active training programs to cover security incident reporting, workplace violence, access control, visitor management, prohibited items and emergency response. Non-employees should be restricted to non-product areas unless escorted by an authorized employee.

... **LOW-TRAFFIC AREAS, DOCKS, PARKING.** Electrical, refrigeration, gas storage, water systems and HVAC mechanical rooms or areas should be secured. Limit access to areas containing cleaning supplies, pest control and other chemicals. Control loading dock access and check actual deliveries against scheduled deliveries. Use tamper-proof seals on outgoing shipments. Employee vehicles need some form of visual identification. Also consider any parking structures as part of the outer boundary layer of security.

... **NEW TECHNOLOGIES.** Internet protocol cameras are overtaking analog cameras in video surveillance. Meanwhile, operators should integrate video surveillance, card access and intrusion detection systems. Video analytics is an emerging video surveillance technology that uses video processing algorithms to detect real-time events. Because employee theft is a moving target, operators should also consider installing wireless cameras to cover “hot spots.”

... **PARTNERING WITH ESI.** ESI helped one customer implement a “layered” site security plan. It started with perimeter hardscape, fencing, gates and turnstiles. Next, it involved physical entry and access controls – along with intrusion detection. It extended all the way to fuel tank video surveillance and additional steps to secure trash compactor doors and roof hatches.

Robin Wolff has more than 20 years experience as a Senior Electrical Engineer.



Money savings on the rooftop!

Let's talk about high performance. When a national broadband foodservice distributor wanted to expand its Dallas location, ESI Group presented several solutions to address current and future needs.

This 2011 project consisted of a 54,000-



Our Partners / Project Profile

square-foot warehouse expansion that included additional freezer, cooler and refrigerated dock areas. The construction involved insulated metal panels, concrete tilt-up, white TPO single-ply membrane roof and ammonia refrigeration.

"A unique design element is that the refrigeration equipment enclosure skid – complete with compressors, vessels, pip-

ing and MCC – was placed on the roof," notes Don Olsen, ESI Design's lead project engineer. "We designed it that way because the client didn't have space in front of its docks and couldn't afford to lose a dock door. The enclosure skid is out of their way for daily operations yet is still accessible for maintenance."

ESI also installed rooftop solar pan-

els (using Serco panels and connections) to

power the expansion's dock door equipment. Technology advancements in this field are making it more popular and feasible to use solar panels for various refrigerated warehouse power requirements.

"Although it's only been operating for several months, this technology already is saving money for our client," says Tim Nguyen, a regional vice president with ESI Constructors. ■

By Don Olsen and Tim Nguyen

By Don Olsen, a lead project engineer with 20 years design experience; and Tim Nguyen, a regional vice president with 20 years in cold storage industry.

The 411 on: DISTRIBUTION RACKING

WHAT'S CHANGED: Slow market conditions are fueling foreign and domestic competition and keeping steel prices low. Structural racking is replacing roll form racking and is more accepted (with a 10 percent price difference). Re-enforcing rack now is more common and overall cost is minimal compared to repair costs. Powder paint finish is more popular because of its competitive pricing, value and appearance.

WHAT YOU SHOULD DO: Growing? Don't just duplicate the same racking. Prior to the project, slot your products and review product movement. Then consider best options (such as two-deep push back or planned inventory retrieval) to match actual activity. Working with a new vendor? Verify past projects, check references.

WHAT TO AVOID: Don't buy racking without a clear understanding of DC inventory flows and outbound orders. Schedule the project in phases to minimize disruptions to operations.

WHAT'S NEXT? AS/RS systems offer better ROI today because of improved technology and lower software costs. In the future, we project more semi-automated DC's with fewer workers.

Brad Emerson has 22 years experience in storage design and engineering.



Don't miss our next project feature!

279K sf New Distribution Center with stand alone 12K sf truck maintenance facility. This state of the art building has projected overall energy savings of 36%.