



AGM Partner Wins Seat on AOLS Council



The Association of Ontario Land Surveyors is a self-governing association responsible for the licensing and governance of professional land surveyors. The Association derives its authority from the Surveyors Act. It is governed by a Council of nine professional members who are elected by the membership, the Surveyor General of Ontario, and three appointees who are not surveyors.

In February members of the Association voted to elect two new Councillors for three year terms. AGM is pleased to announce that Bruce Baker, has been chosen by his peers to serve on the Council of the AOLS.

Bruce graduated from Erindale College at the University of Toronto with a BSc Survey Science Specialty. He is a Partner and Vice-President of AGM Surveying and Engineering.

During his career, Bruce has served our industry in many ways. He has been an Assistant to the Academic Experience and Requirements Committee of the AOLS, has served on the London Lot Grading Committee, has served as the Chair of the Southwestern Regional Group of Ontario Land Surveyors, chaired the 1996 AOLS Annual Meeting Committee as well as several committees for the London Home Builders' Association and served as the LHBA president in 2000. He has also been active in other civic roles, serving on the Board of Governors' Advisory Committee to the School of Technology for Fanshawe College, the London Chamber of Commerce and the London Executives Association serving as president in 2006.

Bruce's campaign platform was based on the need to meet two key challenges to the industry. The first challenge is the lack of skilled candidates articling as licensed surveyors. Bruce argued that it is essential for the Association to identify education facilities that will prepare students for licensing and to support the facilities with its financial (scholarships and bursaries) and intellectual resources so that the industry can continue to renew

itself. The second challenge is the lack of public perception of the value of the industry's services and products. Bruce's position is that the Association has to create a cohesive, clear message about the value of the services and products provided by its members and deliver this message consistently to municipal officials and the general public.

Bruce will bring his energy and experience to several committees of Council - Complaints, Continuing Education, Public Awareness, Technical Education and the Kawartha-Haliburton Regional Group Liaison.

We at AGM Surveying and Engineering are very proud of Bruce's accomplishment and have assured him and the other members of our association of our strong support for him as he takes on his new responsibilities on the Council.

AGM's 10th Annual Golf Tournament

will be held on

August 21, 2007

at

Maple Ridge Golf Club

Mark your calendar and watch for our registration flyer and tournament details in June.

See you on the first tee.

ARCHIBALD, GRAY & MCKAY



AGM Site Lines

SURVEYING • ENGINEERING



Spring 2007

Brooks Subdivision

Norm Brooks has been a home builder and land developer for 55 years. He was a founding member of the London Home Builders Association in 1952 and a pioneer in developing the Kilworth subdivision.

When the opportunity to develop Kilworth Meadows came up a few years ago "I took a long look at it before I decided to go ahead," Norm said. "I'm 82 years old now, and I really had not anticipated doing another project at this stage of my career."

There were a variety of reasons why he decided to proceed with the development. An important one was his past experience working with AGM's surveying services. For this project, he decided also to engage AGM Engineering. "In the past," he said, "I did most of the ramrod myself. This time I decided to let AGM do the work for me."

AGM's engineering staff began by creating a draft plan for the new development showing the proposed location and size of the 22 new lots and coordinating all of the noise studies, soils testing, planning submissions, presentations and public meetings required to gain approval from Middlesex Centre, Middlesex County, the Upper Thames Region Conservation Authority, the Ministry of the Environment and the Ministry of Culture.

With all necessary approvals in place, detailed engineering could begin. AGM's staff designed the site grading plan. This design in turn determined the siting for sanitary and storm sewers as

well as the cut-fill balance. Construction efficiency is an important design factor; however, aesthetics, lot topography and surface runoff must also be taken into consideration. Kilworth Meadows had originally been a gravel pit, therefore a fully balanced cut and fill plan would not have yielded an acceptable grading plan.

The final output of the detailed design work is a set of engineering drawings showing the master plan of services, grading plan, sanitary and storm drainage plans and typical road sections.

As part of the design, it was necessary to provide specifications for a noise barrier identified as required during the noise study. AGM engineers conducted a materials evaluation study, selecting a pre-cast concrete material that provided the necessary noise abatement at a significant cost saving.

AGM took the lead in the tendering phase of the project as well. In consultation with Norm Brooks, they identified several contractors who were to be invited to tender. AGM prepared the invitation packages and collected and evaluated all bids recommending a single contractor for both earth moving and service installation.

One important aspect of this development in Norm Brooks' opinion was AGM's ability to coordinate surveying and engineering work seamlessly. Site surveying was completed in a timely fashion so that grading and service installation could proceed quickly. AGM

finished the work on this project by applying for assumption of the development by the Township.

The development was a success. Brooks' Really sold the first 12 lots within three months. All lots are now sold and 17 already have houses built on them. The warranty period will be satisfied soon and it is likely that the Township will be assuming in the near future.

Looking back on the project, Norm Brooks has high praise for AGM's engineering staff. "I have been in the land development business for 55 years. During that time, I have used four or five different engineering firms. I switched to AGM for this last project because they had been doing my surveying and could coordinate both engineering and surveying. I have had good engineers in the past, but this is the best management I have ever had."



Inside

- Springbank Dam
- Habitat for Humanity
- AGM Partner wins seat on AOLS Council
- AGM Golf Tournament





Springbank Dam

The Springbank Dam is located on the main branch of the Thames River in southwest London. It was built at this site in 1929 to replace a dam located a short distance upstream. The dam has 17 sets of wooden stoplogs supported in steel gins that hold back the flow of the Thames. Each fall the logs are removed and the gins are swung up under the deck to allow for the free passage of winter ice and spring runoff. In the spring the logs are reinstalled, raising the water level on the upstream side of the dam. The dam is currently being rehabilitated. The project includes replacing failing stop logs with gates that will be less prone to blockage by debris.

The installation of the new gates presented a complex three-dimensional technical problem. They were to be manufactured off-site and installed between the piers of the dam to replace the stoplogs. Visualize a damper, hinged at the bottom and able to swing up and down within the dam structure. The design demanded tight tolerances between the gate and the walls of the piers, precise placement of the trunnions at the base of each gate and near perfect alignment of the plane of the gate in all operating positions. All of this had to be created within the framework of a structure built over three-quarters of a century ago and damaged by flooding several times in its life.

McLean Taylor Construction, the contractor on the project consulted with AGM Surveying on the problem. There were four distinct aspects to be solved.

1. Find the baseline of the dam. All of

the engineering design used a baseline marked along the top of the dam in the original engineering drawings from 1929. Unfortunately, over the intervening years the top of the dam had been refurbished and resurfaced and all position markers for the baseline had been obliterated.

2. Create the geometry for opening and closing the gates. Locate the bases for the superstructures that would house the actuator mechanisms to raise and lower



Springbank Dam renovation under way. Note the wall plates welded in place using AGM's spatial location skills to achieve the necessary precision.

each gate. Locate the trunnions at the base of each gate with an unprecedented level of accuracy. The bearing centres had to be within a tolerance 1.5 mm over a distance of 14 metres.

3. Set the height for the gate rests. When the gates are open, they lay along the base of the dam. To prevent deformation of the gates, they need to be supported flat. The existing concrete base would not provide a flat plane, therefore gate rests had to be located and set to create the necessary plane.

4. Install and plumb wall plates between the piers to create the "jamb" that would frame the sides of the gates. The design called for the wall plates to be set exactly

perpendicular and parallel to each other at close tolerance to the width of the gate (slightly over 14 metres) over the entire range of travel.

The first task was to identify a comprehensive set of fixed control points from the 1927 drawings still in existence now from which the original location of the base line could be measured. Field crews then set up the control point network took site readings to locate the baseline. Back in the office, technical staff then used these data and calculated the best fit line to connect all of the site readings. This reconstructed baseline then served as the basis for all subsequent measurements.

With the baseline in place, AGM used a total station to measure and locate the bases for the superstructures, the trunnions and the rests for the gates. What was unusual about this job, was the degree of precision required – the locations had to be accurate to ¼ cm.

AGM provided the missing key needed to solving the fourth issue. The design called for the wall plates to be installed against stop nuts set on a series of lag bolts set into the original concrete piers of the dam. The question was how to set the stop nuts in a perfect vertical plane and parallel to the plate on the opposite pier. Standard construction measuring methods would not be accurate enough – however, using the total station AGM field staff could precisely delineate a vertical plane. They could also check that the second plate on the opposite side of the gate was exactly parallel to the first with EDM (electronic distance measuring) – a feature of the total station.

The contractor set the bolts in the piers according to the design. Using the total station, we were able to measure when

the face of each stop nut was perfectly on the plane. The contractor then tacked it in place. When all the nuts were set, the contractor was able to install the wall plate against the nuts as stops creating a perfect plane. The plates were then welded to the bolts. Measurements after the installation showed that the walls were plumb and parallel with a variation of no more than 7 mm from their true axes over the entire face of the wall plate.

Habitat for Humanity



Habitat for Humanity's mission is to provide people with a "hand-up not a hand-out". It works through the partnership of volunteers, homeowners,

churches, businesses and communities. Homeowners contribute five hundred hours of "sweat equity" towards the construction of their own homes. In Canada since 1985, Habitat for Humanity has built over five hundred homes – twelve of them in London.

AGM Surveying and Engineering has worked with Habitat for Humanity London from the organization's very first build on Watson Street in 2001.

This year, Habitat for Humanity will be opening up a new project site in the 1100 block of Kipp's Lane. When completed, this project will create 4 new Habitat homes. Two are scheduled to be constructed this year, and two next year. Once again, AGM Surveying and Engineering will be part of the team.

AGM's contribution to the project begins long before

any excavation or building takes place. Representing AGM's Engineering Department, Hendrik Schuurmans, P.Eng. provides advisory services to the Habitat staff as well as a complete builders' package of services.

The package includes:

- locating the boundaries of the lot and the house within those boundaries taking into account setback requirements,
- laying out the foundation on-site and

Mike Doupe, Vice-President of McLean Taylor said, "We simply would not have been able to do this job without AGM. The tolerances required were unique and would have been unattainable but for the work of the AGM crew."

Ingenuity and precision combined to solve an intractable problem at the Springbank Dam.

locating the correct depth for the underside of the footings,

- checking the excavation before the footings are poured and providing the Interim Grading Certificate to certify the final footing elevations,

- staking the lot after construction to provide the finished grade elevations and
- providing the final grading certificate.

In addition to these essential services, Hendrik also provides advisory services on issues ranging from zoning and minor planning questions to research on available services and maximum possible house dimensions for a given lot.



Habitat for Humanity's 2006 build under construction

Julie Coley, Executive Director of Habitat for Humanity London said, "I've been working with AGM for over six years. They've been a donor and very supportive of what we do. They are always ready to offer their expertise to help us succeed."

Everyone at AGM is proud to be part of the Habitat for Humanity team. We are looking forward to our role in this new Habitat project.

London

Drew Annable, O.L.S.
Bruce Baker, O.L.S.
Rick Dykstra, P.Eng.
Jason Wilband, O.L.S., P.Eng.
553 Southdale Road East,
N6E 1A2
Business: (519) 685-5300
Fax: (519) 685-5303
email: agmlon@agm.on.ca
internet: www.agm.on.ca



Member



Member

ARCHIBALD, GRAY & McKAY

