

GRUNAU GRAM



EXCELLENCE SINCE 1920

Mechanical and Fire Protection Contractors and Engineers

Spring 2004

The President's Corner

by Paul Grunau

Welcome to the Spring 2004 issue of the GrunauGram! As we emerge from another winter we are hoping for warmer temperatures (although as I write this it is 40° with blustery winds), and a much improved economy. Let's hope both happen!

One of the features you will find in this issue is the work of our Grunau Metals Division. Grunau Metals is a specialty metal fabricator, providing a wide range of fabrication services, including both commercial items such as stairs, handrails, platforms, and specialty reinforcing, as well as technical items such as wind tunnels, crane rail/equipment moving systems, and skid mounted packages for third party manufacturers. Although this business has been part of our company for 25+ years, it has really come into its own in the last five years. During that period our team has expanded into new markets, and widened their geographic reach to include most of the Upper Midwest.

So why I am telling you all of this? Well, we sometimes assume, incorrectly, that our customers know all about us. When we talk with our customers, however, we often learn that their knowledge of our business is limited, and they don't know the full range of our services. Our Grunau Metals business, in our admittedly biased view, is a terrific business, led by an excellent team. We continue to find new ways to help our customers advance their business objectives.

I encourage you to take a moment to explore this issue of the GrunauGram. Our entire team is very proud of our participation in the featured projects. We are particularly proud of the role we continue to play in advancing our customers' business objectives. We all understand that our success is a result of being part of our customers' success. Thanks to all of our customers for their continued support and trust in our team.

The Milwaukee Theatre

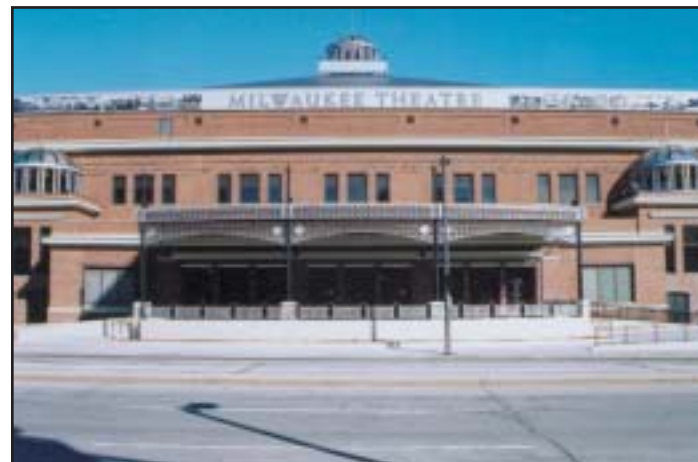
Located in downtown Milwaukee, next to the U.S. Cellular Arena on Kilbourn Avenue, the grand reopening of the newly renovated Milwaukee Theatre took place in early November 2003. The original auditorium was built in 1909 with a construction cost of just under \$500,000; the two-year renovation project cost was approximately \$42 million.

Grunau provided the HVAC and Plumbing on this historical renovation. The HVAC system consists of a custom HVAC unit to serve the main auditorium and rotunda. With specific control sequencing, the HVAC system provides conditioning for the majority of areas, including the auditorium, rotunda, and ticket lobby. Separate HVAC units are dedicated for the stage area, dressing rooms, and ticketing office. Two (2) 300 ton air-cooled chillers are used for supplying chilled water. The chillers were erected to provide required cooling and on demand during a select few days in off season. The steam supplied by WE Energies is used for space heating, humidification and domestic heating.

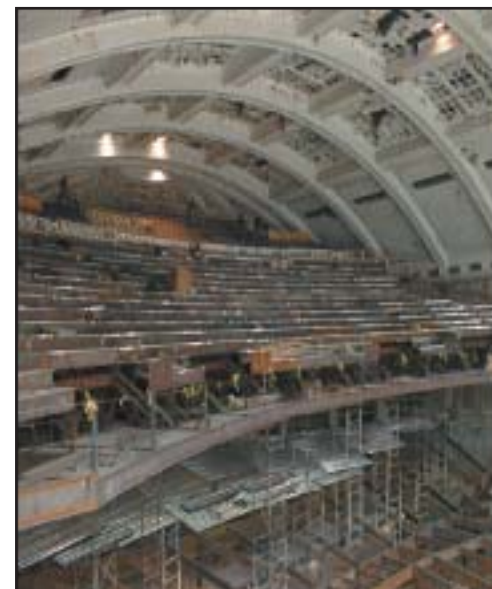
Grunau also installed a new plumbing system which included: instantaneous steam water heaters for the hot water system; automated dispensers, including flush valves; faucets at sinks; soap dispensers; and paper towel dispensers in all public rest rooms.

The construction spending and cost savings required re-evaluation of the HVAC and plumbing design. Most of the existing sheet metal ducts were integrated with new HVAC equipment. Several other value engineering modifications were implemented. The temperature control system is integrated with the Midwest Express Center system and the U.S. Cellular Area. All the buildings in the complex can be monitored from any single location.

The construction team faced several challenges with integration of the new areas into the 95 year old structure. With Grunau Company expertise and joint team effort of Johnson Controls, United States Fire Protection and Insulation Industries, Inc., along with other construction teams, the project was successfully completed.



The Milwaukee Theatre



Auditorium Before Final Finishes



Pump Room



Typical Air Handling Unit

GRUNAU METALS

Grunau Metals added to the interior and exterior architecture of the Milwaukee Theatre renovation/addition project with the fabrication and installation of specialty metal items below:

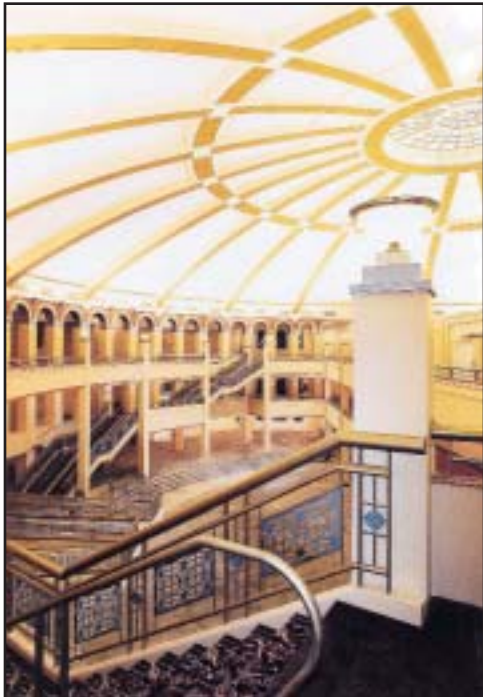


Photo by Erol Reyal

The half-round Rotunda Lobby is enhanced by two grand multi-story staircases, and a domed ceiling with a mirrored wall to give the space a look of twice the size.

Handrails with decorative plasma panels and Milwaukee (MT) logos are seen throughout the area.



Catwalks, stage ladders, and platforms along with various handrails, seating stairs and light support bars are located inside the theatre.



Additionally, the balance of the building has more than 18 other stairways (general public and access).



The exterior along Kilbourn Avenue features two canopied entrances with radius cut plasma panels, spiked spires and MT logos set in at column bases. Multi-layered laser cut aluminum frieze panels with various artwork of Milwaukee wrap around the exterior along the top of the exterior walls.



The Mecca sign was modified to support new electronic signage and added spires and a large 4'-0" diameter MT logo at the top.



The exterior has hundreds of feet of various styles of guardrails/handrails from 2-line at service entrances and plasma cut panel and vertical picket style along Kilbourn Avenue entrances.

The size and schedule of the MTD project necessitated the formation of a team to complete the metals work on this project.

Fabricators: Grunau Metals, Badger Railing, Rebechini Studios, and others.

Installers: Grunau Metals, Great Lakes Contracting, and Milwaukee Ironworks.

Biogenesis

In May of 2003 the Biogenesis Company, headquartered in Oak Creek, Wisconsin, took delivery of four pieces of equipment. Three pieces were slated for Venice Italy. They consisted of a cavitation unit, collision skid with mix tank, and preprocessor unit with mix tank. A second collision skid was sent to New Jersey. Significant improvements were made on all these units with input from the Grunau Metal Fabrication Shop/Division, Weld Shop, and Electricians.



St. Luke's Medical Center Cardiac Center and Patient Tower

Grunau Metals acted in a support role for Grunau Mechanical fabricating various supports and hangers for all trades. They designed, fabricated and installed 58" diameter 1/4" plate breeching, including expansion joints, from the Powerhouse to the existing chimney. Breeching ran over different height roofs and was supported by structural steel. We worked with Gibraltar Chimney with the header steel and metal sleeve that connected to existing smoke stack. Insulation Industries completed the project with the thermal insulation coating.

ST. LUKE'S MEDICAL CENTER Cardiac Center and Patient Tower

The new Cardiac Center and Patient Tower Project at St. Luke's Medical Center was a major undertaking for the entire project team. The project was constructed in the middle of the SLMC campus starting at the 6th floor level of an existing parking structure and rising up 7 stories above the structure while the hospital remained in operation. Communication, coordination, and execution were very critical for the success of the project. Grunau Company, Inc. was contracted to perform the HVAC work for the project.



Typical Patient Room Floor

Due to extremely tight site logistics caused by a work site that began 6 stories in the air surrounded by a fully operational hospital, major coordination was involved from the start to manage the construction of the project. Grunau took the lead in the coordination process by developing the HVAC CAD drawings then overlaying the other trade work to coordinate the field installation. Once complete our field forces were in constant communication with our fabrication facilities trying to maintain a just in time delivery system to minimize any storage on the jobsite as well as efficiently utilize the two tower cranes onsite which were always in high demand. This just in time delivery of materials was also necessary in an effort to minimize any exposure to the elements. Materials onsite were elevated off the floor slabs and covered prior to installation. Once installed any remaining open ends of duct or piping were sealed at the end of each work day to further eliminate exposure.



Mechanical Floor - Bi-Level Air Handling Unit

The new tower building consists of a large mechanical floor on the first level above the existing parking with a mezzanine floor on the north side which functions as the 6th floor. Located on the 7th floor are ICU patient rooms and eight operating rooms directly above the mechanical floor. To eliminate vibrations from the mechanical floor a stand-

alone steel structure was erected inside the mechanical level from which all the MEP utilities were hung. Anything that had to be attached to the underside of the 7th floor was isolated with spring hangers, canvas connections, etc. The 7th and 8th floors are used as the critical care floors, served by two large custom RACAN units and utilize a ducted return. Floors 9 through 12 are served by two more custom RACAN units and utilize a plenum return. Each pair of RACAN units (four units total) functions together to provide the supply air for the floors served. Each individual RACAN unit is capable of 100,000 cfm but functions together with its mate through the control system to maintain the required static pressure in the system. Each unit was supplied in four sections that were then hoisted into place, pulled together, and assembled into the final unit. Staging the eight truck loads of unit parts around the hospital's schedule and utilizing the two tower cranes was a task. The structural steel skeleton for the mechanical floor and the 7th level deck were in place with a few beams left out to set these units. Once the unit pieces were hoisted onto the structure some of them had to be temporarily set on the seventh level deck and then picked again by the other crane to accommodate the reach restrictions of the tower cranes. Each piece then had to be turned and lowered through the openings in the structural steel provided and then pulled into place. Each unit is a stacked unit so that the two lower pieces were set and pulled together and then the two upper pieces were set and pulled together. Once in place the units were then sealed from the elements and awaited further building enclosure for Grunau to begin work on them.



*Mechanical Floor -
Large Supply Air Plenum & Overhead Piping*

The rest of the mechanical floor houses exhaust fans, hot water pumps and expansion tanks, steam to hot water converters, and the steam pressure reducing stations. High pressure steam is supplied through underground piping from the central plant to the new tower then up to the mechanical floor where we installed the necessary pressure reducing stations to supply the new tower with medium and low pressure steam.



Penthouse Mechanical Room - Chiller

To cool the new building, two new 750 ton chillers were installed in the penthouse with associated cooling towers on the roof. The chilled water system utilizes a Systecon pumping package with integrated controls to supply the chilled water to the units on the mechanical floor and stage the chillers as required. A similar pump package is used on the condenser water side. Inside the penthouse level directly below the new cooling towers is a large remote sump fabricated by Grunau Metals. Most of the piping including the large diameter piping such as the 14", 16" and 20" was fabricated offsite at our shop facilities and then hoisted into place.



Penthouse - Remote Sump & Cond. Piping

As the installation of systems progressed Grunau Company also provided the installation work for the Johnson Controls Metasys system. Once a majority of the mechanical, electrical, and control system had been completed, Grunau Company then began work on the balancing and commissioning of the HVAC systems. Grunau utilized its own certified forces to start up and balance the large air handling units, exhaust fans, pumps, etc. Working in tandem with Johnson Controls, Grunau Company started, tested, adjusted, and balanced the (4) large air handling units, 21 exhaust fans, and over (500) VAV boxes with associated grilles and diffusers. Once balanced and commissioned the team then ran through the different sequence of operations for air handling unit shutdown, stair pressurization, smoke evacuation, and special operating room sequences. These last efforts by the project team verified the quality and effectiveness of the designed and installed system.

Special thanks to Aurora Health Care, Boldt Construction, Ring & DuChateau, Insulation Industries, and Johnson Controls for their concerted effort on this very complex project.

THE WISCONSIN HEART HOSPITAL

In November 2002, the Grunau Company began the journey in construction of a new Health Care Facility, the Wisconsin Heart Hospital with the preparation and submission of pricing to M.A. Mortenson (MAM), general contractor to perform the HVAC and plumbing work for this new facility. The "Grunau Team" consisted of engineers, estimators, and project manager to review the design prepared by the engineer, complete the drawings based on experience and cost history, and provide a guaranteed maximum price (GMP) to MAM. Several meetings were held with HDR, the engineer, MAM and Grunau to review project pricing, job knowledge and similar project experience. The outcome was that Grunau Company was selected to perform the HVAC and Plumbing work on this new health care facility.

The project was to be constructed in two phases. The first phase included demolition of part of the existing hospital and construction of a 98,000 sq.ft. new hospital. Phase II allowed demo of the entire existing hospital and construction of the final 32,000 sq.ft. of new hospital.

The excitement of securing this job was quickly transformed to the reality of the tight schedule. The plumbing inside underground piping needed to be installed immediately to allow for floor slabs to be poured so the structure could be built. With the expertise and experience of the Grunau plumbing team, we were able to maintain the schedule for installation of services by creating a shell device to remove frost from the ground to allow excavation and pipe installation. This was performed while fireproofing was being sprayed on structural steel to maintain the building floor ratings.

As the inside underground plumbing was being installed, the above ceiling MEP coordination drawings were being prepared. This was one of the most critical pre-construction phases of work since it allowed all trades to install their rough-in work without concern of continual conflicts with other contractors. This is a service the Grunau Company is proud to say,



we feel we are the best at, and always take the lead and initiative in developing these plans. Also during the coordination process all the major mechanical equipment is purchased, reviewed by the Engineer, HDR, and released to the job for installation.

The plumbing installation consisted of 600 fixtures, a water softening system, medical gases to all operating rooms, CT scan room, and patient rooms along with major items such as water heaters, air and vacuum pumps.



The overhead HVAC duct and pipe installation began at the finish of the coordination plans. The key factor to above ceiling rough-in after coordination plans are approved, is to set a flow pattern for the job which means what areas all trades are to work in and allow all trades to install their systems in sequence. Allowing trades to install without sequence and planning will only cause a delay in final finishing of the area.

The central HVAC system consisted of 400 tons of cooling, four steam and hot water boilers for heating, humidifying and sterilizing, and fourteen pumps for distribution of these utilities.

Air was distributed by four fan systems delivering 120,000 cfm for ventilation and required air changes throughout the facility. Thirty-two fans provided system exhaust and code required smoke evacuation systems.

Phase II began in August 2003 and warranted dividing the crews and project into two different stages. Phase one required finishing at this time by setting plumbing fixtures, diffusers and controls, while phase II was just starting rough-in. This created a challenge since the total project still needed to be finished at the same time. This was accomplished by proper phasing of the phase II area and the Grunau field force keeping their momentum and efficiencies even though long overtime hours were being expended.

The final month of system start up, training and connections of owner furnished equipment was completed and certificate of occupancy was received in December 2003, which demonstrates that when all members of the construction team focus on final goals and follow plans and schedules, completion dates can be met.

Thanks to the doctors group, Covenant Health Care and M.A. Mortenson Company for teaming with us to build this state-of-the-art facility.

This project has again shown the capabilities, teamwork, and values that the entire Grunau Team demonstrates on all projects.

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