



**Press Release**  
**For Immediate Release**  
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**Tick Tock the Museum of Discovery and Science's Great Gravity Clock will officially reopen on April 6, 2017 after a complete renovation.**

**- Photo Opportunity at 11 a.m. on April 6, 2017 -**

**Fort Lauderdale, FL, March 22, 2017** – Beginning on April 6, 2017, Museum of Discovery and Science visitors will be able to watch the Great Gravity Clock in action again thanks to generous donations from JM Family Enterprises, Inc. and The Jim Moran Foundation that funded a complete exhibit restoration.

The Great Gravity Clock stands at 52-feet tall and is the biggest kinetic energy sculpture in Florida. Located in the Museum's grand atrium since 1993, this unique timepiece is only one of three in the world. The other two are in Mexico and Japan. Twenty-four years of exposure to the elements compromised its ability to tell time so a major restoration was undertaken.

“More than 20 years ago, Jim and Jan Moran and JM Family Enterprises partnered together to bring the Great Gravity Clock to Broward County. We are happy to restore the clock to its original distinction with the help of The Jim Moran Foundation so that children and families may once again be welcomed by this unique exhibit and excited about the learning and discovery that is just beyond the Museum's entrance,” said Colin Brown, president and CEO, JM Family Enterprises, Inc.

Centrifugal Rebabbiting of Fort Lauderdale, which has been helping to maintain the clock for several years, was selected to perform a complete restoration of the sculpture.

Beginning December 5, 2016, a 55-foot-tall scaffolding structure was constructed around the full height of the clock. Centrifugal's team of 18 people began by inspecting every component of the clock. They examined pin wheels, ball gates, pneumatic control valves, rails, ball stirrups, and circuits. Many new parts had to be custom fabricated in their shop in Fort Lauderdale since you can't just buy the parts off the shelf!

Aaron Myers, Centrifugal's Project Supervisor, said “Pneumatic control valves were not functioning and had to be replaced, rails needed to be realigned so that the balls would roll correctly, chains on the elevator were renewed and repairing and shining up the water wheels all took time. Plus, machinists had to sand cast 30 aluminum crescent pieces that hold the tubing. Maneuvering on the high-reach lift to conduct trouble shooting while navigating the structure wire supports was one of the most difficult and time consuming elements of this project.”

Centrifugal's Project Manager, Oliver "Buddy" Street, Jr., said "The crew really made sure that safety of museum visitors and workers was a priority."

Visitors have been able to watch the restoration process including repainting from top to bottom and testing of 60 new balls. The balls must be exactly balanced in order to keep flowing correctly. The work has become an evolving exhibit of sorts. Crew members were surprised that many visitors stopped to ask them if they were taking the clock down. When told that workers were restoring the clock, they were relieved. It seems visitors of all ages hold fond memories of the clock and see it as an icon of the Museum.

### **How Can You Tell Time with the Clock?**

It's easy. If four balls are on the bottom "hour" rail, three balls are on the middle "ten-minute" rail, and five balls are on the top "minute" rail, the time is 4:35.

### **How Does it Work?**

Look up and observe the three slightly tilted rails just below the face of the clock. These rails hold the minute balls, ten-minute balls and hour balls. A ball rolls onto a rail with the passing of every minute, every ten minutes and every hour. Since each ball represents an increment of time, the Great Gravity Clock is digital. Each minute a ball moves around the face of the clock and is released onto the digital rails. Gravity takes over causing the balls to travel the rails.

### **How Does it Track the Time?**

The top "minute" rail holds up to nine balls, each measuring one minute. When the tenth ball rolls onto the top rail, it causes the rail to empty and one ball to drop to the "ten-minute" rail. The middle "ten-minute" rail can hold five balls representing fifty minutes. As the sixth ball rolls onto the rail, it causes the rail to empty and one ball drops to the "hour" rail. The bottom "hour" rail catches one ball per hour up to twelve hours. All the digital rails will be completely full at 12:59. At 1:00, all the balls will cascade down to the bottom of the tower and the twelve-hour sequence starts again.

### **East Wall**

#### **The Counterbalanced Pendulums**

When a ball rolls through this part of the track, it triggers the pendulums. As the pendulums swing, the weights on the end of their shafts affect their motion in unpredictable ways. Each motion affects another differently each time. Watch and see. Sometimes the pendulums swing very fast and sometimes very slowly.

### **West Wall**

#### **The Vertical Wave**

When a ball passes this part of the exhibit, it causes the wave bar to twist at the top. This twist or wave motion travels down the spring, reaches the bottom and returns to the top. This shows that kinetic energy caused by the top twist is stored by the spring and then released.

### **ABOUT JM FAMILY ENTERPRISES, INC.**

[JM Family Enterprises, Inc.](#), founded by Jim Moran in 1968, is a \$14.9 billion diversified automotive company ranked No. 21 on *Forbes'* list of "America's Largest Private Companies."

JM Family is also ranked No. 55 by FORTUNE® as one of the 100 Best Companies to Work For®, its 19<sup>th</sup> consecutive year on the list. Primary subsidiaries include: [Southeast Toyota Distributors](#), [JM&A Group](#), [World Omni Financial Corp.](#), and [JM Lexus](#). Headquartered in Deerfield Beach, Fla., JM Family has major U.S. operations in Jacksonville and Margate, Fla.; Commerce and Alpharetta, Ga.; Mobile, Ala.; and St. Louis, Mo. Interact with JM Family at [Facebook.com/JMFamilyEnterprises](https://www.facebook.com/JMFamilyEnterprises).

### **ABOUT THE JIM MORAN FOUNDATION**

Founded by automotive pioneer Jim Moran, the mission of The Jim Moran Foundation is to improve the quality of life for the youth and families of Florida through the support of innovative programs and opportunities that meet the ever-changing needs of the community. The Foundation has invested nearly \$80 million in education, elder care, family strengthening, after school and youth transitional living initiatives since its inception in 2000 – with efforts currently focused in Broward, Palm Beach and Duval counties. Through a long-term Grant Agreement, The Foundation’s significant funders are JM Family Enterprises, Inc. and its subsidiaries, including Southeast Toyota Distributors, LLC. It is located at 100 Jim Moran Blvd., Deerfield Beach, FL 33442. To learn more, visit [www.jimmoranfoundation.org](http://www.jimmoranfoundation.org) or call (954) 429-2122.

### **ABOUT THE MUSEUM OF DISCOVERY AND SCIENCE**

The mission of the Museum of Discovery and Science is to provide experiential pathways to lifelong learning in science for children and adults through exhibits, programs and films. Founded in 1976 as The Discovery Center, the nonprofit facility serves approximately 400,000 visitors annually. Major operational support for the Museum is provided through generous support by Leadership Guild members including: JM Family Enterprises, Inc., Jet Blue and Wells Fargo.

The Museum is open seven days a week, 365 days a year; Monday through Saturday from 10 a.m. to 5 p.m., and Sunday from noon to 6 p.m. The Museum of Discovery and Science is located downtown at 401 SW Second Street, Fort Lauderdale, Florida 33312. For more information about the Museum, visitors should call 954.467.MODS (6637) or visit our web site at [www.mods.org](http://www.mods.org)

### **Image:**

<https://www.dropbox.com/s/h39xaxbbw2bsjou/Centrifugal%20Rebabbiting%20working%20on%20Great%20Gravity%20Clock%20Restoration.JPG?dl=0>

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