GRUNAU GRAM

Spring 2011

Spring is a time of renewal: new ideas, new projects, new customer relationships. With the still sluggish economy, Grunau continues to look for better ways to bring value to our customers and expand our customer base.

This spring, we trained another batch of Lean Construction Leaders to provide direction to our newest Lean teams. These teams of employees are working on streamlining our internal processes to reduce waste and provide better value.

Our Orlando fire protection project for NASA speaks to the emphasis we place on building relationships with our customers. You may recall our earlier NASA project was with Grunau Metals and featured in our Spring 2009 GrunauGram. We have expanded our ties with NASA by landing another project that you'll read more about in this issue.

Aurora is another customer with whom we've built a solid relationship, and three of our featured articles explain different projects we've completed with them. We realize every one of our employees is a salesperson in the way they perform their jobs, their attitudes, the way they interact on the phone and in person. Grunau's values are not just words on paper—our employees live these values each day and our customers notice the difference.

As you read through these articles, you'll also observe more use of BIM in our projects. This computerized 3-D coordination tool has become a valuable means of reducing wasted time and material in the field by preplanning in advance. This helps ensure all systems fit in the spaces allotted without conflicts with other equipment, piping, etc. These savings allow us to provide better customer value.

If we haven't done any work for you in awhile, we hope to renew that relationship to prove once again we are the right contractor for the job. If we just saw you last week, we hope you'll remember us when your next job arises so we can fulfill our commitments to be customer focused and built on values.

Lawrence E. Loomis
President, Grunau Company

HOSPITAL HVAC ON A WHOLE NEW LEVEL

Based on Grunau's work at Aurora Healthcare's recent hospital in the town of Summit, Aurora asked the team to install HVAC systems for its new 500,000 square-foot facility in Grafton, Wisconsin. Eighteen months and 215,000 man hours later, Grunau had helped transform the Grafton farm field into a fully-functioning hospital.

Earning LEED certification for green building is a top priority for many companies today. Grunau helped Aurora fulfill LEED requirements by installing energy recovery chillers, which are used for both heating and cooling. To supplement the energy recovery chillers, Grunau added two large water-cooled chillers for use in the summer months, and interim air-cooled chillers for use during the winter when the water-based cooling towers are at risk for freezing. The hospital also has a separate air-cooled chiller for surgical areas.

The building's heat is supplied by four super high-efficiency hot water boilers, installed by Grunau. These boilers can go from completely off to full steam within 10 minutes — much faster than standard boilers. They save money and energy because they can be turned on only when needed, without wasting additional time to warm up.

On the roof, Grunau installed 10 air handling units, including seven massive units that created several unique challenges. Each unit was the size of a small building and required six to eight semis for transportation to the building site. Grunau used the biggest hydro crane available to lift them into place and took extra care to ensure the giant units were level.

The sheer scope of the piping and medical gas systems required for the hospital was also impressive. Grunau installed medical gas lines, including oxygen, nitrogen, medical air, vacuum, CO^2 and nitrous oxide, throughout the building. Teams also installed 31 independent zones of steam humidification. The variety of humidification levels helped protect medical machinery and maintain the correct environment for the facility's 16 operating rooms.

In an effort to better coordinate with other trades on the project, Grunau used 3D Building Information Modeling (BIM). This process allows teams to see a virtual 3D model of the project before beginning work. By identifying potential problems virtually, teams can more easily prevent them on the job, saving money, time and effort.

"The project went extremely well," said project manager Mike Selas. "The entire team was outstanding to work with. Collaboration with the owner and designers, along with our suppliers and other construction trades allowed the project to be completed on time and under budget."

Energy Recovery Chiller

HVAC Components

Grunau installed large-scale HVAC systems to keep Aurora's new Grafton hospital running smooth.

Massive Roof-Top Air-Handler

MAKING HEALTHCARE HVAC GREEN

In addition to its new hospital in Grafton, Aurora built a three-story outpatient care building in Wauwatosa. Grunau was awarded the HVAC installation, and worked with the same construction team and owner as it had during an earlier Aurora project.

Aurora wanted the building, which includes MRI capabilities, rehab and four operating rooms, to achieve LEED certification. To fulfill those requirements, Grunau installed energy efficient units on the roof and equipped the large mechanical room with boilers and a steam generator. The team also protected the building's air quality by covering the ends of ductwork and piping system components with plastic wrap at the end of each day. These efforts will eliminate the need to clean duct and piping systems internally, and reduce risks of contaminated air and water systems.

Instead of working from the ground up, like with most new buildings, this project required Grunau to start its installation on the second floor and then move up, working on the first floor last. To combat that challenge, Grunau took the lead on BIM (Building Information Modeling) coordination for the job. This tool helped organize different on-site trades.

Aurora also wanted to minimize equipment noise in the HVAC system, so Grunau used a combination of duct silencers and heavy sound insulation to keep the ductwork running quiet.

Grunau finished the job on schedule and conducted equipment commissioning in preparation for the building's opening this past April.

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A PRESCRIPTION FOR FIRE PROTECTION

Grunau's PA/OH fire protection branch used BIM to help install sprinkler systems at Butler Hospital. ▶

Butler Hospital in Butler, Pennsylvania, recently asked Grunau's PA/OH Branch to manage fire protection installations for its new 7-story addition.

The project, which lasted 18 months, required approximately 2,000 wet sprinklers and the installation of a 750 gallon-per-minute fire pump to boost water pressure to the sprinklers. Grunau also installed vertical standpipes in each of the building's stairwells. These give fire departments quick access to valve hook-ups on any floor in case of a fire.

Since the addition was connected to an existing facility, Grunau needed to integrate the hospital's old and new fire protection systems in certain areas. The team kept these renovations to a minimum to avoid disruptions for patients and staff in the existing hospital.

The work at the Butler Hospital also marked the first opportunity for Grunau's PA/OH office to use 3D Building Information Modeling (BIM) software to coordinate system installations across a variety of trades — medical gas, plumbing, and HVAC.

"We used BIM extensively. It definitely helped all of the onsite teams stay coordinated. We're looking forward to additional BIM work in the future."

– Randy Rubesa, *PA/OH Branch Manager*

PREPPING FOR LIFT-OFF

When NASA developed a manned space flight vehicle to replace the aged Space Shuttle, it also needed a new Mobile Launcher. Grunau's Orlando branch was awarded a subcontract to provide fire protection for the 400-foot-high structure.

The Mobile Launcher consisted of a base and a multi-leveled tower filled with rocket-science equipment that required a variety of fire protection systems.

Tower sections were constructed on the ground, then crane-lifted into place. However, some installations could only be completed after the tower was erect, and technicians took extra precautions to ensure everything—including themselves and their tools—was tethered safely. Since tower platforms consisted of open grating, any dropped equipment could fall 300 feet unless properly secured. One of Grunau's welders put the finishing touches on his work from a lift basket at 225 ft.

Continued on page 3

NASA's Ares Rocket launch

Grunau's Orlando fire protection office installed a variety of systems for NASA's Ares Rocket launch tower. ▶

"The project required extensive coordination among trades. We were thankful for BIM technology that helped us avoid issues in the field. Our Grunau teams really excel at this type of challenging, enjoyable work."

— Mark Peters, FL *Branch Manager*

Prepping for Lift-Off
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Safety was top priority. Grunau received site-specific training on NASA's strict workman conduct. Due to the tower's height, teams also had to be alert if bad weather got within five miles.

Grunau installed seven pre-action fire protections systems, three in the base and four in the tower, including 234 sprinklers total. On the eighth level, a last-chance-before-you-go astronaut restroom required a single fire sprinkler—the only system utilizing explosion-proof fire alarm signaling equipment. Florida also is not immune to freeze damage, so all water-filled piping utilized a circulating loop arrangement with pumps to maintain motion.

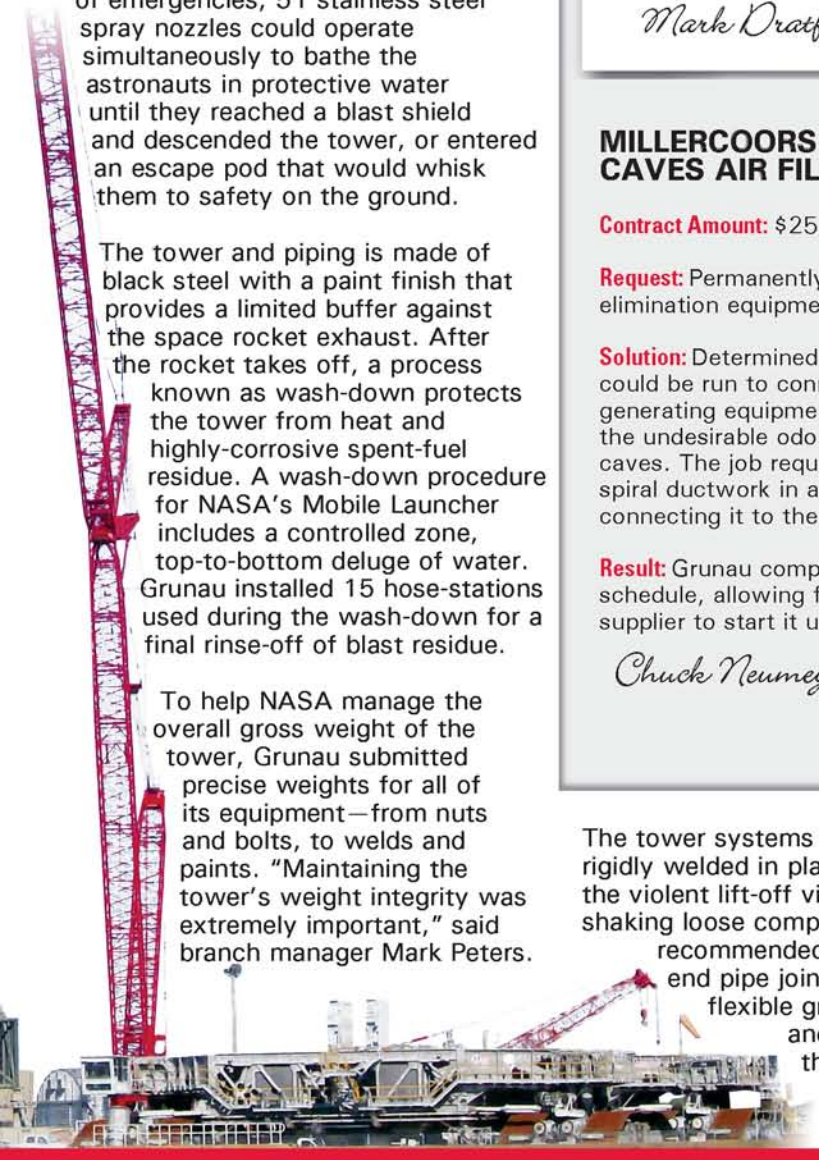
In addition to those basic protection systems, Grunau placed egress water mist systems directly over all the tower's stairwells. In case of emergencies, 51 stainless steel spray nozzles could operate simultaneously to bathe the astronauts in protective water until they reached a blast shield and descended the tower, or entered an escape pod that would whisk them to safety on the ground.

The tower and piping is made of black steel with a paint finish that provides a limited buffer against the space rocket exhaust. After the rocket takes off, a process known as wash-down protects the tower from heat and highly-corrosive spent-fuel residue. A wash-down procedure for NASA's Mobile Launcher includes a controlled zone, top-to-bottom deluge of water. Grunau installed 15 hose-stations used during the wash-down for a final rinse-off of blast residue.

To help NASA manage the overall gross weight of the tower, Grunau submitted precise weights for all of its equipment—from nuts and bolts, to welds and paints. "Maintaining the tower's weight integrity was extremely important," said branch manager Mark Peters.

The tower systems also had to be rigidly welded in place to prevent the violent lift-off vibrations from shaking loose components. Grunau recommended using grooved-end pipe joints and fittings with flexible grooved couplings, and NASA agreed to the suggestion for select locations.

Another unique challenge was the tower's mobility. Because it would be moved by giant tractor crawlers to and from the assembly building and launch site, the tower didn't have a basic internal water supply. Instead, it had to hook up to local water supplies on site.



SPRING SNAPSHOTS

Grunau Company is involved with a wide variety of projects – both large and small – on any given day. These "Project Snapshots" give you an idea of what we've accomplished for our clients on several recent jobs.

DUQUESNE UNIVERSITY

Contract Amount: $922,876

Request: Install complete sprinkler systems for two existing dorms.

Solution: Installed 17 wet systems, 6 standpipes, and 2 diesel fire pumps, including all exhaust, insulation and interlock wiring. The project was led by Chad Mertz, Nick Hoyle and Jim Flook.

Result: The work was completed during summer break in two phases. The majority of the sprinkler systems and standpipes were installed during the first year and the diesel pumps were installed the following year.

Mark Dratfinsky, project manager

DIVERSEY

Contract Amount: $6,751

Request: Install stainless steel wall protection in dishroom.

Solution: Carefully added custom stainless steel metal panels, as well as constructed and installed a removable water diverter to prevent overspray from migrating behind the conveyor.

Result: Customer appreciated the care that our crew took during the project. The panels and removable diverter are aesthetically pleasing as well as practical, satisfying the needs of the client 100 percent.

Dan Cypcar, project manager

MILLERCOORS, MILLER CAVES AIR FILTRATION

Contract Amount: $25,619

Request: Permanently connect odor elimination equipment in the Caves.

Solution: Determined where ductwork could be run to connect the hydroxyl generating equipment to eliminate the undesirable odors in client's caves. The job required hanging spiral ductwork in an arched area and connecting it to the equipment.

Result: Grunau completed the job on schedule, allowing for the equipment supplier to start it up.

Chuck Neumeyer, project manager

ELI LILLY & COMPANY

Contract Amount: $557,000

Request: Investigate existing sprinkler systems.

Solution: Investigated the system per original protocol and worked with the owner [on-going] to improve it. Developed a means in both the field and office to document exactly what was done, what was discovered, where each task took place and what was needed to repair the systems.

Result: The 2010 work consisted of three buildings – B312, Brougher and K100 South.

Most of Grunau's recommended repair estimates have since been budgeted and are scheduled to take place in 2011.

Bob Harlow, project manager

GRUNAUGRAM

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METALS

EXPERTISE ON MEDICAL METALS

Aurora, a 13-hospital health care provider in eastern Wisconsin, planned a new hospital in Grafton and needed a steel contractor who could do it all — they chose Grunau Metals.

Grunau Metals did both structural and specialty metals work for the new hospital campus. In the four-story medical office building, for example, the team supplied and installed structural support steel. Within the main hospital, Grunau Metals also installed steel supports for the brick façade, fire doors and windows — necessary work that often remains unseen in the finished building. They provided ceiling-mounted structural supports for procedure lights, MRIs, X-ray machines and other equipment used in the hospital's operating and patient rooms.

One of the prominent features in the hospital's atrium entrance is a three-story set of ornamental stairs, complete with decorative glass hand railings. Grunau Metals fabricated the stairs in sections at its shop and transported the completed structures to the hospital site for installation and finish work. In addition to the main ornamental staircase, Grunau provided the hospital's metal egress "fire escape" stairs, and added steel support structure for artistic panels in a fourth floor courtyard.

"We worked alongside several different trades, so teamwork was very important," said project manager Brad Landry. Having multiple Grunau divisions onsite allowed for better collaboration, communication and problem solving. The metals team, for example, installed support steel for the air handling and piping done by the Grunau mechanical team.

The project, which took a little over a year to complete, was finished on time thanks to Grunau Metals' hard work and broad expertise.

Grunau Metals fabricated and installed the decorative specialty metals staircase in the atrium of Aurora's Grafton hospital. ▶

TECHNICAL CONTRIBUTORS

President's Corner – Larry Loomis, *president*
Aurora Grafton HVAC and Plumbing – *Mike Selas, project manager*
Aurora Mayfair HVAC – *Ron Kwiatkowski, vice president, design/build*
Butler Hospital – *Randy Rubesa, fire protection branch manager, Youngstown/Pittsburgh*
NASA Mobile Launch Tower – *Paul Robertson, project manager*
Project Snapshots – *See individual snapshots for contributing project manager*
Aurora Grafton Metals – *Brad Landry, metals division manager*