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## THIS OLD TUNNEL

Akkerman equipment is designed for accuracy, durability, ease of set-up and powerful jacking force. In the case of PCI Roads' application in Minneapolis, sometimes our customers simply want to jack pipe. What may be lacking in equipment capability in this story is made up for with a rich history about Minneapolis's sewer systems.

Minneapolis experienced incredible growth, following the arrival of the first settlers in 1848. In 1860, the population was around 2,500 and a decade later it increased to 13,000. Over the next decade, from 1880-1890, the population grew from roughly 47,000 to 165,000. By 1910 it was at 301,000. To accommodate

the emergent need for infrastructure, the City of Minneapolis erected the first combined storm and sewer tunnel infrastructure in the downtown area in 1870. Upon its completion, about a decade afterward, it was comprised of 2.5 miles of open trench tunnels. In 1882, the city completed an additional 3.5 miles of new sewer and storm water tunnels in just one year. By 1892, an additional 7.3 miles were created bringing the total to 106 miles of storm water and sewer lines, of which 4.7 miles were tunnels like the one highlighted on this project. By 1918, there were 441.5 miles in the total system. All these pipelines and tunnels lead to the Mississippi River, causing major health risks which ultimately lead to the creation of the Minneapolis-St. Paul Sanitary District in 1933.

A hand-mined tunnel, located at 2nd Street SE and 10th Avenue SE on the north side of the Mississippi (and the new I-35 Bridge today) was constructed in 1882 with extensions added in 1893 and 1913-1914. The tunnel, 78-inch in diameter and 504-feet in length, was hand chiseled and blasted through limestone. It was sculpted with an inverse curve at the bottom, and lined with bricks and a concrete layer at the top. Since these were combined storm water and sewer systems, the limestone walls were non-corrosive for solid waste and the concrete top layer provided reinforcement from settling. The larger opening at the top of the tunnel accommodated a larger capacity opening for large amounts of rainfall.

Flash forward to 2011, several tie-ins and alterations later, Minneapolis now needs to increase the 10th Avenue Tunnel's capacity to accommodate 144-inch OD RCP. Now only used for storm water drain flow, contractors are getting some experience with what it was like to create this tunnel by removing the layer of concrete and exposing the original hand-mined limestone. Luckily, crew members get to use jack hammers rather than chisels and mallets. Part of the tunnel has eroded over time and some has been blown out on the flat area leading to the shore of the Mississippi River. The tunnel's total length is now about 400-feet. The 10th Avenue Tunnel and Storm Sewer Rehabilitation was designed



PCI Roads, LLC of St. Michael, MN used a 5000 Series Pump Unit, skid and thrust yoke to direct jack pipe as they increase the diameter of the 10th Avenue SE Tunnel in Minneapolis, originally hand mined in 1882.

## THIS OLD TUNNEL (continued)

by CNA Consulting Engineers of Minneapolis.

Because the tunnel outlet lies alongside the Mississippi River, alterations require a permit from the Army Corp of Engineers. This process triggered consideration for eligibility into the National Register of Historical Places (NRHP). After completing the process of surveying and assessment for the NRHP, it was determined that archived documentation is an acceptable way to mitigate preservation and proceed with construction.

Using jackhammers and a skid loader with a modified bucket for spoil removal, PCi Roads is running two shifts per day. As crew members excavate enough to accommodate the full length of a pipe segment, an Akkerman 5000 Series Pump Unit, skid and yoke direct jack the RCP into the tunnel. While this production may seem slow in comparison to a typical TBM set-up, it is the most cost effective approach to the project. Construction is hindered if a mere ¼ inch of rain befalls the city and it's been a really rainy season so far. Despite this, crew members are making good progress.

At the time of publication, PCi Roads had completed 104-feet of pipe installation. The tunnel excavation comprises the majority of work on this project with

the exception of a few minor tunnel repairs. An anticipated completion date is set for September 2011.

*Thanks to Greg Mathis at 106 Group, Nap Scott with PCi Roads and Alex Whiteis with Akkerman Inc. for their kind assistance with this article.*



The photo, taken from inside the tunnel shows a pipe section meeting up with the original tunnel while excavated debris awaits removal.

## NEW ENGINEERING STAFF



Jesse Quam began as a Design Engineer at Akkerman Inc. in January 2011. His current area of responsibility is designing new equipment. Quam is a May 2009 graduate of Minnesota State University, Mankato with a B.S. in Mechanical Engineering. He was previously employed as an engineering intern at Viracon in Owatonna, MN, a glass coatings manufacturer, redesigning glass testing equipment used for certification purposes. Quam is originally from and currently resides in Clarks Grove, MN. His hobbies include ridding motorcycle, hunting, and fishing.



in Mechanical Engineering. Weber was previously employed Service, Reliability and Innovation

with Ventura Foods in Albert Lea, MN as an engineer for the plant engineer. Here Weber assessed plant flow and processes, managed several equipment safety programs and maintained the ammonia process safety management program. A native of Owatonna, MN he resides there with his wife Nikki and 1-year old daughter Aubree. Recreationally, he enjoys softball, golf, fishing and riding his motorcycle.

Scott Weber also began as a Design Engineer at Akkerman Inc. in January 2011. His main focus has been with our GBM equipment line although he's been involved recently with a hydraulics revision on the conventional line. A 2006 graduate of Minnesota State University, Mankato, he holds a B.S.

## ARE WE REACHING YOU?

In addition to our *Trenchless News* newsletter, Akkerman sends out many electronic notifications to our customers and friends. **Are we reaching you?** If not, we probably don't have your e-mail address in our database and would greatly appreciate the opportunity to include you in our news e-mail list. Please send a blank e-mail with your company signature to [updates@akkerman.com](mailto:updates@akkerman.com) to be added to this list. Look for a mailing in the near future to update your company contact information. Also, don't forget to "Like" us on Facebook!



## FROM THE PRESIDENT'S DESK



One of the struggles that small business owners, like Akkerman Inc. grapple with, is how to grow an organization with emphasis on a shared vision. Although upper-management understands our core values, often these ideas do not trickle down to all facets of our staff and are sometimes ill-conveyed to our customers. As a second generation family business, I feel a responsibility to the company and the next generation of ownership to pass Akkerman Inc. along at its height of potential. To meet this challenge, Akkerman Inc. is undergoing an internal strategic planning assessment and implementation. I look forward to sharing our new shared vision and mission with you in the future.

Our new corporate office is almost complete. Contractors are finishing the landscaping around the building and leveling the area where the former building resided. It's been cold and damp so far this spring so the finishing touches have been a bit delayed. We plan to hold our annual Akkerman Family Picnic on the grass area behind the new building in mid-July. Photos of our new corporate office will be featured in an upcoming newsletter.

On a final note, congratulations to all our employees who participated in the Akkerman Inc. Biggest Loser contest. Collectively, 16 staff members lost 201 pounds during a 12-week period. I applaud our employee's efforts in making healthy lifestyle choices. Special thanks to Vladimir Nikishov, Programmer and IT Specialist, for spearheading this effort by designing the software application to tally lost pounds for individuals and teams. A new employee challenge is currently underway. The "AkkWalk" program logs participant's walking, running and biking miles during the course of the summer. In these contests, everyone wins, no matter what level of participation.

Best wishes for a safe and productive summer!

~ Maynard



*You keep a knockin' but you can't come in.* This is one of our turkey friends who roam around the grounds at Akkerman. Here he was pecking at the corporate office entrance.

## RECENT NEWS: USED EQUIPMENT SALES + FIND US ON FACEBOOK



Our recently launched Used Equipment Sales web page, offers pre-owned equipment from our rental and lease fleet for final sale. These products from our guided boring machine, conventional and microtunneling lines of equipment have been thoroughly serviced and many come with a factory warranty. The Used Equipment Sales page features full descriptions with genuine photos, serial numbers and comparative pricing. Inventory will be updated on a monthly basis and sold items will be removed immediately so the information is always fresh. Please visit the Used Equipment Sales

page to see our initial offerings and check back regularly for updates. As always, our friendly sales staff are available to discuss these items in more detail.



Akkerman Inc. followers can now connect with us like never before! Our recently launched Facebook page features exclusive information, photos, video clips, news and comments. To spearhead our fan network, the "Akkerman Inc. Facebook Fan Hat Giveaway" will reward one in ten participants who "Like" our page with a free hat, embroidered with our logo and Facebook address.

The objective with our Facebook page is to communicate more frequently on a personal level with all of our fans. We want users to understand Akkerman Inc. not only as an equipment manufacturer but also as a hardworking group of individuals. Rather than duplicate current communication strategies, the Facebook page will supplement these efforts with additional content.

Enter the contest and become a fan at [www.facebook.com/AkkermanInc](http://www.facebook.com/AkkermanInc). We look forward to reading your posts and comments!

### Come visit us at the following events:

**June 19-22, 2011**

RETC 2011  
Booth #113  
San Francisco, CA  
Marriott Marquis

**October 4-6, 2011**

ICUEE 2011  
Booth #K103  
Louisville, Kentucky  
Kentucky Exposition Center

**January 24-26, 2012**

UCT 2012  
Booth #247  
San Antonio, Texas  
Henry B. Gonzalez Convention Center



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## TECHNICIAN'S TIP

**T**he Powered Cutter Head (PCH) is an upsizing tool used by many of our guided boring machine system owners. To date, we've sold 35 units. As with all of our equipment, maintenance intervals are outlined, diagramed and detailed in the corresponding operator's manual. Maintenance intervals are split into three categories: prior to each launch, after each drive, and after every 2,000 feet.

Design Engineer, Nathan Lindeman highlighted several key maintenance steps that he recommends be conducted by operators on the job site for best PCH performance.

Prior to each drive, an important activity is to inspect the drag bits and bullet teeth. All carbide inserts must be intact and the bullet teeth should be free to rotate in their holders. Outer teeth will wear fastest. Additionally, machines that have been fitted with an increase kit will likely wear faster due to exposure to more surface feet per minute. If necessary, replace the bits and teeth before launching the PCH. Additionally, inspection of all hydraulic hoses and how they are routed, especially those near the drive shaft connection between the front and rear sections will prevent hose abrasion. When launching the PCH, be sure to test fire the jetting and lubrication circuits and clear clogs as necessary.

The front section of the PCH is equipped with internal cutter face dirt seals that are lined with grease, creating a barrier to protect the unit from the entrance of contaminants. There are two grease points, one is on the outer circumference of the front section and the other is on the inside of the machine and can be accessed by separating the two sections. Some models contain a grease hose, which may be serviced via the access port holes on the back section of the PCH. Proper maintenance of these seals entails purging the grease with new grease to maintain its integrity. It is most beneficial to conduct this maintenance interval after each run while the spoil is moist, preferably with the bit turning. Also after each run, operators must check the auger gear box and front section bearing cavity oil for level, fluid quality, excess moisture, and change it if necessary.

After every 2,000 feet of PCH activity, the front section bearing cavity should be drained and refilled. There are detailed instructions in the operator's manuals on how to do this, differentiated by PCH size.

Our website hosts a password protected manuals page, featuring the most up-to-date manual choices. Customers may contact Aftermarket Support for the access code to this page.