

2017 FDOT-CO Winter FRP-RC Workshop

February 3, 2017

Orlando, FL

Workshop Outline



Announcement

- Following up on a successful **GFRP Rebar Workshop** in Daytona in June 2016, and in continual support of FDOT's **Invitation to Innovation** initiative for Fiber Reinforced Polymer (FRP) Reinforcing Bars and Strands, FDOT's State Structures Design Office is hosting a winter **FRP-Reinforced Concrete Workshop** to be held at the Florida Turnpike Headquarters in Orlando, Florida. The workshop is critical for improving the practical implementation of design and material criteria to effectively leverage the most benefit from these new materials. The workshop aim is to collaborate with design practitioners, FRP Industry producers and academia for FDOT structural items of interest.
- The workshop will be held the day following the **FTBA/FDOT Construction Conference - Structures Sessions**, as a separate meeting with no registration fee. Attendees are requested to email Rick Vallier (Rick.Vallier@dot.state.fl.us) for confirmation of attendance.
- Industry attendees are encouraged to participate in the preceding **FTBA/FDOT Construction Conference** which will provide several FRP construction related presentations and a good opportunity for networking with Contractors doing business in Florida. A separate registration fee is required for attending that event. Hotel information is also available on the website: <http://www.ftba.com/2017-construction-conference.html>



Agenda

- **Welcome** (5 min.)
- **Part 1 - Presentations** (30 min.):
 - Status of AASHTO Guide Spec Update (Potter)
 - Design and Material Criteria Needs (Busel)
 - Design and Material Concerns (Knight)
 - Current Project Status and Challenges (Nolan)
 - ACI & International Perspective (Nanni):
- **Discussion – Review Roadmap** (55 min.)
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Break (15 min.)

- **Part 2 - Discussion on New Items (Needs)** (60 min. – *Facilitated Discussion*):
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- **Part 3 – Wrap Up** (15 min.)
 - Action Items & Next Step



List of invited attendees:

Universities:

- FAMU-FSU - Michelle Rodenberry mroddenberry@fsu.edu; Raphael Kampmann rk11h@my.fsu.edu
- UM & ACI 440 rep - Tony Nanni nanni@miami.edu (+5 graduate students)
- UNF - Adel ElSafty adel.el-safty@unf.edu
- UF - Trey Hamilton hrh@ce.ufl.edu; Gary Consolazio grc@ce.ufl.edu
- USF - Rajan Sen sen@eng.usf.edu
- Embry-RiddleUniversity - Jeff Brown BROWJ112@erau.edu + student
- CRIB & UofSherbrooke - Brahim Benmokrane Brahim.Benmokrane@usherbrooke.ca

FRP Industry:

- ACMA – John Busel (ACI 440 member) jbusel@acmanet.org
- Ashland - Joy Bennett LJBennett@ashland.com
- ATP srl – Luigi Giamundo l.giamundo@atp.sa.it
- BP Composites/TUF-BAR – Didier Hutchison didier@tuf-bar.com; or Randy Brandstrom randy@tuf-bar.com
- Composite Rebar Technology – Robert Gibson gibson2350@aol.com
- Hughes Brothers – Doug Gremel doug@hughesbros.com; Ryan Koch ryan.koch@hughesbros.com
- Interplastics Corp. – Damon Brown DBrown@interplastic.com
- Marshall Composite Technologies/ACMA FRP-RMC – Cam Crawford ccrawford@oregonbl.com
- Owens Corning – Mikhail Vorobiev <Mikhail.Vorobiev@owenscorning.com>; Pultrall/V-ROD – Mathieu Champagne mathieu.champagne@pultrall.com
- Sigma DG/Mateen – Ashley McWatters ashley@sigmadg.com; or Pultron – Dominique Pace dpace@mateenbar.com; Pete Renshaw pete@pultron.com
- Raw Energy Materials Corp. – Don Smith; Don@rawenergytech.com
- TemCorp - Ahmed Mostafa amostafa@temcorp.ca
- Tokyo Rope – Yoshiaki Yamamoto 山本義明 yamamoto.yoshiaki@tokyorope.jp

FDOT – Central Office:

- SDO - Robert Robertson Robert.Robertson2@dot.state.fl.us
- SDO – Sam Fallaha Sam.Fallaha@dot.state.fl.us
- SDO - Rick Vallier Rick.Vallier@dot.state.fl.us
- SDO - Steve Nolan Steven.Nolan@dot.state.fl.us
- SRC - Will Potter William.Potter@dot.state.fl.us
- SBM – Richard Kerr Richard.Kerr@dot.state.fl.us

FDOT - State Materials Office:

- Chase Knight Chase.Knight@dot.state.fl.us
- Ivan Lasa Ivan.Lasa@dot.state.fl.us
- Paul Vinik Paul.Vinik@dot.state.fl.us

FHWA:

- Florida - Jeffery Ger Jeffrey.Ger@dot.gov
- Colorado (FRP Rep) Jamal Elkaissi jamal.elkaissi@dot.gov
- SCRIP - Benjamin Graybeal Benjamin.Graybeal@dot.gov;
- TFHRC - Zach Haber zachary.haber.ctr@dot.gov



FDOT Resources

- [Invitation to Innovation – FRP Reinforcing](#) (website)
- [Developmental Design Standards](#) (Index D6011C, D21310 & D22000 series)
- [FY2017-18 Design Standards](#) (Index 22000 series)
- [Structures Manual](#), Volume 4 Fiber Reinforced Polymer Guidelines.
- [Materials Manual](#) (Chapter 12) and [FRP Producer QC Program](#) requirements
- [FDOT/FHWA Corrosion-Resistant Rebar \(CRRB\) Seminar](#) (July 17, 2012)
- [FHWA/NCHRP 20-68A U.S. Domestic Scan 13-03](#) meeting with FDOT (June 4-5, 2015)
- [2014 FDOT Design Expo](#) (June 10-12):
 - [Fiber Reinforced Polymer \(FRP\) Composites](#)
- [2015 FDOT Design Expo](#) (June 9-11, 2015):
 - [Composites and FDOT Direction](#)
 - [Design of First FRP Reinforced Concrete Bridge in Florida](#)
- 2016 Design Expo
 - 6/13/16 [Corrosion Resistant Piling & Precast Bent Cap Standards](#)
 - 6/14/16 [High-Strength and Fiber-Reinforced Concrete Design](#)
 - 6/14/16 [Halls River Composite Bridge Update](#)
- [FDOT-GFRP Rebar Workshop](#) (June 15, 2016) – following 2015 Design Expo
- [2016 CAMX](#) (Anaheim, CA. Sept. 26-29, 2016)
 - [FDOT-FRP Deployment for Structural Applications](#)
 - ACMA-Transportation Structures Council meeting - [FDOT Presentation](#)
- District 7 - Halls River Bridge Replacement FRP Demonstration Project Workshop (*proposed May 2017*)
 - following SEACON/FHWA - GFRP Seminar including European participation.

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Part 1 - Presentations

1. Status of AASHTO Guide Spec Update (Will Potter)
2. Design and Material Criteria Needs (ACMA - John Busel)
3. Design and Material Concerns (Chase Knight)
4. Current Project Status and Challenges (Steve Nolan)
5. ACI & International Perspective (Antonio Nanni)



Break (15 mins.)



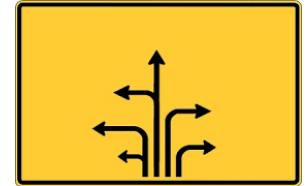
Part 2 - New Items

– Discussion on Needs

1. Design Criteria
2. Durability Issues
3. Material Specifications & Vendor Approvals
4. Construction Specifications
5. Products in the marketplace (present and future)
6. Research Focus
7. ACMA/FRP-RMC Industry Concerns
 1. Necessary and required testing today versus years of test data compiled from other installations
 2. Identification and selection process of testing laboratories which are ISO qualified
 3. Government agencies and engineers that use products that may be interpreted by some as questionable, un-tested and does not meet the expected standards generated by ASTM, ACI, others
 4. First costs versus cost premium impact to overall project cost. How is this handled from the owners stand point. Do life cycle costs play a role as identified in MAP-21?
 5. Durability testing: field versus accelerated testing. Which will the DOT feel gives them the results they need? What is the DOT looking for?



Part 3 - Action Items & Next Step



1. Action Items

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2. Next Step (s)

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Adjourn - Thanks for Coming !!



Safe Travels Home...

