



Hooper
CORPORATION

Spring 2017 Edition

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From the President: Aging and Renewal



BY DAVE ORR
HOOPER PRESIDENT

In the mid-1990's I was involved in bringing high efficiency boilers to Madison's Meriter Hospital. Now, just over two decades later, I am once again seeing new replacement boilers installed at this critical health care facility. As we all age, so does equipment become obsolete and in need of refurbishment and replacement.

Reflecting on this, I see a focus on improving health care as a featured part of the work performed by Hooper Corporation and our affiliate, General Heating and Air Conditioning (GHAC).

For the past year, Hooper and GHAC have been engaged to help with the construction of a new 270-bed, 535,000 square foot replacement hospital in Marquette, Michigan. Over the course of the fall and winter months, the new footprint for the facility was defined and significant progress is now evident at the jobsite.

This development emphasizes the importance of access to modern and state-of-the-art health care facilities. The new hospital will be a source of pride for the people of the Upper

“...we also know that efforts to build a strong workforce is another part of having strong and healthy communities.”

Peninsula, while strengthening the fabric of shared community. It will also serve as a boom for economic development.

At Hooper and GHAC, we have a track record of significant involvement in the development of many health related facilities. Beyond just hospitals and clinics, our work touches health care research, pharmaceutical, and biomedical facilities.

In addition to this project work for clients, the Hooper Foundation is pleased to be involved in a number of other health care related issues and areas of high priority social investment. The Foundation has been engaged in philanthropic support of organizations including: The American Cancer Society, the American Heart Association, the Arthritis Foundation, the Juvenile Diabetes Research Foundation, the Leukemia & Lymphoma Society, Meriter Hospital, Breast Cancer Recovery, UW Health/ UW Hospital, and SSM Health Care (St. Marys).

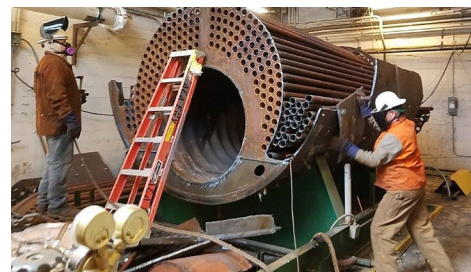
Closer to home, we also know that efforts to build a strong workforce is another part of having strong and healthy communities. We believe in recruiting, developing, and retaining a strong and diversified workforce. Through our commitment to training and development, we help ensure the retention of the skilled workers and talented professionals that the future so clearly requires.

As our reach extends out to other

communities – including our work in Florida and Colorado – we are helping to build strong connections with these remote locations.

As noted in the stories that follow, Hooper and GHAC are involved in a number of high visibility projects in other locations. Whether we are talking about our work with Catalent Pharma Solutions, United Vaccines, United States Geological Survey, or even Xcel Energy and Dairyland Power, we can see many indications of the work we are providing in the communities we serve. This spirit of innovation and outreach has been part of the Hooper mindset since we were founded in 1913.

Below (clockwise): Demolition vintage 1990s boiler.
New 2017 boiler (one of five total).



S-T-R-E-T-C-H-I-N-G: Focus on Employee Well-Being

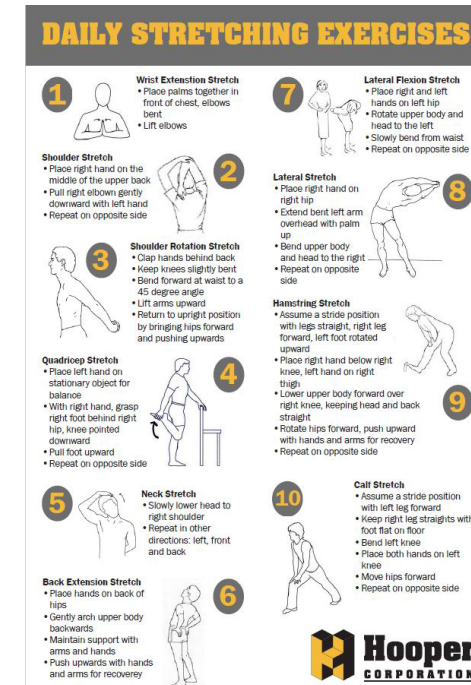
At Hooper Corporation, our staff does the difficult work required by our crafts and trade. Oftentimes the demands of our jobs require physical exertion. Whether climbing poles or towers, moving boxes around the office, drilling anchors, or hand-digging holes, the tool most used and abused is our body. Over a career, all this wear and tear can take its toll and eventually the body signals overuse.

According to the Bureau of Labor and Statistics, more than 30 percent of all total injury cases in 2015 were associated with musculoskeletal disorders (MSD), such as sprains or strains resulting from overexertion. Nationwide, more than 350,000 cases were recorded of workers who sustained a MSD. On average, each injury required a median of 12 days to recuperate before returning to work.

Common types of MSDs include repetitive overuse, carpal tunnel syndrome, tendonitis, rotator cuff injuries, muscle sprains and strains, and other problems with joints, muscles, tendons, ligaments, nerves, and soft tissue

A core safety principle at Hooper Corporation focuses on individual responsibility. This means that every employee, regardless of title, is responsible for ensuring a safe work environment for themselves and in turn for their co-workers. This individual responsibility is especially true when it comes to preventing MSD. In an effort to reduce the number of MSDs, Hooper has four areas of focus to support individual efforts.

Focus Area 1: Stretch and Flex
Hooper work crews are required to participate in the daily stretch and flex program. Prior to performing physical activity, it is important to stretch and warm up your muscles. This is a lesson that can be taken from professional athletes; they always stretch and warm-up prior to playing a game or practicing.

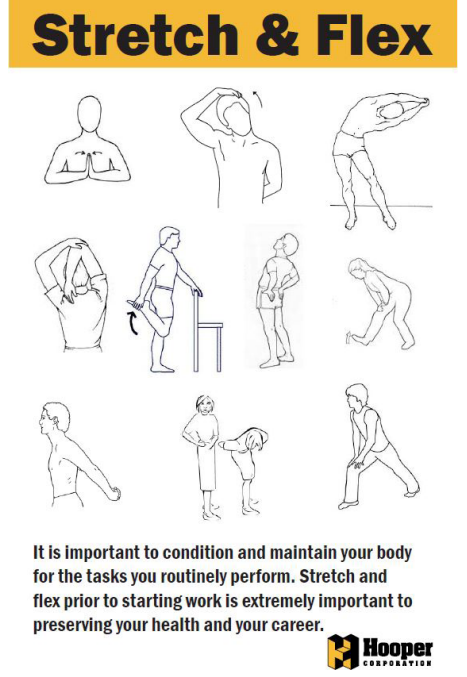


Left: This poster shows the daily stretching exercises crews complete in the morning before beginning work.
Right: This poster is part of a quarterly safety poster program that illustrates the importance of stretching.

Focus Area 2: Awareness
Everyone should be thinking about how to extend the warranty on his or her body. If your chosen profession is to work with tools, how long are you planning to be in your career? 25 to 35 years? That's a long time working a physical job where a lot of damage can occur, unless you purposely think about how to get through each day working smarter, not harder. A focused approach and the building of good habits that limit your exertion can help you avoid injuries over time.

Focus Area 3: Proper Body Mechanics
Much attention has been given to reducing MSDs over the past 30 years. Much of the same advice offered 30 years ago is still valid today, specifically the use of good physics and body mechanics to reduce the stress on your body. Utilizing proper lifting techniques such as using your legs, team lift, and simply knowing your personal physical limitations, can go a long way.

Focus Area 4: Task Evaluation
Each individual must evaluate their



specific task to ensure they are performing it in the safest manner possible. We have to ask ourselves: Is there a way to perform this task that puts less stress on my body? Can I move this material in pieces instead of trying to move the entire thing at once? Is my work height too high or too low and can I adjust it? Can a co-worker assist me with handling this material? Is there ice or mud on the ground? Each individual needs to be responsible for control of the actions required to perform their task to ensure proper coordination.

Airplane Hangar at Sawyer International Airport Provides Unique Home to UP Hospital Prefab

As the rush of a plane taking off sounds overhead, crews work in a nearby airplane hangar to prefabricate key pieces for the replacement hospital in Marquette, Mich. Hooper and General Heating and Air Conditioning (GHAC) continue their extensive work at the UP Health System – Marquette hospital. This project broke ground in the summer of 2016 when Hooper and GHAC were chosen to complete the HVAC and plumbing work in partnership with Skanska/Closner, the general contractor. Off-site fabrication has been a key component of this project. This approach ensures quality, enhances safety, and meets a challenging schedule.

In order to prefabricate multi-trade racks, patient room headwalls, bathroom pods, and ductwork assembly, our crews needed a large, open space to set up shop. An airplane hangar at the decommissioned K.I. Sawyer Air Force base in Marquette provided the perfect space. Presently, Sawyer International Airport occupies a portion of this former base and has general aviation activity along with regularly scheduled airline flights. Check out some highlights from the base's eclectic past in the box to the right.

Sawyer International Airport Fun Facts:

- > Sawyer International Airport operates on the decommissioned K. I. Sawyer Air Force base that operated for nearly 40 years and closed in 1995.
- > Due to the large size of the runway, it is an ideal testing site for large planes to easily land and take off with full loads. Sawyer is a standby landing site for the Space Shuttle.
- > Sawyer has experienced many large planes over the years. The fourth largest aircraft was Russia's Antonov 124 which landed in 2012. The world's longest passenger plane (B747-8) also made an appearance at Sawyer. It required 10,500 feet of runway for takeoff and 56,000 square feet for parking. Air Force One has landed a number of times at Sawyer and as many as three C-5A cargo airplanes a week have used Sawyer for refueling before flying to the Middle East.
- > Four U.S. Presidents have landed at Sawyer International Airport including Richard Nixon, Gerald Ford, George W. Bush, and Barack Obama.
- > Sawyer is still home to an orphaned Russian-made Ilyushin IL-78, which landed in 2009 to refuel. The plane was headed from Texas to Pakistan when it landed in Sawyer. Its five crew members were arrested for expired visas and eventually returned to their home in Kiev, Ukraine. Air-1 filed a lawsuit alleging that the plane's owners owed more than \$62,000 in unpaid bills for all the work Air-1 did on the plane back in Texas. After many years of court proceedings, new owners, and months of repairs, the plane may be close to flying again.
- > Sawyer is very critical to the success of the organ transplant network. Organ donor teams use Sawyer several times a month to fly patients and medical personnel in and out for medical care.



Above: Inside the airplane hangar that serves as a home to our prefabrication assemblies.
Top Right: The star locates Sawyer Airport in the UP.
Bottom Right: The Russian Ilyushin IL-78 is currently parked at Sawyer Airport.

Dairyland Power and Hooper Collaborate to Replace Major Overhead Line in La Crosse Region



Unique challenges must be faced whenever overhead power lines are refurbished or rebuilt. Sometimes, these challenges are due to how much the landscape has changed over time. An overhead line originally built in the 1950s, for instance, when it was across relatively desolate areas, may now be traveling through commercial districts, across backyards, over numerous homes and businesses and alongside residential roads, busy streets, or even interstate highways.

When Dairyland Power was planning to rebuild a key power line in the La Crosse and Onalaska area, they chose to work with Hooper Corporation to carefully plan for this project. For more than a year prior to the start of construction, Hooper worked with Dairyland Power on the plans for rebuilding an urban 10.8 mile 161kV line that is double circuit with a 69kV line for a portion of the route running from northern La Crosse through Onalaska. The location of this line now travels through Interstate 90,

Highway 53, Highway 16, a high speed railroad corridor, two different golf courses, a large wetland area, a mall parking lot as well as over many homes and businesses. In order to minimize the inconvenience to the public, this project would require a significant amount of planning before any construction actually began.

Considerable effort was devoted to create a work and access plan that organized the sequence, timing, and methodology of construction to reduce the impact on third parties. Onsite Hooper General Foreman and the Safety and Training Engineer worked very closely with the Dairyland Power Project Manager to ensure construction was completed safely with minimal impact to residents and business owners. Select examples of strategies employed include:

- Some work was completed in the middle of the night to reduce the impact on local businesses.
- Composite matting was utilized to

protect all yards, driveways, parking lots, and archaeological areas.

- In areas that had been designated as archaeological sites, arrangements were made to have an archaeologist on site while digging.
- Many working areas were very tight due to the age and location of the existing transmission line. Accordingly, each pole piece was offloaded directly from the truck and set rather than assembling the entire structure on the ground and setting it in one piece.
- Special precautions were made before wire was strung over homes, businesses, and busy roads to ensure the safety of the property owners, the crews, and the general public.

The 1950 wooden H-Frame line was rebuilt with steel monopoles. Due to limitations associated with the right

(Continued on page 11.)

Above: Crew adjusts tension on the wire in preparation to make up deadends.

Refurbishing Madison's Capitol Square

Continued development and improvements are changing the face of our state's capital city, especially the focal point for Madison's isthmus, the Capitol Square. Everywhere you look in Madison, new buildings are being built and renovations and expansions of existing buildings are underway. As Madison's population continues to increase, each new residential or commercial project is a sign of new investment. The improvement, renewal, and refurbishment of existing structures also represents another sign of the significant investment being made in the greater Madison metropolitan area.

An example of these developments is evident by renovations being made to a prominent bank building on the south side of the Capitol Square. Urban Land Interests acquired (Dec. 2014) what was commonly known as Anchor Bank. The extensive reconstruction project includes an expansion of the office building, demolition of the existing above-grade parking structure, and construction of a new five-level underground parking structure beneath Carroll Street. Additional aspects of the project include the construction of a mixed-use apartment building (containing 8 levels of rental apartments) and new retail/restaurant space at the sidewalk level.

Once the project is completed, the appearance and functionality of this important building will help redefine the area. The improved building will have a very attractive, modern glass façade and landscaped roof terraces to blend into emerging design features and qualities found throughout the downtown area.

Hooper Plumbing took on the task of design building all plumbing and site utility work for the property redevelopment. This included relocating and maintaining sanitary sewer, storm sewer, and water services during the construction of the underground parking structure which was under a city street.

Crews gutted the existing Anchor Bank office building and replaced all plumbing and fire protection systems. This building footprint was also enlarged with an



addition through all nine floors. Across the street, additional work was done on the plumbing infrastructure to provide full fire protection services to the nine story mixed-use apartment building. This project involved cooperative work with the City of Madison to design and extend Anchor Bank's site utilities to the new structure as well as to provide grease interceptor structures for each building.

Top: Hooper completed the plumbing on the original Anchor Bank in 1963.
Bottom: Construction view from the same corner 54 years later.

Continued Growth and Expansion for Catalent Pharma Solutions



Catalent Pharma Solutions is a global pharmaceutical manufacturing company. Catalent performs trial tests for many of the world's largest pharmaceutical companies. A record of solid growth required an expansion of production lines. Catalent initiated a 22,000-square foot addition that will increase manufacturing, office, and laboratory space. This project is expected to create more than 100 new jobs.

The job was envisioned in several phases, beginning with an expansion of existing shell space, selected areas of remodeling, and the construction of an addition to the current building.

- The **Process Piping Department** fabricated and installed custom stainless steel utility panels with integrated electrical and controls devices, each outfitted with specialty gases and thermal fluids, and installed a high purity water system.
- The **Plumbing Department** completed the building plumbing

and underground process drain installation, including a new 5,000 gallon holding tank to facilitate hazardous room fire protection coverage.

- **General Heating and Air Conditioning (GHAC)** added a new 200-ton chiller to two existing chillers in order to support all the additional equipment that will need chilled water connections. Crews also added air handling units to the large new mechanical room in the addition. New pumps will be added to help expand the chilled water and hot water systems already in place, and new exhaust fans will serve the new production spaces and warehouse.

Special Precautions

Given the nature of its business in the pharmaceutical industry, Catalent adheres to the highest possible standards for design and cleanliness. The facility has restricted access and meeting these requirements demands

considerable pre-planning.

The existing plant was open continuously throughout the project, and cleanliness was the highest priority. Any disruption to manufacturing would potentially be catastrophic to the clinical trials taking place. Extra precautions were taken including designated entry and exit zones, workers escorted through certain areas of the building, and temporary walls built through existing corridors to separate construction zones and working areas. GHAC installed high efficiency particulate air (HEPA) filtration in the temp walls to ensure the cleanliness of the working areas met expectations. For certain parts of the project, workers were required to complete Catalent's "scrub in" procedure, and nothing was brought into the area or discarded without going through designated airlocks.

(Continued on page 11.)

Above: Hooper and GHAC install rough-ins on the new expansion.

In Texas: Xcel Energy Relies on Hooper to Aid in Restoration Services

When Mother Nature brings storms that damage power lines, Hooper is ready to respond. Xcel Energy called upon Hooper to help address power outages in Texas after mid-January ice storms hit the northeastern part of the Texas Panhandle.

Widespread power outages occurred in several areas in Texas when freezing rain (Jan. 13 and 14) caused 31,000 to lose power. Xcel Energy requested help and approximately 500 individuals were brought in to aid in restoration services.

Due to Hooper's longstanding relationship with Xcel, three Colorado crews were called upon to restore power to the hardest-hit areas of Borger, Pampa, and Perryton. Service was restored to about 17,000 customers within a day after the storm and crews continued to work for another week to fully restore electric power to the remaining 14,000.

Right: The saturated ground made it difficult for crews to get to overhead lines.



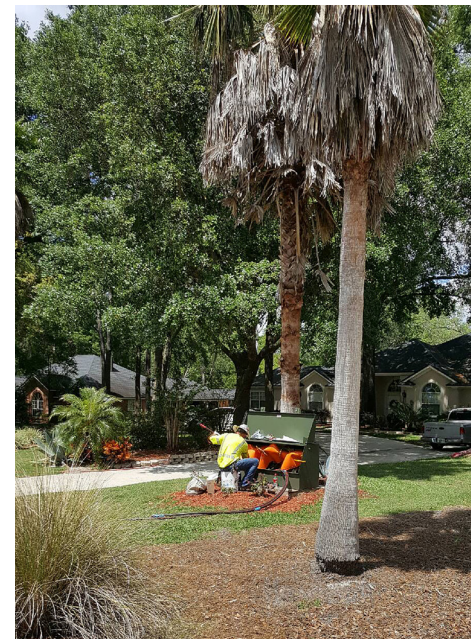
In Florida: Hooper Takes Over Management of Electrical System in Green Cove Springs

In May 2016, Hooper Corporation entered into a five-year agreement with the City of Green Cove Springs, a city located in northeastern Florida, about an hour south of Jacksonville, to manage the city's electric department and electric system. This agreement becomes the third instance in the United States where a city owned electrical system is not managed by the city, but rather an outside contractor.

Green Cove Springs has a population of around 7,300 residents and covers approximately 10 square miles. The electric system service territory encompasses about 25 square miles which includes about 3,300 metered residential customers and 720 commercial customers. The Green Cove Springs electric system operates at three separate voltages containing 23.5 miles of 23kV overhead line, 5.1 miles of underground 23kV underground line, 21.9 miles of overhead 13kV line, and 3.7 miles of overhead 4kV line. The system also encompasses six substations.

Under the new contract, Hooper Corporation is responsible for maintaining all aspects of the Green Cove Springs electric system. This includes the management, coordination, and scheduling of the line clearance tree trimming program. It also includes replacing and repairing malfunctioning street lights, managing the electrical material stock for the electrical department, performing substation inspections for proper functionality, and performing maintenance and replacement of all line hardware such as poles, cross arms, conductor, and transformers. Hooper is responsible for responding to all system and storm outages 24 hours a day, seven days a week.

Hooper is now installing new electronic reclosers throughout the overhead system as well as in the substations and performing fuse coordination with these reclosers. Hooper currently employs the Electric Department Manager, one line superintendant, three journeyman linemen, and one recently hired line apprentice.



Above: A Green Cove Springs lineman prepares to terminate newly installed primary underground wire in the Magnolia Point subdivision.

Verona is Home for United Vaccines, Inc.

United Vaccines, Inc. is a certified manufacturer of veterinary biologics. They are the only vaccine manufacturer for the fur-bearing animal industry that is licensed to ship product to customers in North America and Europe. Due to continued growth and development, they have expanded their manufacturing and production space on a six-acre site in Verona through the construction of a new, two-story, 57,000-square foot facility.

With the new facility located adjacent to the Wisconsin Brewing Company, United Vaccines retained General Heating and Air Conditioning (GHAC), Hooper Plumbing and Process Piping to complete the mechanical system installation alongside general contractor, Vogel Bros. Building Co.

These systems include a clean steam generator and orbitally-welded clean steam piping that is validated for pharmaceutical use. This clean steam piping provides pharmaceutical grade steam to the owner's new production equipment.

Other systems included an RO water treatment system and associated pure water piping to various labs, as well as liquid nitrogen distribution piping, and compressed gases. Additionally, GHAC, through the Design Assist process, significantly reduced costs by using a polypropylene (PPR) piping system for some of the non-critical HVAC systems. While the use of PPR systems is not new to GHAC, this was the first time these applications have been used in a pharmaceutical environment.

This project scope included the challenge of multiple layers of mechanical systems often on interstitial areas with no floor or beams. Tight coordination requirements were overcome by full BIM management including systems that are not traditionally coordinated.

Clockwise from top: United Vaccines outside view. Interstitial space with branch duct connections to terminal HEPA filters. Process and water piping to lyophilizer. RO System. Dry cooler, air cooled chiller, and liquid nitrogen tank.



Ensuring Health of National Wildlife - Hooper Replaces Aging Infrastructure

The investigation of outbreaks of wildlife diseases nationwide is conducted by the United States Geological Survey through the Madison-based National Wildlife Health Center. Over the years, the building's cast iron underground plumbing system had become rotted and deteriorated. This difficulty was compounded because it was not feasible to complete a direct replacement due to the size of the system and its location beneath the building.

Hooper was invited to serve as the general contractor on this job and install an alternative solution. A vacuum system was engineered to take the waste overhead from the laboratory rooms back to a central vacuum center located in a new mechanical room.

The backbone of this project is the vacuum system utilized to extract waste overhead from 26 laboratory room locations. The vacuum system is not a typical installation. Training, coordination, and plumbing crew talent was required to create a fully functional system. The vacuum system consists of accumulators within the laboratory rooms, overhead piping system, collection tanks in the mechanical room, a triplex-vacuum pump center, strainers,



high efficiency particulate air (HEPA) filters and many other components. Portions of gravity drainage and pressurized pump discharge are also incorporated into the system.

The nature of the waste on this project required that much of the piping system be dual containment as a safety precaution. For a successful dual containment piping install, a lot of pre-planning, proper sequencing, and skilled labor was needed. Fabrication drawings of the dual containment piping assemblies were created and sent to the manufacturer for creation. The complex

(Continued on page 11.)



Clockwise: Dual containment piping. USGS National Wildlife Health Center outside view. Underground dual containment piping within a laboratory room. Installation of overhead vacuum piping.



> 161 kv Line for Dairyland Power (continued from page 5)

of way, the proximity of the line to the La Crosse airport, and the urban congestions, adding structures was not possible and many structures had height limitations. As a result, 3M manufactured 656 KCMIL 26/19 ACCR conductor was selected to replace the old 336 ACSR conductor. The properties of the 3M ACCR conductor allow for the line to maintain proper clearances without adding structures or increasing the height.

The line also had an optical ground wire (OPGW) cable owned by Windstream that had to remain live during construction. The old OPGW cable was transferred to a temporary position below the conductors

on the new poles and remained live until the new OPGW cable was in place. At this time, a midnight outage was taken on the fiber to cut the fiber over from the old cable to the new.

Dairyland and Hooper engaged in careful planning and constant daily communication during the full scope of the project. This was essential to minimize the impact of the project on the lives and work of all adjacent to the work site.



Above: Crew grounds wire in preparation to install jumpers.

> Catalent Expansion and Remodel (continued from page 7)

Challenges

Crews tied in all of the steam, hot water, and chilled water piping into the existing systems in place on site, so coordination was a large priority. Any disruption to service had to be cleared through the manufacturing and maintenance departments at Catalent, and all tie-ins were done overnight or on the weekends to minimize disruption to manufacturing.

In order to ensure that the new spaces are constructed to the necessary cleanliness standards, third party commissioning was used on this project. For GHAC, that meant that all ductwork and piping was cleaned and capped before coming on site, and then tested multiple times once installed in order

to fulfill Catalent's expectations. Some of the ductwork also needed to be tied into existing systems, and balancing was done before and after tie-ins to ensure that no existing areas had pressure changes or airflow issues. Hooper and GHAC are on schedule to complete this project in the fall of this year and are proud to contribute to a building that will bring so many jobs to the Madison area.

Right: One of the many custom built utility panels for clean room use. The ability to manufacture these custom units in-house greatly facilitated the ability to integrate many customer driven changes on short notice.



> USGS National Wildlife Health Center (continued from page 10)

and cumbersome assemblies were then pieced together in the field to complete the system.

HEPA filtration is also utilized at many points in this system as a means of air filtration. This project incorporates many systems and components not typically found on the traditional gravity drainage system. A new complete epoxy flooring system will be installed to conclude this project and give the owner a brand new floor surface.

Hooper, with the help of its subcontractors, is on track to complete this complex project on time to give the owner continued use of this facility for many years. The health of the nation and its wildlife will be served for many years through these new facilities.

Right: Vacuum piping main down corrior.

