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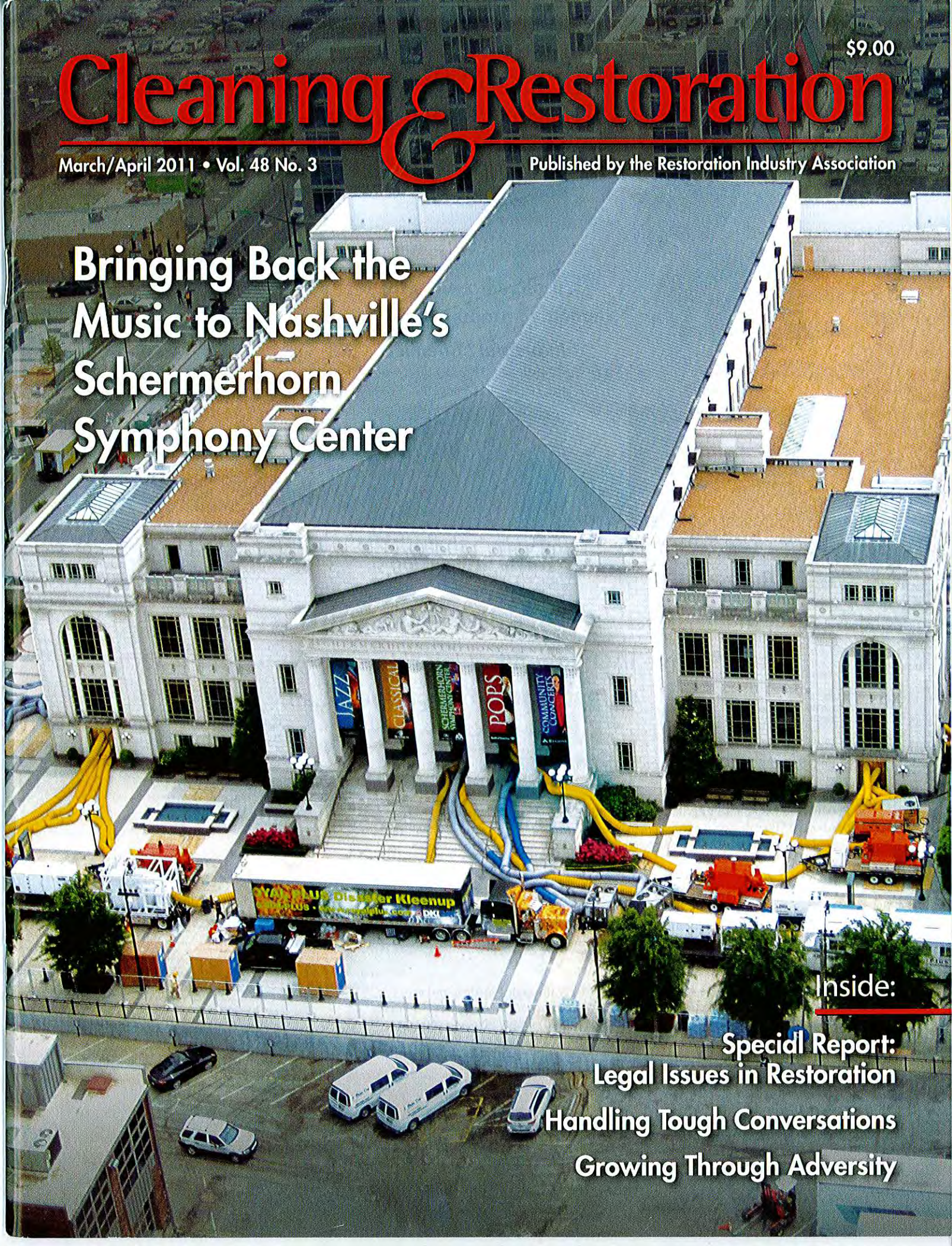

Bringing Back the Music to Nashville's Schermerhorn Symphony Center

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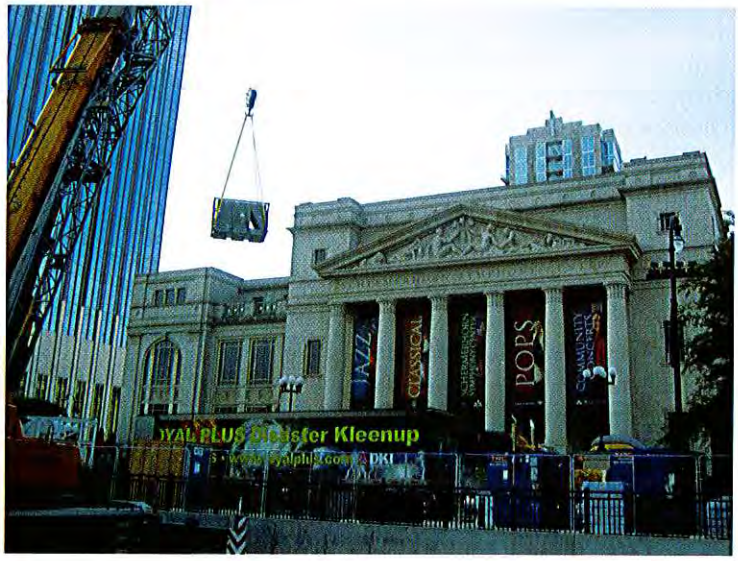
Dehumidifiers and temporary ducting maintained proper humidity levels and prevented secondary damage from mold and other contaminants inside the structure.

Bringing Back the Music: The Schermerhorn Symphony Center Restoration Project

Story and photographs by Patricia L. Harman



Royal Plus established a command center in front of the Symphony Center to coordinate crews and equipment.

Early last May, torrential storms dumped more than 12 inches of rain across Tennessee in a two-day period, causing massive flooding throughout the state. One of the hardest hit areas was Nashville, where the Cumberland River crested more than 12 feet above its banks. It flooded downtown Nashville and a host of famous attractions, such as the Grand Ole Opry, the Opry Mills Mall, the Opryland Hotel, the Country Music Hall of Fame, Soundcheck (where musicians store their instruments when not on tour), and the Schermerhorn Symphony Center.

RIA members worked throughout Nashville and the rest of the state, drying and restoring buildings and contents as quickly as their crews and equipment allowed. They brought in teams of workers, supplies, and equipment from across the country to help with the hundreds of projects that required immediate attention. Royal Plus DKI worked on several high-profile projects, including the Country Music Hall of Fame; a private collection of irreplaceable items, including Jimi Hendrix's guitars, MTV awards, Oscars, and Elvis Presley's instruments; and the Schermerhorn.

Setting the stage

Five million gallons of muddy flood water poured into the basement of the Schermerhorn, damaging the pipe organ console and blower, the catering kitchen, thousands of dollars worth of instruments that were part of the Nashville Symphony's Instrument Petting Zoo for school children, and some of the musicians' personal instruments. Also affected were the electrical and HVAC systems, switch gears, special acoustical treatments, and four lifts used to raise two Steinway grand pianos (valued at $100,000 each) and the orchestra from the floor below to stage level.

The water rose 24 feet and damaged two floors of the five-story building (four floors plus the basement). It came in so quickly that staffers were unable to rescue any of the instruments stored in the basement. Initial estimates of the damage were $15 million, with $10 million covered through flood insurance.

The 197,000-square-foot building opened in September 2006 at a cost of $123.5 million. It is considered one of the premier symphony halls in the country because of its acoustic design and interior finishes. John Madole, vice president and executive in charge of specialty projects with American Constructors, Inc., oversaw the building construction, as well as the restoration efforts after the flooding.

He explained that the building is a reinforced concrete frame structure that rests on 237 caissons drilled 35 feet down into the ground. Two concrete buildings actually compose the Symphony Center. An inner building holds the Laura Turner Concert Hall, and an outer building houses the lobbies and offices. The inner building has 12-inch solid concrete walls, as well as precast concrete ceilings. The outer building is eight inches of solid concrete and runs parallel to the 12-inch interior building walls. There is a two-inch gap between the buildings that allows the membrane walls to vibrate separately and prevents noise from the lobbies and outer building from intruding into the concert hall. The building's roof actually rests on the eight-inch concrete wall.

"This is the largest recording studio in Nashville," said Madole. "It is a single-use facility designed for symphonic, nonamplified music." A two-second reverberation time is accomplished through architectural details in the concert hall.

Natural light enters the concert hall through 30 specially designed soundproof windows. Velour drapes provide additional sound deadening inside the concert hall. All finishes are real plaster to assist in diffusing the sound, and since the hall is used for a variety of performances, an automated system of movable banners and panels adjusts the acoustics to suit the musical genre.

The Laura Turner Concert Hall features 1,844 seats divided among three levels. It was built in a classic "shoebox" layout—long and narrow—and is modeled after the concert hall in Vienna. The variable height ceiling throughout the hall helps to enhance the sound clarity for both the performers and the audience. The coffered ceilings are part of the sound diffusion in the hall, as are the walls, which help to diffuse high notes. The architectural details and furnishings have been so refined to achieve maximum sound diffusion that during the winter, heavy coats are not allowed into the concert hall because they will provide too much sound absorption.

In the first few weeks, Royal Plus ran crews 24/7. On-site caterers prepared four meals a day since nothing was available nearby.

Fortunately, the concert hall was spared from the flooding, but the floors below suffered extensive damage. Just underneath the concert hall are motorized chair "wagons" that lower rows of seats into a special storage space in the basement so the venue can be set with tables and chairs. It can even be used as a dance floor for events. These wagons were severely damaged by the floodwaters and were part of the systems that had to be replaced. The concrete floor where the chairs are stored when not in use buckled under the hydroscopic pressure, and had to be removed in pieces. Then, a new floor had to be repoured and rebar was added to prevent it from buckling in the future.

The Martin Foundation Concert Organ

One of the truly remarkable instruments in the symphony center was the Martin Foundation Concert Organ. Valued at $2.5 million, the custom-built organ extends more than four

The console of the Martin Foundation Concert Organ is prepared for shipment to determine if it can be restored. Sadly, the damage was too extensive.

stories and comprises 3,568 pipes ranging from three-fourths of an inch to 32 feet, 47 voices (tone colors), three manual keyboards, and one pedal keyboard. The pipes are made of wood, sugar pine, poplar, tin, zinc, and lead. Some of the pipes are more than 100 years old and were taken out of old vaudeville organs.

"The mahogany case for the organ was built in Nashville, but the organ itself was constructed in San Francisco," explained Madole. It took two years to build the organ and another seven months to install and tune it. Sadly, the organ console was so badly damaged that it could not be restored and will have to be replaced.

The complexity of the organ added to the challenge of drying the building and preventing more moisture damage. A separate containment system that spanned all four stories was built so the organ could be in a climate-controlled environment separate from the rest of the building.

Restoration begins

"We ran on generators for the first 2 ½ weeks," said Matt Odachowski, president of Royal Plus DKI. "There was damage to the HVAC system, building automation systems, security, audio/video, switch gear panels, chair lifts, and instrument lifts to the stage."

In the first few weeks, Royal Plus ran crews 24/7. Caterers on site prepared four meals a day since nothing was available nearby. Food choices for the meals were as varied as the nationalities of workers at the site.

Negative air was set up through a series of 20-foot plenums. Since they were pulling from four different areas within the building, Royal Plus had to be careful to prevent cross containment in the building. They monitored the water table constantly to make sure the water being pumped out of the basement into the sewer system didn't make its way back into the building. Three weeks after they'd started, the company was still pumping out water.

The approach to such a multi-faceted project required that the biggest issues and risks be addressed first. An evaluation team comprising an HVAC contractor, electrical engineer, mechanical engineer, and the water restoration team identified the priorities and how they would be handled.

Royal Plus was hired for the mitigation aspects of the job. There were four teams with extraction trucks on site once the water finally receded. Goggles, boots, and gloves were sanitized every day. "From the lowest section to the highest water level was 24 feet," said Odachowski. "We had to pump slowly to make sure we didn't create more damage with the hydrostatic pressure."

Quick action by Royal Plus to manage the humidity levels in the music library prevented it from suffering any damage

The value of the structure and contents was a primary concern, as were the construction details because of the interplay between the furnishings, finishes, and their acoustical properties. Moisture mapping was done around the clock so the team could see where they were making progress and where they had to make adjustments or place more equipment to dry out the building.

The music library that houses the symphony's sheet music was the first place protected once the water was out of the building

This is just a small portion of the equipment needed to dry out the 197,000-square-foot building.

because of the humidity. Quick action by Royal Plus to manage the humidity levels in the library prevented it from suffering any damage.

The company provided several weeks of demolition, drying, cleaning, and climate control for the center. Desiccants had to be lifted into the building to get them into locations where they were needed. Traffic and parking were also issues due to the downtown location. The company had to rent 100 parking spots for its equipment and vehicles.

In the basement, the kitchen was a mixture of mud, muck and food since the freezers blew out some of their contents—there were hams in the ceiling—and the grease traps blew back into the room as well. Because of the level of contamination and extent of the damage, everything in the kitchen had to be replaced.

"Every day has been a challenge," said Odachowski. "This has been one of the most unique jobs I've ever had to do because of the climate issues."

Just eight months after the nightmare began, the Schermerhorn Symphony Center reopened with a New Year's Eve concert by renowned violinist Itzhak Perlman and the Nashville Symphony. Perlman was so honored to be a part of the concert that he left a family vacation to play at the reopening.

The total price for the restoration project was almost $40 million, and encompassed the damage restoration and mitigation, the replacement of the mechanical lifts, a new kitchen and contents, instruments, a new HVAC system, and new electrical wiring.

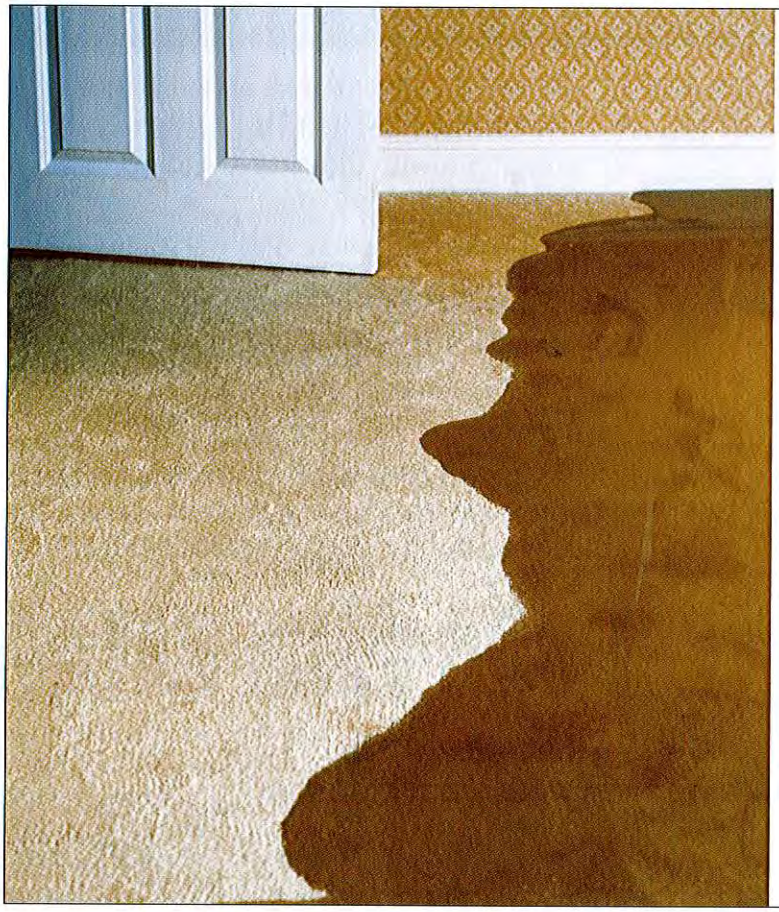
A number of improvements have been made to protect the building and its contents in the event of another flood. "If we're ever in another event like this," said Jonathan Marx, director of communications for the Nashville Symphony, "we'll be in much better shape."

A flood emergency plan was created and is in the process of being executed by the staff. The sump pump system was redesigned to expand its capacity. Critical equipment, particularly the elevator system, was added to the emergency generator. This will allow staff to use the elevators to quickly move instruments and equipment out of the basement. Doorways were added and existing ones were widened to facilitate evacuation of critical items.

Major pieces of equipment have been outfitted with casters to make them more mobile. A new HVAC system was installed and critical components were raised off the floor to protect them in case of future flooding. A groundwater monitoring system was installed to provide early warnings if the water levels under the building begin to rise.

"After all of this," said Marx, "we're enormously grateful to be back to normal." ■

Patricia L. Harman is the editor-in-chief of Cleaning & Restoration.



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