

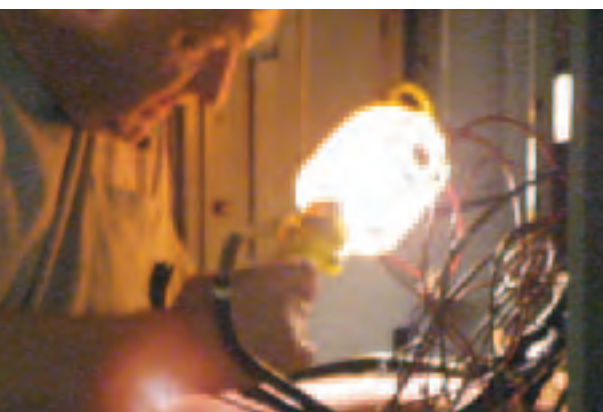
TULANE UNIVERSITY RECOVERY— BELFOR'S FULL-SERVICE SOLUTION



Case Study

Tulane University

Hurricane Katrina Restoration



BELFOR 
PROPERTY RESTORATION



August 29, 2005
Hurricane Katrina makes landfall at the
Louisiana/Mississippi border as a Category 3 storm.

BELFOR USA was contracted
by Tulane University officials.

Tulane University is one of the country's leading private research institutions. Founded in 1834 in New Orleans, it is home to 11 schools and colleges offering undergraduate, graduate and professional degrees in architecture, business, engineering, law, liberal arts and sciences, medicine, public health and tropical medicine and social work. At the beginning of the fall semester in 2005, there were over 13,000 students enrolled in the University.

"This was the biggest single restoration project in company history," stated Theresa Williams, BELFOR USA Executive Vice President Sales and Marketing. "We were working on 62 buildings with varying degrees of damage and that was just on the Uptown Tulane campus in New Orleans. We had 25 more, for a total of 87, that operated within the Tulane System spread out across the city and the region, with more than 1,500 people working on all of them. We also brought in 40 highly specialized technicians from our European offices to support all of the electronic and mechanical restoration and replacement."

Overall, such a large-scale project looked to be a formidable challenge. However, throw in the University's deadline request for BELFOR to complete all clean up and restoration services by December 31, 2005 and to some, it would have seemed impossible.

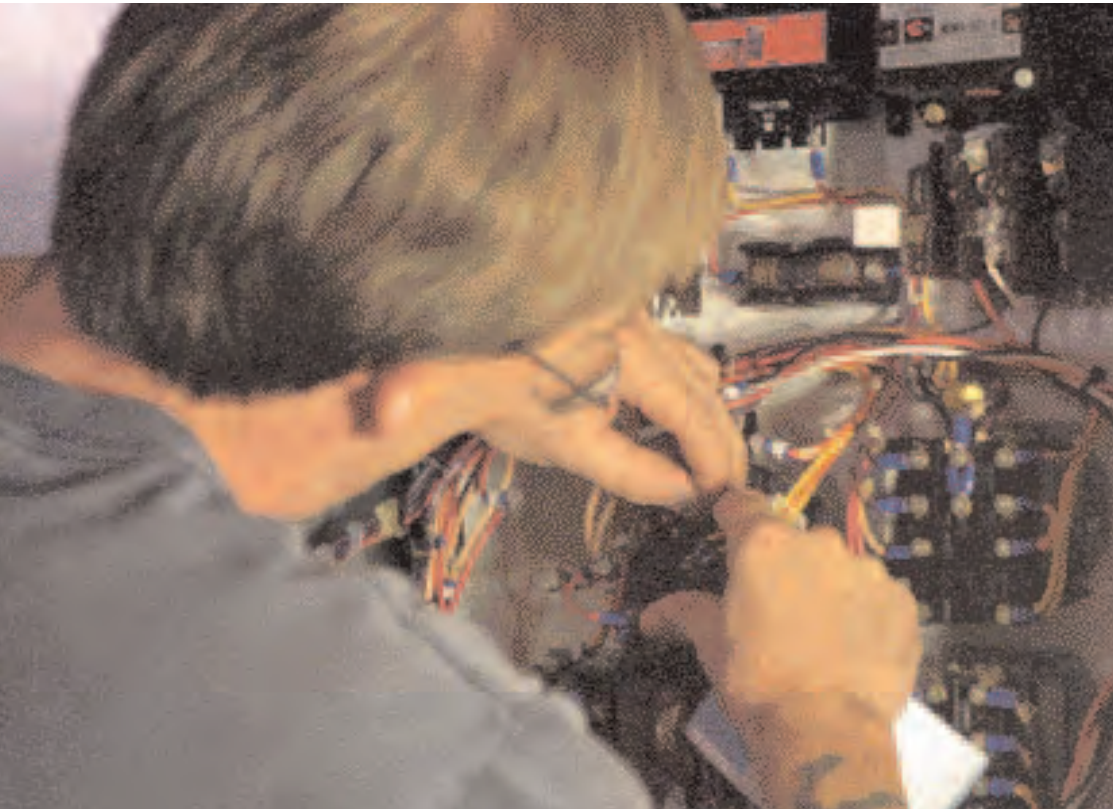
"It was a massive undertaking, no doubt about it, but it's something we had to do," said Kirk Lively, BELFOR USA Director of Technical Services. "School was essentially shut down on the campus and there were thousands of students waiting to return. Tulane is one of the nation's premier universities and an important part of this city's heritage, not to mention the significant economic role it plays in academic studies and research. It was absolutely vital to get it back up and running in January 2006 so the spring semester could begin as scheduled."

A wave of destruction Though anything was possible, the sheer fact that Tulane University would flood was far from the minds of most New Orleanians. The University is miles away from the banks of Lake Pontchartrain and the levee breach at the 17th Street Canal. However, as the massive amount of water poured in, University officials prepared for the worst. When they arrived on campus, they were met with the unsettling knowledge that, although things were not as bad as they could have been, the situation was definitely serious. While most buildings weathered the hurricane well, 75% of those located on the back half of Tulane's Uptown campus between Freret and Claiborne Streets sustained water damage. Every building north of Freret Street was damaged, and 90% sustained some level of water damage. Shortly after assessing the damage, University officials acted quickly and called BELFOR.

School officials met with BELFOR representatives at the Houston office.

BELFOR assessed the campus and devised a plan of action.

Electricity was restored on campus.

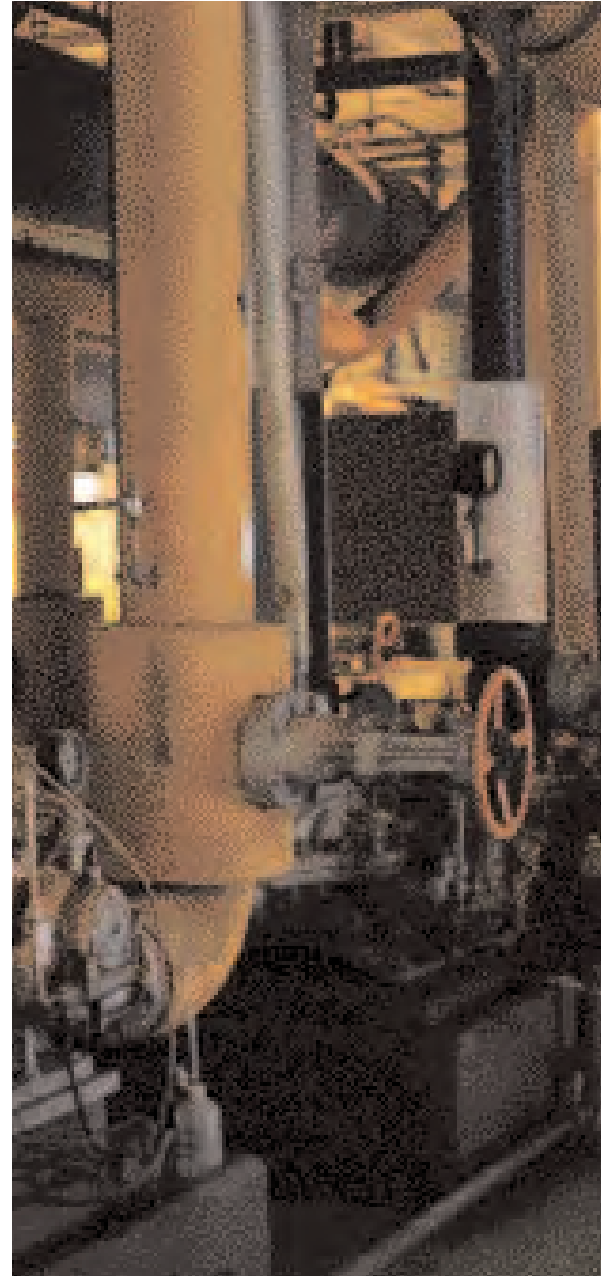


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1. BELFOR cleaned out all of the switchgear and transformers in each individual electric vault, which saved Tulane restoration time and thousands of dollars in equipment.
2. To eliminate potential risks, protective gear including hard hats and respirators were required of all BELFOR employees at all times.
3. BELFOR worked to decontaminate and remove corrosive material from the bare metal surfaces on a large electric motor.
4. High-voltage terminals on all large electrical switches were decontaminated.
5. BELFOR assessed and disassembled contaminated electrical and mechanical components to allow for thorough ultrasonic cleaning.

Generators were put into place to provide temporary and ambient temperature control.

Demolition and initial clean up of the Uptown campus began.



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1. BELFOR removed over 95,000 cubic yards of damaged contents and debris from the Tulane Uptown Campus.
2. Pipes and mechanical equipment in low-lying areas across the campus, like these at the Physical Plant Logistics Building, were partially submerged and had to be cleaned and repaired.
3. BELFOR management and project leaders assembled each day to determine key paths of action and evaluate progress.

All damaged materials were removed and discarded.

Drywall was removed to ensure any potential mold growth was eliminated.

Mold remediation took place. HEPA vacs were used to filter air.

The following is a brief overview of the process BELFOR incorporated to bring Tulane University back for its students, faculty, staff and the city of New Orleans.

Immediately following the hurricane, BELFOR USA was contacted by Tulane University. School officials met with BELFOR representatives at the Tulane temporary command center located at the Four Seasons Hotel in downtown Houston to discuss the arrangements of a partnership.

Shortly after, BELFOR team members were dispatched to New Orleans to tour the flooded campus in boats and Hummers, assess the damage, and formulate a plan of action. A broad overview of BELFOR duties was determined:


- The removal of water from buildings primarily between Freret and Willow Streets
- The protection of undamaged areas from humidity
- The recovery of vital documents from libraries
- The restoration of power to campus
- The security of the campus, as well as all student, faculty and staff belongings
- The removal of debris and trees
- The repairing of all buildings damaged by the storm
- The reconstruction of interior areas

Initially, one of the most important issues was to get power to the campus, whether temporary or via generators. The University had an off-site power plant that normally provided half the campus with electricity and was used to keep critical items on line when power went down. However, during the storm the power plant was flooded with about 18 inches of water. BELFOR's team immediately went in, pumped water out and cleaned the switchgear and transformers to get the house mechanical and electrical back up and running to the front part of the campus. Team members assessed the bottlenecks in the switch system and determined key buildings on which to begin work due to their location on the power loop that distributes electricity to the others. BELFOR then went to work on

the back portion of campus, cleaning out the individual electrical vaults in each building to get them back on line. Without this important step, it would have been necessary to purchase new equipment, which would have delayed the project for weeks. BELFOR saved Tulane months of time and a significant amount of money.

Simultaneously, a mass of generators was brought in to power other buildings and deliver temporary ambient control to the upper floors, which prevents high heat conditions and the onset of mold and additional deterioration. One of the most problematic areas was the basement of the Howard-Tilton Memorial Library, which had flooded with eight feet of water. This area housed the University's music library, microfilm collection, Government documents, and protected storage collection, and Tulane administrators feared they would be completely destroyed. However, BELFOR moved quickly and was able to drain the water and retrieve 12,000 boxes of valuable books, film and documents. The items were stored in freezer trucks and moved to a large storage freezer at BELFOR's base operation. From there, these precious items were shipped to one of three document centers where they underwent processing, which also involved gamma radiation treatment to kill all contaminants. In addition, because of BELFOR's quick action in providing refrigerated, dry air to the top portion of the building, the first floor and all upper floors of the library escaped damage, were tested and passed all air quality clearance tests.

A master plan was developed for the Tulane Uptown Campus consisting of all 62 buildings that had some form of damage. Project managers broke that into seven different groups with seven different start dates. Estimated completion was between 50-60 days per building and each phase was timed to meet the December 31st deadline. After the water receded and was pumped out, demolition and the rough clean was initiated. Crews began hauling out materials such as desks, computers, documents and more, separating these into contents that could be salvaged and those that could not.



The buildings passed the set protocol air tests.

New drywall was prepared.

BELFOR...a single source

BELFOR is one of the few companies in the U.S. with the ability to complete a project of this magnitude, especially while simultaneously working on other projects around the city. The Tulane project was also unique in the fact that every single service BELFOR offers was utilized, from structural dehumidification to mold remediation, document restoration, structure and contents cleaning, and electrical and mechanical decontamination. BELFOR is also one of the world's only companies that offers all of these services from a single source. This proved to be a valuable asset for Tulane.

Having the manpower, massive resources and technical expertise that BELFOR commands would mean little without the organizational skills and time-tested process its leadership brings to every job. Nowhere was this more important than on a project of this size and magnitude.

Final cleaning included the removal of all damaged materials and then dry wall was cut out three feet above the waterline to ensure that any potential wet areas and mold growth would be removed. These materials were removed, disposed of in dumpsters and hauled away.

Mold remediation took place next as HEPA (High Efficiency Particulate Air) Vacs were used to pull air out through a filter removing 99.97% of the mold spores. BELFOR followed a formal protocol for mold remediation developed by a third-party industrial hygienist firm hired by the University. This protocol requires verification that all mold and mildew has been removed before replacement of sheetrock and carpet can begin. Tulane University had its own standards to prevent mold and moisture in its buildings and BELFOR was required to adhere to those rigorous rules to ensure that all buildings were safe. The final portion of the protocol required air testing within the building. If the mold clearance criteria were not achieved in a building, a re-inspection by both BELFOR and the IH team would be performed to locate hidden damp areas or other previously undetected sources of mold. Then, the entire area would have to be re-cleaned until there was no mold. Only after passing the test could the reconstruction efforts begin.

In the final stage of the reconstruction process, BELFOR crews completed all the necessary work which included roof repairs, acoustical ceilings, insulation, plumbing, electrical, HVAC, drywall, cabinetry, doors, painting, finish carpentry and floor covering. The reconstruction group's biggest challenge was performing product take-offs in cumbersome tyvek suits and respirators while demolition and mold remediation were in progress. This was necessary so long lead-time items, many of which had to be custom made, would be manufactured, shipped and installed on a timely basis to meet the December 31 deadline.

Finally, all additional repairs were made to the buildings damaged by the storm and the campus was cleaned of excess limbs and debris.

By the end of November, great strides had been made across the campus and students were beginning to return to prepare for the next semester. Ultimately, BELFOR met its goal and a grand opening celebration took place for returning students on Monday, January 16, 2006.

All rooms were repaired to their former state.

The campus was cleaned of excess limbs & debris.

January 17, 2005
Students returned to campus
for the Grand Opening Celebration.



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1. The upper floors of buildings received immediate attention with dry air in order to stabilize the interior environment and prevent further deterioration.
2. Workers cut out wet drywall from the structure to ensure any potential wet areas and mold growth were removed.
3. A desiccant dehumidifier was used to remove damp air and pump dry air into the building in order to stabilize the environment.
4. BELFOR is dedicated to safety and employees are always properly outfitted and taught the best ways to avoid potential risks.

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