Building the Beijing Olympic Field

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Wrap-up Report – November 2008

The China National Stadium (the Bird's Nest) in Beijing was designed and built specifically for the 2008 Olympic Games. In August 2008, this stadium was host to the opening ceremony, track and field events, the international football finals, the closing ceremony, and the Paralympics Games. This stadium, because of its large seating capacity, will function as a gathering place for a variety of different events in the future. To facilitate a wide variety of activities, which would otherwise be destructive to a natural turfgrass system, Chinese officials selected a modular, or portable, field capable of being moved in and out of the stadium in a relatively short period of time. Dr. John N. Rogers, III, and Dr. James R. Crum, experts in the field of turfgrass management at Michigan State University (MSU), East Lansing, MI, developed and served as consultants for a number of modular field projects including the first ever modular field used for the 1994 Fédération Internationale de Football Association (FIFA) World Cup and the 2004 Olympic Games, Athens, Greece (Rogers, et al., 1993; Anderson, and VanLoo, 2005). This made Rogers, Crum, and the MSU turf team the natural choice as external consultant to insure the success of the project.

Summer/Fall 2007: Preparation and Turfgrass Establishment

From March 2005 to July 2007, Crum and Rogers made several trips to Beijing. These trips ranged in purpose from contract negotiations to raw material selections and inspections. In September 2007, Rogers and Graduate Assistant Alexander Kowalewski (along with Dr. Weijun Zhao, MSU Office of China Programs) traveled to Beijing to seed and establish the modular field.

The MSU turf team worked in tandem with the China Sports Industry Group Co. (CSI), the Beijing based company responsible for the construction of the field and ultimately its long term care. The modular system selected for this project was the GreenTech® ITM system™, Roswell, GA, the same system used in the 2004 Olympic Games and the MSU Spartan Stadium project (Nektarios, and N. Ntoulas, 2008; Adkins, and Rogers, 2003). An individual GreenTech module is 4.0 ft x 4.0 ft wide and weighs approximately 1,100 lbs when filled with 8 in of a sand-based root zone (Image 1). After the final surface grade touches were made on September 5, 2007, the field received it first fertilizer application (provided by Scott's®, Marysville, OH) and was seeded using a Kentucky bluegrass (*Poa pratensis* L.) mixture ('Freedom III', 'Midnight II' and 'Barrister') (provided by Barenburg® USA, Tangent, OR). Kentucky bluegrass, a cool-season grass, was chosen for this project because Beijing, while being very hot during the summer (reaching temperatures over 100 ºF), is subject to cold and windy winter conditions, which is not conducive to warm-season grass survival. The turfgrass germinated well and filled in nicely during the fall with the exception of a small *Pythium* outbreak, due to an unusually high temperature spike in late September, which was dealt with accordingly. On October 5, 2008, the last remaining member of the MSU turfgrass

team, Kowalewski, left China for the winter with CSI in charge of maintenance until the team's return in the following spring.

Spring 2008: Practice Move and General Maintenance

In April 2008, Rogers traveled to Beijing to inspect the field as it woke from the winter and to provide a maintenance plan for the early spring. Alexander Kowalewski, and his wife Heidi, arrived in early May. Kowalewski's focus was to provide guidance in field maintenance, inspect the field daily for issues as they developed, and be the eyes and ears for the MSU team back in Michigan.

The first order of business came in mid-May when the CSI group moved the field into the stadium for the Beijing Good Luck Games. This exercise was important to all involved in the Olympics, as it gave CSI experience and confidence in the installation of the field and it provided the Olympic Committee and the National Stadium Authority peace of mind that the system was indeed viable. In late May, the field was returned to its original construction site to be maintained through the brutally hot and humid Beijing summer.

Summer maintenance focused on the primary cultural practices, mowing, fertilization, and irrigation, and an integrated pest management (IPM) program for weed and disease control. Mowing was done frequently at a height of 3.5 cm then reduced to 3.0 cm prior to the start of Olympic competition. Frequent fertilization and irrigation applications were made throughout the summer to provide the sand-based system with a constant supply of nutrients and water; however, these applications were made at low levels to minimize disease development. Weed populations were controlled manually on a daily basis, every day a handful of field laborers would walk the field and hand pick

weeds as they emerged. In July and August, due an extended period of very hot and humid conditions, disease control became the major concern leading up the Games. Dr. Joseph M. Vargas, MSU Department of Plant Pathology, and MSU alumnus Dr. Brandon Horvath, Virginia Tech University; College of Agriculture and Life Sciences, Virginia Beach, VA, became very crucial contacts at this time. Both Dr. Vargas and Dr. Horvath were very instrumental in disease diagnosis and identification via email, and provided the necessary curative procedures for the specific situations as they developed (Image 2). The major disease that was battled throughout the summer months was brown patch (*Rhizoctonia* spp.). Kowalewski and Rogers had almost daily contact during the summer to discuss and assess field conditions and management strategies.

August 2008: The Opening Ceremony and Move in Process

On August 8, 2008 at 8:00 pm the entire city of Beijing halted to watch the opening ceremony in person at the National Stadium or on television. Shortly after the ceremony was completed, the modular field again began its 6 mile journey from its construction site on the outskirts of the city to the stadium located in downtown Beijing. The first modules arrived at the National Stadium after the opening ceremony on the morning of August 10, 2008, and were placed at 8:00 am. Michigan State University turf team members Dr. Rogers, and Dr. Zhao made the trip back to China at this time to assist with the move in process. Work was initially slow because CSI had to share the stadium floor with the crews responsible for breaking down the opening ceremony platform, and installing a structure that was hidden beneath the field and ultimately used for the closing ceremony (Image 3). Work finished for the day at 8:00 pm on August 10, 2008, and began again the next morning at 8:00 am. As the stadium crew made way for CSI the

installation pace quickened substantially. China Sports Industry Group worked through the night and the final modules were laid by hand early the next morning, August 12, 2008, at 4:00 am (Image 4 and 5).

The MSU turf team left China after the modular field was installed and groomed in preparation for the Olympic Games on August 15, 2008, and CSI assumed sole responsibility for its care. Track and field competition took place from August 15 – 23, 2008, at the stadium on the modular field. The men's football finals between Argentina and Nigeria concluded the 2008 Olympic competition on August 23, 2008. All reports stated that the field provided a stable, uniform, and aesthetically pleasing playing surface. Overall, this project was viewed as a tremendous success by all parties – Olympic Committee, National Stadium, CSI, and MSU. The project had its challenges both environmentally and logistically, but in the end, it provided the turf program at MSU a chance to showcase its expertise.

Literature Cited

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Image 1: China Sports Industry Group Co. moving established GreenTech® ITM™ modules at the modular field construction site located on the outskirts of Beijing, China, May 8, 2008.

Image 2: Photos of the disease symptoms (left) were taken at the field, then diseased tissue samples were collected and taken to the China Agricultural University, Beijing, China, were Dr. Ligun Zhang used a digital microspore (center) to take photographic images (right) of the disease at a microscopic level, July 11, 2008. These images were then sent to Dr. Joseph Vargas, Michigan State University, and Dr. Brandon Horvath, Virginia Tech University, for disease identification.

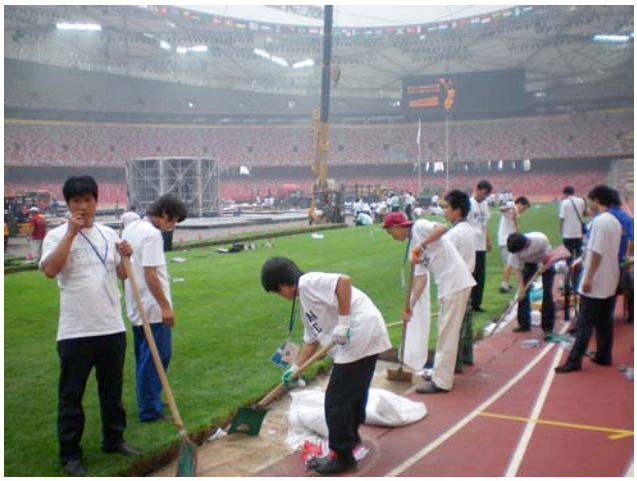

Image 3: China Sports Industry Group Co. installing modules at the China National Stadium, Beijing, China, on August 10, 2008, while crews break down the opening ceremony platform and set up for the closing ceremony.

Image 4: China Sports Industry Group installing the final modules by hand at the National Stadium, Beijing, China, August 12, 2008, at 4:00 am.

Image 5: Modular field after its installation prior to the initiation of track and field competition, August 13, 2008, National Stadium, Beijing, China.