



## **HEAVY MOVABLE STRUCTURES, INC.**

**In cooperation with:**

Engineering Firms, System Designers & Specialists,  
Fabricators, Constructors and Suppliers

**Supporting:**

Private and Public Owners, Including City, County,  
State & Federal Government Agencies



# 13TH

**HEAVY MOVABLE STRUCTURES, INC.  
BIENNIAL SYMPOSIUM**

OCTOBER 25-28, 2010 • CARIBE ROYALE, ORLANDO, FL.



Welcome to the  
**HEAVY MOVABLE STRUCTURES, INC.  
THIRTEENTH BIENNIAL SYMPOSIUM**



October 25-28, 2010

at the CARIBE ROYALE  
8101 WORLD CENTER DRIVE, ORLANDO, FL 32821  
Tel: 407-238-8000 • Fax: 407-238-8050  
[www.CaribeRoyale.com](http://www.CaribeRoyale.com)

IN COOPERATION WITH:  
ENGINEERING FIRMS, SYSTEM DESIGNERS & SPECIALISTS,  
FABRICATORS, CONSTRUCTORS AND SUPPLIERS

SUPPORTING:  
PRIVATE AND PUBLIC OWNERS  
INCLUDING CITY, COUNTY, STATE &  
FEDERAL GOVERNMENT AGENCIES

It is the Policy of the Corporation to provide a means for information exchange. It does not propagate, recommend or endorse any of the information interchanged as it relates to design principles, processes or products presented at the Symposium and/or contained herein. All data are the authors' and not the Corporation's. Application of information interchanged is the responsibility of the user to validate and verify its integrity prior to use.

# HEAVY MOVABLE STRUCTURES // ORGANIZATIONAL INFORMATION



Heavy Movable Structures, Inc., is a not-for-profit technical organization of volunteers focusing on the heavy civil facilities utilized by or for the public benefit, with emphasis on, but not limited to, movable bridges. The main mission of HMS is to provide forums for information interchange among bridge owners, government agencies, designers, contractors, suppliers, and other groups involved in movable bridges and heavy movable structures. This includes both privately owned and publicly owned bridges.

It is intended and believed that this information exchange will benefit the public through improved safety and reliability, more cost effective utilization of public funds through improved design and maintenance practices, and increased awareness and conformance with issues of the environment.

These information exchanges involve scientific principles and practices, various engineering disciplines, current technologies and state-of-the-art crafts related to the industry. The forums of information interchanges utilized are primarily the biennial symposia with the associated publications and other information that the volunteers may therein provide.

The scope or sphere of interest encompassed by HMS, has not been tightly defined by intention. At the present time, HMS is primarily concerned with movable bridges and other larger civil engineering structures such as navigation locks, dams, flap gates, flood control equipment, movable stadium roofs and other structures with large machinery in which most operational speeds are less than critical and forces are large.

## **BOARD OF DIRECTORS**

The Board of Directors is a policy making body representing the membership from the heavy movable structures industry. It sets the position of various subjects related to the intent and purpose expressed in the Articles of Incorporation.

## **CHAIRMAN OF THE BOARD**

Mickey Harrison, HDR Engineering, Inc.  
Phone: 816-360-2700

## **CHAIRMAN EMERITUS**

Vincent Anepete  
Phone: 609-693-6865

## **BOARD MEMBERS (2007-2010)**

David Collier, Federal Transit  
Phone: 863-634-6156

William Ferry, Jr., MassHighway  
Phone: 774-240-1546, Fax: 508-973-2677

Alfred Mangus, CalTrans  
Phone: 916-227-8926, Fax: 916-227-0404

George Patton, EC Driver & Associates, Inc.  
Phone: 813-282-9886, Fax: 813-282-9873

Roger Paucek, Fincor Automation  
Phone: 717-751-4210, Fax: 717-751-4263

Herbert Protin, HDR, Inc.  
Phone: 201-946-4600, Fax: 201-946-4510

Robert Roll, Hubble, Inc.  
Phone: 440-428-1161, Fax: 441-428-7635

Lynn Taylor, Hardie-Tynes, Inc.  
Phone: 205-252-5191, Fax: 205-252-3254

## **BOARD MEMBERS (2009-2012)**

James Alison, Steward Machine Company  
Phone: 205-841-6461, Fax: 205-849-8029

Pete Amador, J.C. Industrial Manufacturing  
Phone: 305-634-5280, Fax: 305-634-5224

Jack Longworth, New Jersey DOT  
Phone: 732-625-4358, Fax: 732-625-4357

Rob Moses, Hardesty & Hanover, LLP  
Phone: 212-944-1150, Fax: 212-391-0297

Dave Sheridan, UWL Company  
Phone: 908-685-0456, Fax: 908-685-1968

Mark White, White Marine, Inc.  
Phone: 800-826-4491, Fax: 732-826-4478

Angel Rodriguez, Florida DOT  
Phone: 850-414-4297, Fax: 850-414-4955

Jeff Newman, Modjeski & Masters  
Phone: 717-790-9565, Fax: 717-790-9564

## **HMS EXECUTIVE OFFICERS**

The Executive Officers are responsible for the Corporation's operating functions and duties as defined in the Articles of Incorporation, By-Laws, Executive Orders and Board Policies and Approved Procedures.

## **PRESIDENT**

Charles DeBardleben,  
Steward Machine Company  
Phone: 205-841-6461, Fax: 205-849-8029

## **VICE PRESIDENT**

Steve Mikucki, Hardesty & Hanover, LLP  
Phone: 212-944-1150, Fax: 212-391-0297

## **SECRETARY**

Peter Davis, HDR, Inc.  
Phone: 201-946-4500, Fax: 201-946-4510

## **TREASURER**

Roy Bill, New Jersey DOT  
Phone: 732-308-4034, Fax: 732-308-0160

## **2009-2010 TECHNICAL COMMITTEE CHAIRS**

## **OWNERS COMMITTEE**

Angel Rodriguez, Phone: 850-414-4297  
angel.rodriguez@dot.state.fl.us

## **STRUCTURAL COMMITTEE**

George Patton, Phone: 813-282-9886  
george\_patton@ecdriever.com

## **PERFORMANCE/CONSTRUCTION/ MAINTENANCE**

Jon Henriksen, Phone: 503-988-3757  
jon.p.henriksen@co.multnomah.or.us

## **MACHINERY/MECHANISMS**

James Alison, Phone: 205-841-6461  
jalison@stewardmachine.com

## **FLUID POWER SYSTEMS**

Frank Marzella, Phone: 360-943-4139  
fmarzella@hardesty-hanover.com

## **ELECTRICAL / ELECTRONIC SYSTMS**

Greg Baron, Phone: 973-237-1650  
gbaron@hntb.com

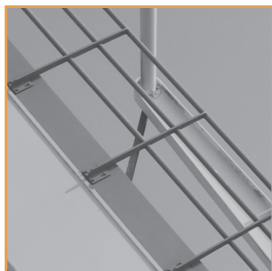
**13<sup>TH</sup>**

**HEAVY MOVABLE STRUCTURES, INC.  
BIENNIAL SYMPOSIUM**



# 13TH BIENNIAL SYMPOSIUM //

## SCHEDULE OF EVENTS OCT. 25-28



### MONDAY

1:00-5:30PM	Booth Set Up Open
1:00-7:00PM	Registration Open
3:00-5:00PM	Board of Directors Meeting (Strauss Room)
6:30-8:30PM	Welcoming Reception (Caribbean Ballroom)
8:30pm	AREMA 15 Exec. Subcommittee Meeting

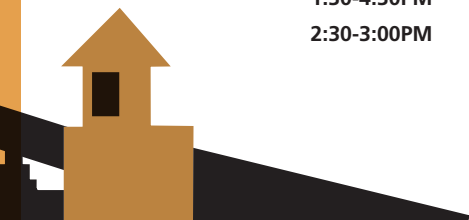
### TUESDAY & WEDNESDAY

(TYPICAL DAILY SCHEDULE)

7:00-9:00AM	Buffet Breakfast
8:00-11:30AM	AREMA Committee 15 Meeting
8:00-11:30AM	Technical Presentations
9:30-10:00AM	Break
11:30-1:30PM	Luncheon
1:30-5:00PM	Technical Presentations
3:00-3:30PM	Break
5:00-6:00PM	Reception for AREMA Committee 15 (Tuesday)
6:00-8:00PM	HMS BBQ & Tennis Tournament (Tuesday)
4:00-8:00PM	Evening at Universal Studios Tour (Wednesday)

### THURSDAY

7:00-9:00AM	Buffet Breakfast
8:00-9:30AM	Technical Presentations
9:30-10:00AM	Break
10:00-11:30AM	Technical Presentations
11:30-1:30PM	Luncheon
1:30-2:30PM	Board of Directors Closing Meeting
1:30-4:30PM	Booth Tear Down
2:30-3:00PM	Executive Officers Meeting





# TUESDAY, OCT. 26TH //

## MORNING SESSIONS

OWNERSHIP / PUBLIC USE AND MANAGEMENT	CHICAGO ROOM
MONITOR: MARK ZAGROBELNEY	

8:00-8:45am	Water Street over Eel Pond Channel // Jeff Keyt
8:45-9:30am	Design & Construction of the Pont Bascalan-Bastide Vertical Lift // Keith R. Griesing & Mathieu Cardin Egis
9:30-10:00am	BREAK
10:00-10:45am	Integrating Function and Aesthetics on the Miami River - SR7 - NW 5th Street Bridge // Michael J. Sileno
10:45-11:30am	Small Bridge, Big Challenges - Port Ferdinand Bridge, Barbados // James M. Phillips
11:30-1:30pm	LUNCH: Guest Speaker Paul Skelton

PERFORMANCE / CONSTRUCTION / MAINTENANCE	WADDELL ROOM
MONITOR: JON HENRICKSEN	

8:00-8:45am	Counterweight Rope Replacement on the Murry Morgan Lift Bridge // Frank Marzella
8:45-9:30am	Emergency Repairs of the I-695 Bridge over Curtis Creek // Scott Reynolds, Daniel Williams
9:30-10:00am	BREAK
10:00-10:45am	Case Study on Bascule Bridge in Ft. Lauderdale // Necati Catbas
10:45-11:30am	Instrumentation and Load Test Evaluation -Wilson Piggot Bridge // George C Patton
11:30-1:30pm	LUNCH: Guest Speaker Paul Skelton

# TUESDAY, OCT. 26TH //

## MORNING SESSIONS

MACHINERY / MECHANISMS	RALL ROOM
MONITOR: MATT GAGLIANNO	

8:00-8:45am	Identifying & Correcting the Errant Roll of a Scherzer Rolling Lift // Herbert Protin
8:45-9:30am	The Changing Culture of Wire Rope for Vertical Lift Bridges // Timothy W. Klein
9:30-10:00am	BREAK
10:00-10:45am	Mechanical Details in Detail // James Alison III
10:45-11:30am	Trunnion Bearing Replacement (Spherical Roller Element)- Pennington Avenue Bridge // John A. Gimblette
11:30-1:30pm	LUNCH: Guest Speaker Paul Skelton

FLUID POWER / ELECTRICAL SYSTEMS	STRAUSS ROOM
MONITOR: RAY HENTZEL	

8:00-8:45am	Removing a Bascule Counterweight - Thames River Bridge // Alan Fisher
8:45-9:30am	Hydraulic Electrical Systems for the Albatros Bridge // Ioan Gische
9:30-10:00am	BREAK
10:00-10:45am	Brake Installation Requirements and Tolerances // Lawrence E. Chizmar
10:45-11:30am	Thames River Bridge Replacement // Gary Peters
11:30-1:30pm	LUNCH: Guest Speaker Paul Skelton

# TUESDAY, OCT. 26TH //

## AFTERNOON SESSIONS

OWNERSHIP / PUBLIC USE AND MANAGEMENT	CHICAGO ROOM
MONITOR: WALLACE SANDERS	

1:30-2:15pm	Design & Construction of the Pont Bascalan-Bastide Vertical Lift // Keith R. Griesing & Mathieu Cardin Egis
2:15-3:00pm	Integrating Function and Aesthetics on the Miami River - SR7 - NW 5th Street Bridge // Michael J. Sileno
3:00-3:30pm	BREAK
3:30-4:15pm	Water Street over Eel Pond Channel // Jeff Keyt
4:15-5:00pm	Small Bridge, Big Challenges - Port Ferdinand Bridge, Barbados // James M. Phillips
6:00-8:00pm	HMS BBQ & TENNIS TOURNAMENT

PERFORMANCE / CONSTRUCTION / MAINTENANCE	WADDELL ROOM
MONITOR: BILL NICKOLEY	

1:30-2:15pm	Counterweight Rope Replacement on the Murry Morgan Lift Bridge // Frank Marzella
2:15-3:00pm	Emergency Repairs of the I-695 Bridge over Curtis Creek // Scott Reynolds, Daniel Williams
3:00-3:30pm	BREAK
3:30-4:15pm	Case Study on Bascule Bridge in Ft. Lauderdale // Necati Catbas
4:15-5:00pm	Instrumentation and Load Test Evaluation -Wilson Piggot Bridge // George C. Patton
6:00-8:00pm	HMS BBQ & TENNIS TOURNAMENT

# TUESDAY, OCT. 26TH //

## AFTERNOON SESSIONS

MACHINERY / MECHANISMS	RALL ROOM
MONITOR: ASHOK AMIN	

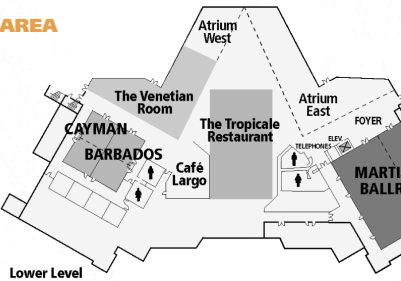
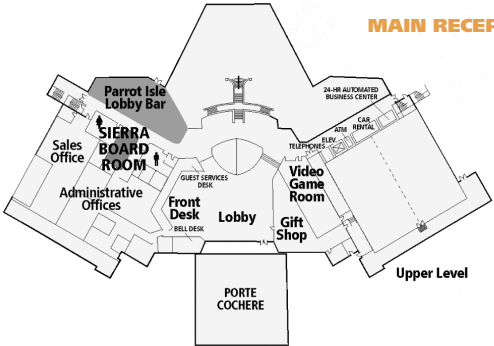
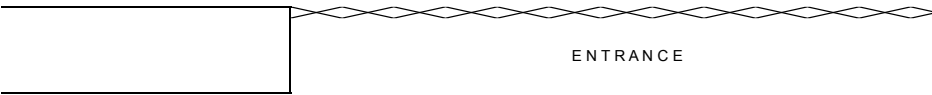
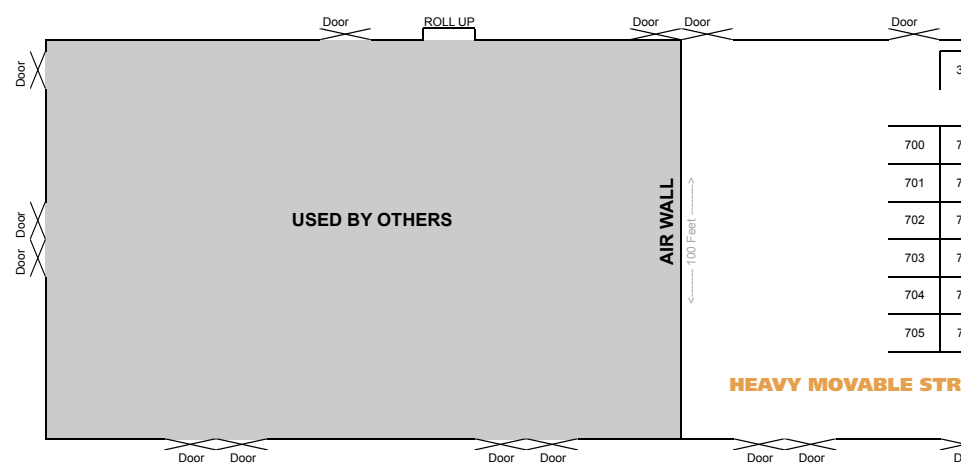
1:30-2:15pm	Mechanical Details in Detail // James Alison III
2:15-3:00pm	Trunnion Bearing Replacement (Spherical Roller Element)- Pennington Avenue Bridge // John A. Gimblette
3:00-3:30pm	<b>BREAK</b>
3:30-4:15pm	The Changing Culture of Wire Rope for Vertical Lift Bridges // Timothy W. Klein
4:15-5:00pm	Identifying & Correcting the Errant Roll of a Scherzer Rolling Lift // Herbert Protin
6:00-8:00pm	<b>HMS BBQ &amp; TENNIS TOURNAMENT</b>

FLUID POWER / ELECTRICAL SYSTEMS	STRAUSS ROOM
MONITOR: GREG BARON	

1:30-2:15pm	Thames River Bridge Replacement // Gary Peters
2:15-3:00pm	Hydraulic Electrical Systems for the Albatros Bridge // Ioan Gische
3:00-3:30pm	<b>BREAK</b>
3:30-4:15pm	Removing a Bascule Counterweight - Thames River Bridge // Alan Fisher
4:15-5:00pm	Brake Installation Requirements and Tolerances // Lawrence E. Chizmar
6:00-8:00pm	<b>HMS BBQ &amp; TENNIS TOURNAMENT</b>

# CARIBE ROYALE ORLANDO //

## HOTEL MAP & EXHIBIT AREA





# WEDNESDAY, OCT. 27TH //

## MORNING SESSIONS

OWNERSHIP / PUBLIC USE AND MANAGEMENT	CHICAGO ROOM
MONITOR: ROB MOSES	

8:00-8:45am	Fore River Bridge Replacement Study // Mark Ennis
8:45-9:30am	Large, Moving Structures in the Entertainment World // Stephen A. Sywak
9:30-10:00am	<b>BREAK</b>
10:00-10:45am	Not All Heavy Movable Structures are Bridges // Pete Davis
10:45-11:30am	Out with the Old and In with the New - Ben Sawyer Swing Span // Timothy J. Noles & Ryan Hamrick
11:30-1:30pm	<b>LUNCH:</b> Guest Speaker Andrew Herrmann

STRUCTURAL ELEMENTS	WADDELL ROOM
MONITOR: GRACE PATINO	

8:00-8:45am	Link Arm Repair and Counterweight Hanger Fatigue Strengthening // Dennis Biegle
8:45-9:30am	Heavy Duty Riveted Bridge Deck - AASHTO H20 Loading and Fatigue Test Results // Kenneth P. Apperson
9:30-10:00am	<b>BREAK</b>
10:00-10:45am	Strengthened Bascule Piers for the Newly Rehabilitated Bridge of Lions // Jian Huang & R. Wayne McLennon
10:45-11:30am	Evaluation of Sheave Trunnions // Robert Gessel
11:30-1:30pm	<b>LUNCH:</b> Guest Speaker Andrew Herrmann

# WEDNESDAY, OCT. 27TH //

## MORNING SESSIONS

MACHINERY / MECHANISMS	RALL ROOM
MONITOR: SCOTT SNELLING	

8:00-8:45am	Roller Coaster Construction // Kenny Waugh
8:45-9:30am	Pretoria Avenue Lift Bridge // Ryan Kanagy
9:30-10:00am	<b>BREAK</b>
10:00-10:45am	Enclosed Drives for Movable Bridges - Specifications Consistency // John G. Proven
10:45-11:30am	Bridge Balance and Counterweight Design Considerations // Ralph G. Giernacky
11:30-1:30pm	<b>LUNCH:</b> Guest Speaker Andrew Herrmann

FLUID POWER / ELECTRICAL SYSTEMS	STRAUSS ROOM
MONITOR: ROGER PAUCEK	

8:00-8:45am	Drive Types with Loading Conditions A, B & C // Lance V. Borden
8:45-9:30am	Adventures in Bridge Instrumentation // David M. Barrett
9:30-10:00am	<b>BREAK</b>
10:00-10:45am	Rehab & Remote Control Operation of a 115+ Year Old Rim Bearing Swing Span // Geoffrey Forest
10:45-11:30am	Preserving a 19th Century Historic Bascule Bridge - Bridge Street Bridge // Paul van Hagen
11:30-1:30pm	<b>LUNCH:</b> Guest Speaker Andrew Herrmann



# WEDNESDAY, OCT. 27TH //

## AFTERNOON SESSIONS

OWNERSHIP / PUBLIC USE AND MANAGEMENT	CHICAGO ROOM
MONITOR: PAUL SKELTON	

1:30-2:15pm	Amtrak's Thames River Movable Bridge Replacement // Jim Richter & Mike Martin
2:15-3:00pm	Out with the Old and In with the New - Ben Sawyer Swing Span // Timothy J. Noles & Ryan Hamrick
3:00-3:30pm	BREAK
3:30-4:15pm	Large, Moving Structures in the Entertainment World // Stephen A. Sywak
4:00pm	<i>First Bus departs to Universal Studios</i>
4:00-8:00pm	EVENING AT UNIVERSAL STUDIOS TOUR

STRUCTURAL ELEMENTS	WADDELL ROOM
MONITOR: JEFF NEWMAN	

1:30-2:15pm	Heavy Duty Riveted Bridge Deck - AASHTO H20 Loading and Fatigue Test Results // Kenneth P. Apperson
2:15-3:00pm	Strengthened Bascule Piers for the Newly Rehabilitated Bridge of Lions // Jian Huang & R. Wayne McLennon
3:00-3:30pm	BREAK
3:30-4:15pm	Evaluation of Sheave Trunnions // Robert Gessel
4:00pm	<i>First Bus departs to Universal Studios</i>
4:00-8:00pm	EVENING AT UNIVERSAL STUDIOS TOUR

# WEDNESDAY, OCT. 27TH //

## AFTERNOON SESSIONS

MACHINERY / MECHANISMS	RALL ROOM
MONITOR: MARK GREEN	

1:30-2:15pm	Enclosed Drives for Movable Bridges - Specifications Consistency // John G. Proven
2:15-3:00pm	Pretoria Avenue Lift Bridge // Ryan Kanagy
3:00-3:30pm	<b>BREAK</b>
3:30-4:15pm	Bridge Balance and Counterweight Design Considerations // Ralph G. Giernacky
4:00pm	<i>First Bus departs to Universal Studios</i>
4:00-8:00pm	<b>EVENING AT UNIVERSAL STUDIOS TOUR</b>

FLUID POWER / ELECTRICAL SYSTEMS	STRAUSS ROOM
MONITOR: LEE LENZ	

1:30-2:15pm	Preserving a 19th Century Historic Bascule Bridge - Bridge Street Bridge // Paul van Hagen
2:15-3:00pm	Rehab & Remote Control Operation of a 115+ Year Old Rim Bearing Swing Span // Geoffrey Forest
3:00-3:30pm	<b>BREAK</b>
3:30-4:15pm	Drive Types with Loading Conditions A, B & C // Lance V. Borden
4:00pm	<i>First Bus departs to Universal Studios</i>
4:00-8:00pm	<b>EVENING AT UNIVERSAL STUDIOS TOUR</b>

# **HMS WELCOMES AREMA COMMITTEE 15 //** **TO OUR 2010 SYMPOSIUM**

We welcome the American Railway Engineering and Maintenance of Way Association (AREMA) Committee 15 Steel Structures to our 13th Biennial Symposium. Committee 15 meetings have been scheduled to coincide with the HMS Symposium this year, with a special lunch presentation by guest speaker Paul Skelton on Tuesday.

## **CELEBRATION GOLF EVENT //** **MONDAY, OCT. 25TH**

Thank you to all of our participants of the biennial golf tournament held Monday, October 25th at Celebration Golf Club. For those of you that missed this activity, we hope you'll join us in 2012 at our next event.

## **BBQ & TENNIS TOURNAMENT //** **TUESDAY EVENING**

The biennial HMS Doubles Tennis Tournament begins at 6pm, who can defeat the powerful Rexroth team?! Bring your own cheering section to enjoy BBQ and drinks while you spur your team on to Victory! Trophies and prizes will be presented by our Master of Ceremonies, Bill Bowden.

## **EARN PDH CREDITS //** **AT THE SYMPOSIUM**

Earn PDH credits at the Symposium! Courses include Welding Technology, 4 PDH Credits - All States and Florida Laws & Rules, DVD 4 PDH Credits (except NY/OH). Check schedule for days/times.



# UNIVERSAL STUDIOS TOUR & PAT O' BRIENS DINNER //

## WEDNESDAY, OCT. 27TH

# JOIN US!

ON WEDNESDAY EVENING FOR THE UNIVERSAL STUDIOS  
SPIDERMAN RIDE AND EXCLUSIVE BACKSTAGE TOUR  
FOLLOWED BY DINNER AT THE FAMOUS PAT O'BRIEN'S AT  
UNIVERSAL CITY WALK.



Enjoy an exhilarating evening at Universal Studios! Spider-Man The Ride will take your breath away with twists & turns. After the ride, see how it all works with a special Backstage tour of the ride for HMS attendees and guests.

Wait - you're not done yet! We have a fantastic time planned for you at Pat O'Briens with a sumptuous buffet dinner, dancing and all the Fun you can handle... Get your tickets and come one, come all and have a ball!

**\$85** per person

**\$75** for Government  
Employees and Exhibitors

# THURSDAY, OCT. 28TH //

## MORNING SESSIONS

Following our final morning sessions, please Join us for the **CLOSING LUNCHEON** at 11:30am featuring a DJ/comedian, prizes & giveaways.

WELDING COARSE	RALL ROOM
MONITOR: MATT GAGLIANNO	

**8:00-8:45am** Welding Technology - DVD Course

**8:45-9:30am** Welding Technology - DVD Course

**9:30-10:00am** **BREAK**

**10:00-10:45am** Welding Technology - DVD Course

**10:45-11:30am** Welding Technology - DVD Course

PROJECT MANAGEMENT	STRAUSS ROOM
MONITOR: TYE ALDANA	

**7:30-9:30am** How Your Projects Will Go Wrong

**9:30-10:00am** **BREAK**

**10:00-11:30am** How Your Projects Will Go Wrong

FORENSIC ENGINEERING	SCHERZER ROOM
MONITOR: ROB MOSES	

**7:30-9:30am** Forensic Engineering

**9:30-10:00am** **BREAK**

**10:00-11:30am** Forensic Engineering

FLORIDA LAWS & RULES	REGENTS BOARD ROOM (Limited Seating)
MONITOR: TIM NOLES	

**7:30-9:30am** Florida Laws & Rules

**9:30-10:00am** **BREAK**

**10:00-11:30am** Florida Laws & Rules

**OWNERSHIP / PUBLIC USE AND MANAGEMENT****CHICAGO ROOM****MONITOR: WALLACE SANDERS**

**8:00-8:45am** Rehabilitation of Historic Components - Bridge of Lions // Steven A. Shaup

**8:45-9:30am** Fore River Bridge Replacement Study // Mark Ennis

**9:30-10:00am** **BREAK**

**10:00-10:45am** Amtrak's Thames River Movable Bridge Replacement // Jim Richter & Mike Martin

**10:45-11:30am** Rehabilitation of Historic Components - Bridge of Lions // Steven A. Shaup

**WADDELL ROOM****MONITOR: JOHN WILLIAMS**

**8:00-9:30am** Rolling Lift Bridge - Tread Plate / Casting Designs (double session) // Panel Discussion: Jeff Routson of Hardesty & Hanover, James Alison of Steward Machine Company, and Jim Carter of Norfolk Southern. *Panel Moderator: John Williams*

**9:30-10:00am** **BREAK**

**10:00-10:45am** Adventures in Bridge Instrumentation // David M. Barrett

**10:45-11:30am** ANSYS Non-Linear Multi Staging Technique for Shrink Fit Analysis // Yahia Al-Smadi

**PAIGE ROOM****MONITOR: PAUL SKELTON**

**8:00-8:45am** Lightweight Aluminum Bridge Decks - 40 year history and 72 examples // Kurt Thompson

**8:45-9:30am** Not All Heavy Movable Structures are Bridges // Pete Davis

**9:30-10:00am** **BREAK**

**10:00-10:45am** Roller Coaster Construction // Kenny Waugh

**10:45-11:30am** Lightweight Aluminum Bridge Decks - 40 year history and 72 examples // Kurt Thompson



## **HEAVY MOVABLE STRUCTURES, INC.**

### **MEMBERSHIP BENEFITS**

**HMS NEWS BRIEFS** - Our membership newsletter will keep you informed of all the organizational business and activities as well as information sharing among members.

**Membership Directory** - Experts in all phases of the Movable Bridges and Structures industry at your fingertips. Members are listed by last name and by company name. Directory is updated continually through the HMS News Briefs.

**Biennial Symposium** - Nearly 400 attendees gather every other year in sunny Florida for information exchange provided by HMS at the biennial symposium. Technical Paper Presentations cover six disciplines of our industry.

**Electrical/Electronic Systems, Ownership/Public Use and Management ,  
Performance/Construction/Maintenance, Fluid Power Systems,  
Machinery/Mechanisms, Structural Elements**

**Vendor display** areas present the latest technological developments in goods and services in the design, construction and maintenance of Heavy Movable Bridges and Structures.

**Industry wide representation!** Designers, specialists, manufacturers, suppliers, owners and operators from around the world gather to exchange their knowledge and experiences.

**Discounts** - Members enjoy a discount on symposium registration (a savings that well exceeds your \$100.00 two-year membership dues). Special discounted room rates while attending the HMS Biennial Symposium.

**Visit HMS online to register for membership.**  
**[www.heavymovablestructures.org](http://www.heavymovablestructures.org)**

# HEAVY MOVABLE STRUCTURES INC. //

## MEMBERSHIP APPLICATION

**PLEASE CHECK ONE:**

☐ New Membership      ☐ Change of Address      ☐ Membership Renewal

**PERSONAL INFORMATION:**

Name: \_\_\_\_\_  
Title: \_\_\_\_\_  
Company: \_\_\_\_\_  
Address: \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_  
Country: \_\_\_\_\_  
Email: \_\_\_\_\_  
Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

**CHECK ONE THAT BEST DESCRIBES YOUR PRESENT CATEGORY OF SERVICES:**

☐ Owners & Operators      ☐ Suppliers/Testing/Distributor/Quality Control  
☐ Designers & Specialists      ☐ Constructors/Fabricators/Manufacturers

**CHECK ALL THAT BEST DESCRIBE YOUR SCOPE OF SERVICES:**

☐ Individual/Company      ☐ Total Civil Facility      ☐ Gen. Construction & Subs  
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