2018 Annual Concrete Pavement Workshop

Moving forward with concrete results
WELCOME
to the
2018 Annual Concrete Pavement Workshop
THANK YOU FOR COMING

• Great Attendance – 285 people registered for the three days of events
• 23 Exhibitors
• 20 Sponsors

• It is going to be crowded, but for WCPA this is a great problem to have!!!!
• Proud History
  – Founded in 1952 – 66 years old!!!!
  – Oldest concrete paving association in the country

• Annual Workshop
  – First one held in 1980
  – This is our 38th Annual Workshop!!!!!
WCPA “VISION”

“The WCPA will be recognized as the statewide representative for the concrete pavement industry by:

• providing a resource for education and research
• developing new markets and technology
• fostering a membership dedicated to building meaningful public and private partnerships

for the purpose of promoting the use of concrete pavement as the best pavement value.”
Wisconsin Concrete Pavement Association
2018 Annual Concrete Pavement Workshop

Platinum Sponsor

2 YEAR PLATINUM SPONSOR!
Diamond Discs International

"Trust • Value • No Headaches"

1.888.582.3861  www.DiamondDiscs.net

5th YEAR GOLD SPONSOR
Wisconsin Concrete Pavement Association
2018 Annual Concrete Pavement Workshop
Gold Sponsors

5th YEAR GOLD SPONSOR
Aon
Empower Results®

3rd YEAR GOLD SPONSOR
Gold Sponsors

3rd YEAR GOLD SPONSOR
Wisconsin Concrete Pavement Association
2018 Annual Concrete Pavement Workshop

Gold Sponsors

3rd YEAR GOLD SPONSOR

ROLAND MACHINERY CO.
Wisconsin Concrete Pavement Association
2018 Annual Concrete Pavement Workshop
Gold Sponsors

3rd YEAR GOLD SPONSOR
Esch Construction Supply, Inc.
Diamonds ♦ Cutting Equipment ♦ Repair

2nd YEAR GOLD SPONSOR
Wisconsin Concrete Pavement Association
2018 Annual Concrete Pavement Workshop
Gold Sponsors

BORAL RESOURCES

2nd YEAR GOLD SPONSOR
Gold Sponsors

5th Year Sponsor
Wisconsin Concrete Pavement Association
2018 Annual Concrete Pavement Workshop
Gold Sponsors

4th Year Sponsor
Silver Sponsors

Buzzi Unicem USA
CMC Paving Solutions
GOMACO Corporation
St. Marys Cement
Illinois/Wisconsin Cement Company
Bronze Sponsors

CTS Cement Mfg. Corp. / Rapid Set *
Sika Corporation
SIMPLEX
Wisconsin Wire and Steel
2018 WCPA Contractor Members

Augelli Construction Company
Chippewa Concrete Services, Inc.
CPR, Inc.
Jim Fischer, Inc.
Interstate Sealing & Concrete, Inc.
Martell Construction, Inc.
Parisi Construction Company, Inc.
Penhall Company
Ptaschinski Construction Company

Raymond P. Cattell, Inc.
Rennhack Construction Co., Inc.
Shafer Contracting Company
Sommers Construction Co., Inc.
Stark Pavement Corporation
Trierweiler Construction Company
Vinton Construction Company
Zignego Company, Inc.
2018 WCPA Cement Members

Buzzi Unicem, USA
Continental Cement Company
Illinois Cement Company
Lafarge Holcim
Lehigh Portland Cement Company
St. Marys Cement Company

Great Lakes Cement Promotion Council
2018 Associate Members

- Admixture
- Ready Mix
- Equipment Companies
- Material Suppliers
- Consultants

- 62 associate members
WCPA
2018
MEMBERSHIP DIRECTORY

HARD COPIES ARE AVAILABLE AT THE REGISTRATION TABLE OR THE WCPA EXHIBIT BOOTH
WCPA STAFF

• **Kevin McMullen, P.E.** – President
• **Heath Schopf, P.E.** – Director of Construction Engineering
• **Susan Lawniczak** – Executive Assistant

4001 Nakoosa Trail, Suite 101
Madison, WI 53714

Phone: 608-240-1020
Fax: 608-240-1019

www.wisconcrete.org
HOUSEKEEPING ITEMS
LET’S THINK GREEN

No paper handouts
No Paper Handouts

- No paper handouts of presentations
- We will post on our website as soon as possible
- PDF versions

- If you absolutely have to have a copy now.....
Thank You to Our Exhibitors!
Wisconsin Concrete Pavement Association
2018 Annual Concrete Pavement Workshop

Exhibitors

- Bioseal
- Butterfield Color, Inc.
- Composite Rebar Technologies, Inc.
- County Materials Corporation
- CTS Cement Mfg. / Rapid Set
- Diamond Discs International
- Esch Construction Supply, Inc.
- Fabick Cat
- Flores Automation and Machine Control
- GRT-MAPEI
- Husqvarna Construction Products
- Neenah Foundry
- O-Dowel, Inc.
- RexCon, Inc.
- Roland Machinery Company
- Sherwin Industries, Inc.
- Sika Corporation
- Sika-Scofield
- Solomon Colors
- Stetson Building Products
- Tuf Tile / LYCON
- Uretek / Elsey Construction Products
- Wisconsin Concrete Pipe Association
- Wisconsin Highway Research Program
Exhibitors

• They have information!
• Please visit with them
• Additional support to the conference that keeps your costs down
• Thank them for their time and extra effort
Professional Development Hours

• Attention all P.E.’s
• PDH certificates are on the registration table
• Keep the form for your records
• Registration Station/Proof of Attendance-sign in sheet for each session you are requesting PDH’s near the registration table
• Your responsibility to sign in.
# Thursday Agenda

**Thursday, February 15, 2018**  

**6.5 PDH**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 AM</td>
<td>Light continental breakfast</td>
</tr>
<tr>
<td>8:00 AM</td>
<td>Registration &amp; <strong>Exhibitor Showcase</strong></td>
</tr>
</tbody>
</table>
| 9:00 AM| Welcome, Introductions and Industry Priorities  
WCPA President Kevin McMullen, PE           |
| 9:15 AM| **Wisconsin DOT Budget & Program Update** Joe Nestler, Chief Engineer - Wisconsin Department of Transportation |
| 9:45 AM| **Wisconsin DOT Technical Priorities & Update** Barry Paye, PE, Chief Materials and Pavement Engineer,  
Wisconsin Department of Transportation |
| 10:15 AM| **WHRP Research, Working for Wisconsin’s Concrete Pavements**        |
|        | ◇ Joint Sawing Practices and Effects on Durability – Dr. James Crovetti, Marquette University |
|        | ◇ Better Concrete Mixtures for Rapid Repair in Wisconsin – Dr. Steve Cramer, University of Wisconsin-Madison |
|        | ◇ Comparison of Fresh Concrete Air Content Test Methods and Analysis of Hardened Air Content, An Update – Dr. Steve Cramer, University of Wisconsin-Madison |
| 11:15 AM| **Vision 2040, A Concrete Industry Poised for The Future**   
American Concrete Pavement Association  
President and CEO, Jerry Voigt, PE         |
Thursday Lunch

• Edward Sullivan, Senior Vice President and Chief Economist, Portland Cement Association

• How good is this economy and what should our industry expect?
## Thursday Agenda

### 2018 WCPA Annual Concrete Pavement Workshop

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
</table>
| 1:30 PM | Celebrating Wisconsin’s Award Winning Concrete Pavement Projects for 2017  
Kevin McMullen, Jerry Voigt and Barry Paye                           |
| 2:00 PM | Preview of [www.PavementDesigner.org](http://www.PavementDesigner.org), A Tool For Designing a Concrete Pavement For All Applications  
Eric Ferrebee, Technical Services Engineer, American Concrete Pavement Association |
| 2:30 PM | Capturing the 30 Years of Real Life Performance of Concrete Overlays  
Dan King, Regional Services Manager, Iowa Concrete Pavement Association |
| 3:30-5:15 PM | BREAKOUT SESSIONS                                                                                                           |

### CONSTRUCTION TRACK

| Session 1: | WisDOT Optimized Concrete Aggregates and Optimized Concrete Mixtures Specifications and Spreadsheet  
Kevin McMullen, WCPA and Chad Hayes, Concrete Engineer, WisDOT Bureau of Technical Services |
|------------|-------------------------------------------------------------------------------------------------------------------------|
| 3:30-4:15 PM | Admixtures, What is Being Used in Pavements and The Equipment  
Scott Grams, GRT-MAPEI                                                                                      |

### DESIGN/RESEARCH TRACK

| Designing New Pavements with  
www.PavementDesigner.org  
Eric Ferrebee, Technical Services Engineer, American Concrete Pavement Association |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------|
| Designing Concrete Overlays with  
www.PavementDesigner.org  
Eric Ferrebee, Technical Services Engineer, American Concrete Pavement Association |

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2018 WCPA Annual Concrete Pavement Workshop
Break Out Sessions

• Construction Track
  – Grand Ballroom

• Design/Research Track
  – Woodfield Room
Evening Activities

- 6:00 Wisconsin Tailgate Dinner and Scholarship Recognition – in this room
  - What does that orange dot on my name tag mean?
- 8:00 pm – Midnight WCPA Hospitality Suite – Foyer
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 AM</td>
<td>Registration, Exhibitor Showcase &amp; HOT Continental Breakfast</td>
</tr>
<tr>
<td>8:00 AM</td>
<td>Supplementary Cementitious Materials, What are They and Why Are They Needed? Andrea Breen, PE, Technical Services Engineer, LafargeHolcim</td>
</tr>
<tr>
<td>8:45 AM</td>
<td>The Challenges of Modern Day Concrete Pavement Specs</td>
</tr>
<tr>
<td>9:45 AM</td>
<td>Break and Exhibitor Showcase</td>
</tr>
<tr>
<td>10:15 AM</td>
<td>The Cutting Edge, The Concrete Issues We Don’t Talk About Every Day</td>
</tr>
<tr>
<td>11:15 AM</td>
<td>Engineering Ethics and The Construction Project</td>
</tr>
<tr>
<td>12:15 PM</td>
<td>Adjourn</td>
</tr>
</tbody>
</table>
One more housekeeping item!
Free WIFI Connection

• The password is:

springs1
What did concrete paving industry construct in 2017?
# 2017 Market

<table>
<thead>
<tr>
<th>Description</th>
<th>Highway Market</th>
<th>Municipal Market</th>
<th>Airport Market</th>
<th>TOTAL MARKET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Pavement (S.Y.)</td>
<td>2,005,873</td>
<td>542,632</td>
<td>64,166</td>
<td>2,612,671</td>
</tr>
<tr>
<td>Curb and Gutter (L.F.)</td>
<td>639,156</td>
<td>288,269</td>
<td></td>
<td>927,425</td>
</tr>
<tr>
<td>Concrete Barrier (L.F.)</td>
<td>39,894</td>
<td></td>
<td>1,204</td>
<td>41,098</td>
</tr>
<tr>
<td>Diamond Grinding (S.Y.)</td>
<td>97,990</td>
<td>12,000</td>
<td></td>
<td>109,990</td>
</tr>
<tr>
<td>Partial Depth Repair (L.F.)</td>
<td>2,880</td>
<td>4,670</td>
<td></td>
<td>7,550</td>
</tr>
<tr>
<td>Retrofit Dowel Bar</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Econocrete (S.Y.)</td>
<td></td>
<td>11,446</td>
<td></td>
<td>11,446</td>
</tr>
<tr>
<td>Dollar Value of the Market</td>
<td>$96,479,684</td>
<td>$25,755,907</td>
<td>$5,337,621</td>
<td>$127,573,218</td>
</tr>
</tbody>
</table>

Dollar Value of the Market: $127,573,218
Estimated industry capacity in Wisconsin is 5.5 Million square yards

19 year Average of Total Market - 3,829,803 S.Y.

WCPA Annual Concrete Pavement Workshop
On the Political Side….

• We urge you to stay informed
  – Next state budget
  – WI revenues
  – Trump Administration Infrastructure Plan

• Federal Highway Reauthorization
  – FAST Act signed into law December 2, 2015
  – 5 year bill that is not fully funded

• Federal Aviation Reauthorization

• Every city and county in Wisconsin has budget issues
UPCOMING EVENTS

2018 WCPA Annual Concrete Pavement Workshop
Concrete Pavement Inspection

2018 WisDOT Region Training
Concrete Pavement Inspection Training

• Great joint effort
• 8th year of training
• Dates for 2018
  – **SE Region**— April 11, 2018 at Waukesha Office
  – **SW Region**— April 3, 2018 at Madison Office
  – **NE Region** – April 4, 2018 at the Green Bay Office
  – **NW Region** – April 2, 2018 at the Eau Claire Office

• Register on WisDOT Website
## Workshop Agenda

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Presenter</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:45</td>
<td>Registration</td>
<td></td>
<td>WCPA</td>
</tr>
<tr>
<td></td>
<td>Non-DOT participants must obtain all day VISITOR PASS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8:00</td>
<td>Opening Remarks</td>
<td>WisDOT Region Rep</td>
<td>WCPA</td>
</tr>
<tr>
<td></td>
<td>Introductions</td>
<td>Kevin McMullen, WCPA</td>
<td></td>
</tr>
<tr>
<td>8:30</td>
<td>Work Zone Safety</td>
<td>Kevin McMullen, WCPA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Contracts Documents and Standard Specifications</td>
<td>Chad Hayes, WisDOT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>QMP Concrete Pavement</td>
<td>Jim Parry, WisDOT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>QMP IRI Ride</td>
<td>Jim Parry, WisDOT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Certifications</td>
<td>Chad Hayes, WisDOT</td>
<td></td>
</tr>
<tr>
<td>10:00</td>
<td>Break</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11:00</td>
<td>Lunch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11:30</td>
<td>Lunch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12:00</td>
<td>Lunch (No Lunch Provided)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:00</td>
<td>Batch Plants, Batching and Delivery of Materials</td>
<td>Heath Schoof, WCPA</td>
<td></td>
</tr>
<tr>
<td>1:30</td>
<td>Slump</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:45</td>
<td>Slump Form Concrete Pavements</td>
<td>Heath Schoof, WCPA</td>
<td></td>
</tr>
<tr>
<td>2:00</td>
<td>Pavement Thickness</td>
<td>Chad Hayes, WisDOT</td>
<td></td>
</tr>
<tr>
<td>2:30</td>
<td>Break</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2:45</td>
<td>Finishing, Surface Texture and Curing</td>
<td>Kevin McMullen, WCPA</td>
<td></td>
</tr>
<tr>
<td>3:30</td>
<td>Hand Formed Concrete Pavements and Colored Concrete</td>
<td>Heath Schoof, WCPA</td>
<td></td>
</tr>
<tr>
<td>4:00</td>
<td>Concrete Joint Layout and Intersection Jointing</td>
<td>Heath Schoof, WCPA</td>
<td></td>
</tr>
<tr>
<td>4:45</td>
<td>Sawing</td>
<td>Kevin McMullen, WCPA</td>
<td></td>
</tr>
<tr>
<td>5:00</td>
<td>Rainfall/Cold Weather Protection</td>
<td>Kevin McMullen, WCPA</td>
<td></td>
</tr>
<tr>
<td>5:30</td>
<td>Adjourn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:00</td>
<td>Adjourn</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### TO REGISTER GO TO:

Find updated link:

- Select Classroom Training
- Select Concrete Paving and Inspection Workshop

### DATES:

- March 7 - SW Region in Madison
- March 23 - NE Region in Green Bay
- April 5 - NW Region in Eau Claire
- April 12 - SE Region in Waukesha

### PROGRAM INFORMATION CONTACT:

Kevin W. McMullen, P.E., President of WCPA, 608-209-0878
Concrete Pavement Preservation

- FHWA and NCPTC course
- We have “Wisconsinized” it
- Upcoming class date to be announced.
- Spring 2018
ADA Training

- One of the most talked about subjects in 2017
- WCPA development of short course.
- Announcement due soon on availability of 2 hour workshop
It is a fun time to be working in the concrete industry! The research, technologies and innovations are leading us into an exciting period of changes.
MORE DURABLE CONCRETE PAVEMENTS
Concrete Pavement Technical Committee

- Optimized Aggregate Gradation
- Optimized Mix Design
- Rapid Repair Concrete
- Joint sealing of urban pavements
- MIT Scan Device for thickness
- Pavement width discussions
- Stringless paving
- Cold weather protection
Performance Engineered Mixtures Program

Standard Practice for Developing Performance Engineered Concrete Pavement Mixtures

AASHTO Designation: PP 84-17
Tech Section: 3c, Hardened Concrete
Release: Group 1 (April 2017)

INTRODUCTION

Specifications for concrete pavement mixtures have traditionally been prescriptive, with State Highway Agencies (SHA) specifying means and methods for both constituent materials and specific requirements for proportioning. This places the majority of the performance risk on the SHA and limits innovation. Recent trends of blending cementitious materials, reducing paste content, using modern additives and admixtures, and other innovations in the industry open the opportunity to move towards specifying the performance characteristics of concrete mixtures and allowing industry to design mixtures that address specific performance requirements. New methods to evaluate concrete performance have been developed, and others are being formulated, that can result in improved performance and economics. Shifting the responsibility for performance to the contractor provides an opportunity for innovation.
New Dowel Bars

• The old green epoxy bar has been the standard for 30+ years in the industry
• New AASHTO T253 tests, revised materials spec AASHTO M254 and new standards for load transfer and corrosion resistance
• National Concrete Consortium and ACPA making this a priority in their programs
Cement Capacity and Consumption
# Midwest Cement Capacity

## 2017 Cement Capacity and Consumption

<table>
<thead>
<tr>
<th>State</th>
<th>Capacity of Cement Produced in Each State (metric tons)</th>
<th>Consumption of Cement in Each State (metric tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iowa</td>
<td>1,833,380</td>
<td>1,937,586</td>
</tr>
<tr>
<td>Illinois</td>
<td>2,557,140</td>
<td>3,183,969</td>
</tr>
<tr>
<td>Missouri</td>
<td>10,056,340</td>
<td>1,836,191</td>
</tr>
<tr>
<td>Michigan</td>
<td>3,819,360</td>
<td>2,128,988</td>
</tr>
<tr>
<td>Indiana</td>
<td>3,511,980</td>
<td>1,925,209</td>
</tr>
<tr>
<td>Ohio</td>
<td>1,146,680</td>
<td>3,312,251</td>
</tr>
<tr>
<td>Minnesota</td>
<td>na</td>
<td>1,686,156</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>na</td>
<td>1,958,607</td>
</tr>
<tr>
<td><strong>Midwest Region Total</strong></td>
<td><strong>22,924,880</strong></td>
<td><strong>17,968,957</strong></td>
</tr>
</tbody>
</table>
# Wisconsin Cement Consumption

<table>
<thead>
<tr>
<th>1000s Tons by Year</th>
<th>Wisconsin</th>
<th>Midwest</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>2,409</td>
<td>24,145</td>
</tr>
<tr>
<td>2001</td>
<td>2,532</td>
<td>24,958</td>
</tr>
<tr>
<td>2002</td>
<td>2,263</td>
<td>23,570</td>
</tr>
<tr>
<td>2003</td>
<td>2,345</td>
<td>22,885</td>
</tr>
<tr>
<td>2004</td>
<td>2,567</td>
<td>24,551</td>
</tr>
<tr>
<td>2005</td>
<td>2,589</td>
<td>24,968</td>
</tr>
<tr>
<td>2006</td>
<td>2,393</td>
<td>23,783</td>
</tr>
<tr>
<td>2007</td>
<td>2,086</td>
<td>21,452</td>
</tr>
<tr>
<td>2008</td>
<td>1,906</td>
<td>18,221</td>
</tr>
<tr>
<td>2009</td>
<td>1,554</td>
<td>14,737</td>
</tr>
<tr>
<td>2010</td>
<td>1,578</td>
<td>14,820</td>
</tr>
<tr>
<td>2011</td>
<td>1,681</td>
<td>15,081</td>
</tr>
<tr>
<td>2012</td>
<td>1,770</td>
<td>16,332</td>
</tr>
<tr>
<td>2013</td>
<td>1,693</td>
<td>16,187</td>
</tr>
<tr>
<td>2014</td>
<td>1,896</td>
<td>17,807</td>
</tr>
<tr>
<td>2015</td>
<td>2,065</td>
<td>18,917</td>
</tr>
<tr>
<td>2016</td>
<td>2,154</td>
<td>19,257</td>
</tr>
<tr>
<td>2017</td>
<td>2,159</td>
<td>19,807</td>
</tr>
</tbody>
</table>
## WI Paving Cement Consumption, 1999-2017

<table>
<thead>
<tr>
<th>Year</th>
<th>Highway S.Y.</th>
<th>Airport S.Y.</th>
<th>Municipal S.Y.</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVERAGE</td>
<td>2,887,894</td>
<td>166,644</td>
<td>696,148</td>
<td>3,750,686</td>
</tr>
<tr>
<td>Average Annual Cement Consumption</td>
<td>226,613 tons</td>
<td>20,871 tons</td>
<td>43,920 tons</td>
<td>291,404 tons</td>
</tr>
</tbody>
</table>
Additional Capacity Since 2014

• St. Mary’s – Charlevoix
  600,000 tons
• LafargeHolcim – St.
  Genevieve  500,000 tons
• St. Mary’s – Dixon
  Marquette plant
  restarted 1,000,000 tons
• New vessels
• More rail access
• More storage
• No known Mississippi River restrictions
Contractor Capacity

• Cited capacity study of a few years ago
• 5.5 million squares
• Current work held by members and nonmembers
Information is KING

- Time
- Logistics of movement of cement, flyash and slag
- Demands for storage
- Movement of equipment and manpower
Fly Ash

• Traditional Type C
• Type F ash in the market place
• Tight supplies are the new normal
• New source of F ash
  – Prairie State Energy, Marissa, IL
  – Others?
SLAG

- Maximum 50 percent replacement
- Typical 30 percent replacement

- Slag will be in our market
- Transportation and storage facilities are the key variables/costs
- LafargeHolcim, St. Mary’s and Skyway all marketing slag in WI
STRINGLESS PAVING
“THE INVESTMENT”
Stringless Technologies in WI

- The technology is here
- Being used across the nation
- WisDOT Specification allows use
- New STSP
- New CMM Guidance
- Used twice in WI in 2017
- Expanded Use in 2018 is expected
Don’t you just love it when something awesome happens in your industry?
PavementDesigner.org

Designed to simplify concrete pavement design for:

- Parking lots
- Roadways
  - JPCP, RCC, CRCP
  - Overlays (bonded and unbonded)
  - Composite pavements
- Industrial / Intermodal yards
  - Forklifts and other odd loadings
It is not software
It is web based
And it is free!!!!!!!

Finally, it tells you where to go for assistance if you need it.
Questions?

C’mon admit it, you would love to get your hands on one of these?