

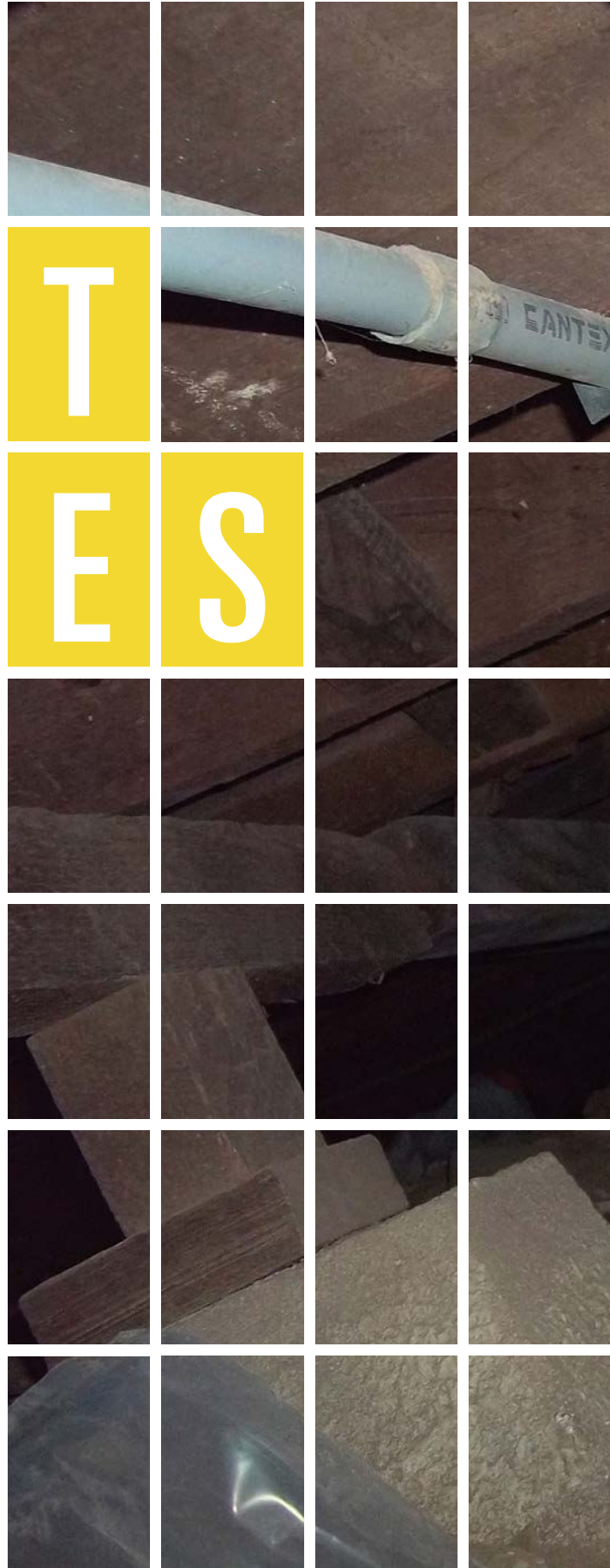
TIGHT SPACES

MSB DISASTER RECOVERY SERVICES SAFELY PERFORMS A DANGEROUS CLEAN-UP BENEATH A HISTORIC BUILDING

By Morgan Buckingham

It was the kind of call no property manager wants to receive. On Sept. 8, 2012, a retail tenant of a major mall management company reported that a floor drain had backed up and there was an odor in the restrooms in one of its historic buildings in Santa Barbara, Calif. A restaurant within the property also contacted its plumbing contractor after drains backed up in several areas. The plumber found standing black water and an open cap on a drainpipe within the crawlspace of the restaurant. The plumber contacted a local restoration contractor to clean and dry the interior of the space. The plumber then returned to remove a blockage from the restaurant's sewer line.

The management company hoped that this would be the end of the back-ups and odor in the building. But its management





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decided that further inspection would be a good idea to ensure the safety of its tenant and the tenant’s customers.

MSB Disaster Recovery Services of Escondido, Calif., found several high levels of moisture across the bottom of the subfloor covering the area’s crawlspace. Additional testing found that the crawlspace had been contaminated with Category 3 water, a combination of urine, feces and other organics that contain dangerous pathogens. Left untreated for an extended period of time, Category 3 water can result in increased bacteria and mold growth. MSB was asked to clean and restore the building.

CONFINED SPACE RULES IN EFFECT

The area by definition was a crawlspace, but it was also a confined space requiring compliance with specific regulations. Under OSHA regulations, a crawlspace is an area large enough and configured so that an employee can enter and perform work, has a limited means of entry and exit and is not designed for continuous human occupancy.

A confined space, according to OSHA, has “limited or restricted means for entry or exit, and it is not designed for continuous employee occupancy. Confined spaces include, but are not limited to underground vaults, tanks, storage bins, manholes, pits, silos, process vessels and pipelines.” OSHA uses the term “permit-required confined space” (permit space) to describe a confined space that has one or more of the following characteristics: contains or has the potential to contain a hazardous atmosphere; contains a material that has the potential to engulf an entrant; has walls that converge inward or floors that slope downward and taper into a smaller area which could trap or asphyxiate an entrant; or contains any other recognized safety or health hazard, such as unguarded machinery, exposed live wires or heat stress.

Even though the cleanup would take several weeks, the restaurant elected to stay open during the restoration. This was the first challenge the job presented. Normally, MSB would have erected containment using 6-mil plastic sheeting and a zipper door to isolate the entry points to the crawlspace, Regina Holman, MSB’s site manager, explained.

Because the restaurant continued to serve customers, MSB sectioned off areas of the restaurant to make hard containment areas framed with steel studs and half-inch drywall with locking door attachments. Its crews removed tables, chairs and booths, but left enough room for employees and customers to work and enjoy the restaurant.

“For cosmetic reasons, we also finished the drywall and painted it on the exterior side of the walls to match the dining room décor,” Holman said.

ACCESS AND CROSS-CONTAMINATION ISSUES

Another challenge was that the building was more than 100 years old. The crawlspace contained decades of debris that had built up from past remodeling projects. The footers of the building were like a maze, which impaired the ability of MSB’s crew to access the affected areas.

With only two entry points into the crawlspace, “technicians were 300 feet away from an access point,” Holman said. “There were several old concrete stem walls throughout the entire crawlspace. These stem walls didn’t have many openings, so technicians would have to crawl through the space until they could find an opening to get through to the other side.”

The crew accessed the crawlspace through the interior of the restaurant and took precautions against cross-contamination into the restaurant space. MSB reduced humidity through ventilation to control airflow and create negative pressure in the crawlspace. Reducing humidity in the area was necessary to prevent a build-up of excessive aerosolized contaminants. MSB installed HEPA air-filtration devices to clean the air and ventilate the crawlspace, as well as manometers to monitor the air pressure.

“We not only had to keep the entire crawlspace under negative air pressure, we also had to provide positive air for the technicians to work in the area,” Holman said.

NO SAFETY SHORTCUTS

Safety was a major concern on this job. Because they were in a confined space, workers were required to wear Dräger X-am 2000 gas detectors. The readings from these detectors were recorded every one to two hours to detect signs of combustible gases and vapors. The team also wore two-way radios to talk to a confined space attendant, who was outside the crawlspace and in constant communication with everyone inside. Heat and dehydration were huge concerns, so the technicians took more water breaks than normal.

Photos courtesy of MSB Disaster Recovery Services



Before: Discarded building materials blocked passage inside the crawlspace.

After: MSB removed and disposed of the debris. This allowed the crew to set up drying equipment and remediate the damaged structure.

Before: The subfloor, seen here from the crawlspace, had been damaged by high levels of moisture and apparent mold growth.

After: MSB vacuumed, cleaned and sanitized the subfloor and reduced moisture levels to acceptable standards.

Before: The wooden structure in this photo had microbial growth caused by secondary damage from moisture.

After: MSB was able to restore the wooden structure to an acceptable condition.

Throughout the removal and cleanup, there were routine inspections, monitoring and constant use of personal protective equipment (PPE), including Tychem suits, gloves and full-face respirators. Within the containment, decontamination areas were set up for workers entering the crawlspace so they could suit up in and remove PPE. MSB also used HEPA-filtered vacuums to remove any contamination from the workers.

CLEANING THE CONTAMINATION

During their efforts to clean the historical building, workers removed all sewage-saturated debris and contaminated topsoil. They placed the contaminated soil in double-bagged, 6-mil plastic bags and properly disposed of the material. A three-step, bio-based formula designed to utilize the “good” bacteria was applied to the affected areas, allowing live bacteria to digest the soil load and convert it into water and carbon dioxide.

To remediate the Category 3 water damage, workers used HEPA vacuums, hand scrapers and wire brushes to extract particulates. The bottom of the subflooring and joists were contaminated with microbial growth; once the

contaminated particulates were removed, the area needed to be disinfected. A peroxide solution was applied to the contaminated area. The foaming solution lifted materials to the surface and took about 24 hours to completely clean the surfaces. After the peroxide was applied, a disinfectant was used to kill the surface mold growth.

Once the crawlspace was brought to an acceptable moisture level, the drying equipment was removed and an industrial hygienist (IH) performed bacteria testing of the soil, as well as air tests inside the crawlspace. Once the IH cleared the crawlspace, workers began repairing the subfloor where access holes had been installed for the containment areas. The company then worked with the restaurant to reinstall tables, chairs and booths.

The project took about six weeks and MSB crews faced many challenges not normally encountered on a Category 3 loss. However, restoring the 100-year-old building allowed the company to highlight its expertise and illustrated the ingenuity restoration firms demonstrate every day. *RIA*

Morgan Buckingham is a former intern with C&R magazine.