Engineering First Coast Promoting Engineering to Future Generations





Duval County Beach Recovery

Recovering Our Beach from Hurricane Matthew, in Time for Hurricane Irma

Page 4



Autonomous Vehicles Transportation Agencies Anticipate a Future with Connected, Autonomous Vehicles

Page 6



UNF Skinner-Jones Hall

Skinner-Jones Hall Opens up New Opportunities for STEM Programs

Page 8



Table of Contents

Chairperson's Message	2
City of Jacksonville Proclamation	3
Duval County Beach Recovery	4
Autonomous Vehicles	6
UNF Skinner-Jones Hall	8
Construction Career Days	10
Beachwalk Lagoon	12
2018 E-Week Calendar	14
Sponsors	15
2018 E-Week Committee	16

Advertisements:

Terracon	5
Arcadis	5
Cardno	7
RS&H	7
Haskell	13
DRMP	14
Hanson Professional Services	14
HDR	14
ECS	15
Eisman & Russo	15
Wantman Group, Inc. (WGI)	16

Chairperson's Message

by Chris Rivera, Suncoast Drilling-Jax, LLC



supporting industries.

I would like to thank the organizations listed below, the sponsors listed on page 15 of this newsletter, and the 2018 E-Week Committee members for their support, year-round commitment, and dedication to the engineering profession.

For more information on this year's E-week festivities, see the 2018 E-Week Calendar of Events on page 14 or visit http://nefl-eweek.org.

American Concrete Institute (ACI) American Public Works Association (APWA) American Society of Civil Engineers (ASCE) American Society of Highway Engineers (ASHE) American Society of Mechanical Engineers (ASME) American Society of Plumbing Engineers (ASPE) American Water Works Association (AWWA) Design Build Institute of America (DBIA) Florida Association of County Engineers and Road Superintendents (FACERS) First Coast Manufacturers Association (FCMA) Florida Engineering Society (FES) Florida Structural Engineers Association (FSEA)

Florida Transportation Builders Association (FTBA) Florida Society of Surveyors and Mappers (CROWN FSMS) Institute of Electrical and Electronics Engineers (IEEE) Institute of Transportation Engineers (ITE) North East Florida Builders Association (NEFBA) National Utility Contractors Association (NUCCA) Society of Military Engineers (SAME) Society of Marketing Professionals (SMPS) UNF – The College of Computing, Engineering & Construction (CCEC) US Green Building Council, North Florida (USGBC NF) Women's Transportation Seminar (WTS)

City of Jacksonville Proclamation



Florida and around the world.

in Jacksonville and encourage all citizens to recognize the far-reaching contributions engineers have made to our community and the important role they play in building our future.



CITY OF JACKSONVILLE, FLORIDA



The National Society of Professional Engineers first recognized National Engineers Week (EWeek) in 1951, in conjunction with George Washington's birthday, and acknowledged our first president as the nation's first notable engineer and surveyor; and

Today, EWeek is a formal coalition of more than 70 engineering, education, and cultural societies, and more than 50 corporations and government agencies. The observance raises public awareness of engineers' positive contributions to communities' quality of life, promoting the importance of a technical education and a high level of math, science, and technology literacy, and motivating youth to pursue engineering careers to provide a diverse and vigorous engineering workforce; and

The various engineering professions provide citizens with a number of necessities, including the design and construction of industrial facilities, delicate medical instruments, computer software, mechanical systems, water systems, and electrical transmission and distribution systems; and

Engineers lead and address the technological challenges of our times, including researching sustainable energy sources, studying new methods to improve safety and grow the nation's global communication abilities

Jacksonville supports and relies on engineers to leverage their knowledge and skills to meet the demands of our future, both here in Northeast

NOW, THEREFORE, I, LENNY CURRY, by virtue of the authority vested in me as mayor of Jacksonville, Florida, do hereby proclaim February 18 - 24, 2018 as

NATIONAL ENGINEERS WEEK

IN WITNESS THEREOF, this 19th day of January in the year Two Thousand MAYOR

DUVAL COUNTY BEACH RECOVERY

Recovering Our Beach from Hurricane Matthew, in Time for Hurricane Irma

Tom Fallin, PE City Engineer, City of Jacksonville

One of our most treasured natural resources in Jacksonville is our lovely beaches. Though we might take the sandy beaches and stately dunes for granted, they did not always exist as we know them now. What we see today was created by the Duval County Shore Protection Project which is a cooperatively funded program among the Federal Government, through the U.S. Army Corps of Engineers (USACE), the State, through the Florida Department of Environmental Protection (FDEP), and the City of Jacksonville (COJ). As indicated by the title of the project, it is primarily focused on providing flood protection benefits. The maintenance of these beaches requires a typical five-year renourishment cycle, the most recent of which was planned long before Hurricane Matthew formed in the Atlantic. The renourishment effort had commenced on 17 September 2016, which was before Hurricane Matthew's arrival in Jacksonville on 7 October 2016.

Hurricane Matthew's impact to our beaches and beach communities is well-documented. Through the efforts of a long-standing partnership consisting of USACE, FDEP, the Bureau of Ocean and Energy Management (BOEM), Atlantic Beach, Neptune Beach, Jacksonville Beach and the City of Jacksonville, repairs to these damages were accomplished rapidly, which was very fortuitous as we were well prepared for Hurricane Irma's visit in September 2017.



Duval County Beaches Shoreline



Berm and Dune Structure Construction

Following Hurricane Matthew, USACE immediately redeployed their contractor, Great Lakes Dock and Dredge, and commenced repairs to the project (Berm). Additionally, the City and USACE entered into an agreement to conduct post Hurricane Matthew reparations to the dune structure affected by Hurricane Matthew as authorized by Ordinance 2016-720. After Hurricane Matthew, repairs to both the affected dune structure and the berm occurred simultaneously through the USACE contract in those areas where USACE activity was taking place.

In addition to that work, other repairs had to take place including spot dune repairs south of 16th Avenue South (Jacksonville Beach), vegetation plantings for the new dunes, and removal of the reed debris along other areas of our beach. USACE was able to use their contractor to create a 5,000 cubic yard stockpile of sand for the COJ repairs south of 16th Avenue South and the USACE contractor moved all available reed debris on the beach to the toe of the dune structure to assist in dune restoration from 16th Avenue South Jacksonville Beach to the southern county line. COJ contracted for the movement of the stockpiled sand to repair significantly damaged dune structures south of 16th Avenue South and contracted for the planting of some 620,000 plants to help maintain the integrity of the new dunes.



Beach Recovery Construction

Though the amount of the work was significant, all repairs were completed before the arrival of Hurricane Irma in September 2017. That work along with some judicious application of lessons learned from Hurricane Matthew as it regards final storm preparation was very successful in protecting Jacksonville from the untoward effects of Hurricane Irma along our beach.

Though this cooperation protected us from Hurricane Irma, we sustained significant damage to those repairs and our beach and dunes from the event. In order to make the next round of repairs, this same team of teams is planning for the next project in order to provide adequate protection to our community. Stay tuned.







Completed Dune Restoration



Completed Berm and Dune



Transportation Agencies Anticipate a Future with Connected, Autonomous Vehicles

by Michael Davis, PE, DBIA

Vice President, Tolls Service Group Leader, RS&H (Reprinted with permission from: R&D Magazine)

Connected and autonomous vehicles are gobbling up headlines and stoking the fire of a technological revolution that could ultimately reshape the American transportation landscape.

But, as we continue to see new and emerging technologies change the transportation industry, we must not only look at the end results – a complete influx of autonomous vehicles that are connected to both each other and the physical and data infrastructure we have implemented. Before we arrive at this destination, we must consider the key steps along the way to get us from where we are now to where we need to be in the future.

Much of the puzzle will not be solved by vehicle manufacturers. To bring on the influx of connected, autonomous vehicles (ČAVs), transportation agencies across the country will be charged with creating a connected infrastructure.

So, how and when will the technology in the vehicles communicate with transportation facilities? Well, that's the elephant in the room. We all see the technology and know the migration to automation is coming – 41 states have either introduced or enacted autonomous vehicle legislation since 2012, according to the National Conference of State Legislatures. To move from pockets of CAVs to widespread adoption, however, state transportation agencies have a long way to go.



The revolution comes to town

The grid system that currently serves major cities across America presents an infrastructure that CAV technologies can build off of. A smarter grid will feature traffic signals that aren't just timed to be in sync with each other; instead, they will be in sync with the CAVs around them.

Smart traffic signals will inform CAVs when the light will change from red to green. As a CAV approaches, the vehicle may slow down to sync up with the approaching lights or recalculate its course to find a better route.

Smart parking facilities will communicate with CAVs to pull these vehicles off of the crowded city streets quicker, reducing redundant vehicle movements around city blocks. By addressing the most congested spots first, the smart grid can pull vehicles from the highways going into crowded areas using the most efficient real-time routes, thus alleviating congestion on nearby freeways and exit ramps.

Connecting the dots

While American cities have grids in varying degrees of technological sophistication and condition, highways that snake through more rural areas likely aren't as prepared for CAVs. To help bring these roads up to speed, roadside sensors can be implemented.

The technology already exists on many toll roads and managed lane facilities. Perhaps you already have a small transponder on the windshield of your vehicle that communicates with toll gantries as you pass by.

Similar technology can allow CAVs to transmit information, which they can then pass along to other CAVs nearby. Think of this process as a game of automotive telephone with no wires - or an automated version of the crowd-sourced traffic application, Waze. These units can help CAVs transfer vehicle, road, traffic and even weather information to each other.

On multilane highways, one lane could be set aside for CAVs when there are enough of them on the roads. These separated lanes – even if they're only separated by striping - will give these vehicles an opportunity to connect with each other, form a platoon and maximize efficiency as they travel.

CAV lanes could be a boon to the trucking industry. If a few autonomous commercial trucks can form a platoon in these lanes, they will be able to create a mini-train, using the draft to save energy and reducing the capacity of roadway they are taking up.

For transportation agencies, a question of when

The connected and autonomous revolution is going to challenge the transportation industry tremendously, but updating infrastructure is only part of the equation. For transportation agencies, the greatest equation will be how to gather, process, store, share and analyze the data from CAVs. Transportation agencies must look to develop data platforms that incorporate data analytics to help with things such as traffic trends, mobility needs, supplements to transit, and the advancement of mobile phone applications.

The data collected could change even the very basics and standards of road design. For instance, will 3-D mapping be updated at a dynamic pace so that project designs could use these precision maps for plan development? Because of their efficiency and connectivity, will the influx of CAVs reduce the width of traffic lanes from 12 feet to 10 feet, thus providing more capacity within the same footprint of roadway?

And, then, there's the question of when. When will we implement these refined standards? When will an agency take the leap from its current policies to become an early adopter of CAV criteria, and what will that criteria be? Or will most agencies wait and see how these new CAV initiatives develop?

Whatever the changes, they won't come as a light switch. But the sooner more agencies begin factoring in CAV needs when working on new transportation projects, the sooner our nation's infrastructure will be ready for widespread adoption.





UNF Skinner-Jones Hall

Skinner-Jones Hall Opens up New Opportunities for STEM Programs

Kathie Carswell

Coordinator, Outreach and Recruitment, UNF College of Computing, Engineering, and Construction

The four-story structure is now home to the College of Computing, Éngineering and Construction, its faculty, and unique new facilities that take advantage of the new space. One such new area is the Material Science Engineering Research Facility (MSERF) found on the first floor.

"MSERF is a multi-user electron microscopy and materials characterization center funded by the state legislature through the Advanced Manufacturing and Materials Innovation (AMMI) initiative." Notes Dr. Paul Eason, Director of the new facility. "MSERF is a collaborative, multi-user facility that supports education and research efforts across all materials science and engineering related disciplines."

Also relocating is the Department of Construction Management and School of Engineering main offices. Boasting 35 laboratories, 51 faculty offices and 7 new student study rooms, Skinner-Jones Hall is ready for what the College of Computing, Engineering and Construction has to bring. "

Other new features of the building include the creation of the College of Computing, Engineering and Construction Career Development Center on the second floor of the structure. Director of the Center,

Completed in January, The University of North Florida Skinner-Jones Hall has opened its doors and along with it an array of opportunities for students seeking and exceptional STEM education in Northeast Florida. space, computer laboratories and classrooms needed for our students to stand out in a quickly advancing industry".

> Under construction since 2016, the project united buildings 3 and 4 on campus for one complete structure, which at that point had been two of the oldest buildings on campus. Now known as Skinner-Jones Hall, the building will also be used to educate K-12 students of what it means to be a STEM student, what career opportunities exist in the fields and what it means to be STEM-ready.

"Our K-12 students have to be prepared before they enter the college campus. They need to have the critical skills that are in high demand from employers. Those skillsets are what makes students STEM-ready, what makes them competitive and marketable. STEM subjects allow students to develop 21st century skills in areas such as critical-thinking, collaboration and teamwork, creativity and imagination. Our workforce, today, is a "global workforce" and because of that, the workforce is very diverse. The outreach program brings awareness and connectivity to STEM programs and activities that students and parents may not necessarily have been introduced to before, which helps to give them more direction on their career path



At UNF, the new Skinner-Jones Hall Opens up New Opportunities for STEM programs with cutting-edge classrooms and laboratories for students and faculty

choice" elaborated Kathie Carswell, Recruitment and Outreach Coordinator in the College.

The College of Computing, Engineering and Construction faculty and staff are eager to settle into its new home in Skinner-Jones Hall, and look forward to educating the STEM leaders of tomorrow at UNF.



Engineering Students Enjoying the new Computer Lab









Engineering Students During Lecture Time

Students Working on Projects in the Engineering Lab (Above, Below, and Left)





Construction Career Days

Northeast Florida's Construction Career Days

Continue to Build on Its Success by Ron Tittle **FDOT District 2 Public Information**



How do you interest young people toward an engineering and construction career? Show them how they can make a difference while building a career in something worthwhile.

That's exactly what the Northeast Florida's Construction Career Days annual event is designed to do – particularly showing area high school students the opportunities in the transportation builders industry.

And they love it too! This is a hands-on adventure that continues to expand to additional counties within the Northeast Florida region. Each year the program branches out to reach more counties in Northeast Florida and the number of interested students keeps climbing.

The exposure alone with industry leaders, employers and engineers provides significant insight to the students, and some leave with contacts for immediate positions once they graduate high school.

Austin Blackburn attended the Construction Career Days event with his Oakleaf High School friends. He talked with various engineers and consultants to better understand what's available to young people like himself. After talking with VIA Consulting Services, Inc. representatives at their display he became interested in this type of work.

Blackburn completed some paperwork and received an email within two weeks as a follow-up.

"I met up with the project administrator and project engineers ... a couple of weeks later they sent me an offer letter. I am now hired as an inspector aide for VIA." He is excited about the training courses he is taking.

"It's an ongoing process and I'm having a lot of fun





doing it."

VIA Construction Services Vice President Peter Sheridan, P.E., is actively involved with the career program for young people to acquaint them with the transportation building industry. He heard of Blackburn's interest and was involved with the interview process to hire him.

"Before we were done with the whole process," states Sheridan, "we ended up hiring this nice young man as soon as he graduated from high school and now he's working in the CEI division, construction engineering and inspection division, as an inspector aide – learning all the different aspects of roadway construction. One of the interesting things was - he indicated to me - 'I never knew so much went in to building a road,' and now he's learning that."

There are opportunities for scholarships too for those who are looking at going to a vocational school to develop a long-term career in the construction or transportation industry.

Through multiple conversations with various industry partners as well as community, school and government leadership, Construction Career Days is an exciting event where students see, hear, touch and work practically all aspects of building transportation as well as additional insight for building resumes and interacting with other related companies and agencies.

Jacksonville's City Council Member (now President) Anna Lopez Brosche attended the 2017 Construction Career Days event and remarked: "I'm commending everyone involved in this particular program to connect students with jobs and help people really apply, through the equipment and all the classes and training that you have here, apply that knowledge and really understand what it means to have a job in the construction industry, and it's really about jobs – and I want to thank you all for your efforts in doing so."

Florida Department of Transportation, Florida Transportation Builders Association, Federal Highway Administration and the multitude of construction partners enhance the opportunities for these students to consider a career in construction.

The event is designed specifically to acquaint high school students with career opportunities. Partnerships with area engineer consulting and construction companies are the backbone of the career days, reinforcing to the students that they are the builders of tomorrow.

Greg Evans, FDOT District Two Secretary for Northeast Florida, expresses the importance of the Construction Career Days event: "It's not just a threeday event, it's an all-year event with us. The levels in transportation funding are levels unheard of and this is our opportunity to give back to our communities and say to our kids - Hey! When you enter the work force we've got an opportunity for you."

Northeast Florida's Construction Career Days 2018 event is scheduled for February 13-15 at the Equestrian Center in west Jacksonville.

Information about the Construction Career Days and sponsors is available at www.nflccd.com.













Beachwalk Lagoon

St. Johns County

by Christopher Egan, PE Project Engineer, ECS Florida LLC

The Beachwalk Lagoon, located in northern St. Johns County, is a mixed use development with a 14-acre lagoon as its centerpiece. Visitors and residents will have access to a swim-up bar, floating stage, as well as opportunities for kayaking, paddle boarding, and sailing. The lagoon is designed with sandy beaches and a textured liner at the beach entrances, which transitions to a smooth liner at greater depths.

One of the major challenges for lagoon construction was determining how to excavate the 14-acre lagoon to a depth of 14 feet, and place the impermeable liner in the bottom. Since the excavation was below the normal groundwater level at the site, the hydrostatic forces would tend to lift the liner when the pond was empty, and placing soil over the liner to resist those forces was not an option.

The design team of Kimley-Horn Associates, Thompson Pump, and ECS Florida, LLC (f.k.a. Ellis & Associates, Inc.), determined that a dewatering system would be required to lower and maintain the groundwater level below the lagoon bottom during periods when the lagoon was empty.

Piezometers were installed during the exploratory phase to determine groundwater depths and general flow direction. After the collection of groundwater data, the design team determined that a dewatering system consisting of 6-inch underdrain lines placed in a gravel envelope, wrapped in a geotextile fabric, and two 12-inch pumps would provide the necessary flow to drawdown the groundwater in a timely manner.



Aerial of Development and Lagoon with Completed Liner



Retaining Wall, Temporary Dewatering System, and **Beach Liner**



Water Filling the Lined Lagoon



Retaining Wall, Temporary Dewatering System, Liner Placement, and Beach Liner

Vallencourt Construction Company, Inc. was the Contractor selected to install the dewatering system. The pump out system was installed with extensive quality control measures including gradation testing, density testing, and visual observation.

As of the writing of this article, the lagoon liner has been fully placed and the lagoon is currently filling with water, and the liner has remained in-place. St. Johns County will soon have a new beach!



Exceptional.

1,355 architects, engineers, constructors and administrative professionals. 20 offices across the US, Latin America and Asia. Nearly \$1B annually for US and global clients in commercial and industrial markets.

Let's build this together.

/ille, FL (Corporate Headquarters) * Akron, OH * Atlanta, GA * Beloit, WI * Charlotte, NC * Cleveland, OH * Columbus, OH * Dallas, TX * Houston, TX * Livermore, CA Nashville, TN * Oklahoma City, OK * Pittsburgh, PA * San Diego, CA * St. Louis, MO * St. Paul, MN * Tulsa, OK * Singapore * Malaysia * China * Mexico





Cast-in-place Retaining Wall and Temporary **Dewatering System Outside the Wall**

HASKELL

Bently Heritage | Minden, NV engineering, Procurement, Construction up & Commissioning Services by Haskel

www.haskell.com

SPECIAL THANKS TO ...

2018 E-WEEK CALENDAR OF EVENTS

Feb.13-15 (Tue.-Thurs.)

Northeast Florida Construction **Career Days - Equestrian** Center

Feb. 16 (Friday) ASCE Kick-Off Luncheon -Maggiano's

Feb. 21 (Wednesday) **SMPS** Transportation Summit - Epping Forest

Feb. 22 (Thursday) **Engineers Week/ASHE/ASCE/** FES/JEST Happy Hour - Top Golf

Feb. 23 (Friday) Mathcounts - UNF University Center

Feb. 24 (Saturday) **Boy Scouts Community Service** - **UNF Building 50**

Feb. 24 (Saturday)

Annual Awards Banquet (Mardi Gras Theme) - San Jose **Country Club**

March 9 (Friday) E-Week Golf Tournament -**Deercreek Country Club**

For more information on these events, visit http://nefl-eweek.org



DIAMOND SPONSORS Haskell

PLATINUM SPONSORS

DRMP ECS Florida, LLC Eisman & Russo, Inc.

GOLD SPONSORS

Arcadis HDR Terracon Wantman Group, Inc.

SILVER SPONSORS

Cardno, Inc. Hanson Professional Services RS&H

BRONZE SPONSORS

Ayres Associates



Jacksonville 904.880.0960 ecslimited.com

- **BRONZE SPONSORS (CONT.)** Civil Services, Inc. Clary & Associates, Inc. **Environmental and Geotechnical** Specialists Fred Wilson & Associates, Inc. **Gibbs** Group Meskel & Associates Engineering Miller Electric Company
- **VIA** Consulting Services
- SUPPORTING SPONSORS
- Adkinson Engineering, P.A.
- Cloud Consultants and Services, Inc.
- **Environmental Resource Solutions**
- Environmental Services, Inc.
- Five Points Design Group, Inc.
- **Keville Enterprises**

Eisman& Russo

Transportation Planning & Engineering Communication and In

Construction Management & CEI Best Practices. Oversight. Processes. Protection.

Disaster Management & Recovery Responsive. Prepared.







Top 100 Construction Manageme 2015, 2016, and 2017

Where Commitment and Action Meet. ville Ft. Lauderdale Hollywood Leesburg

www.eisman e: 6455 Powers Av

Eisman

₰₽RUSSO

in -

Serving the Southeast since 1985

Chairperson Chris Rivera Suncoast Drilling-Jax, LLC

Awards Banquet

Becky Kiser ECS Florida, LLC

Brett Manzie, PE McCranie & Associates, Inc.

Chris Rivera Suncoast Drilling-Jax, LLC

Courtney Taylor, CPSM Environmental Services, Inc.

Golf Tournament

David Cook Professional Promotions & Planners

Becky Kiser ECS Florida, LLC

Chris Rivera Suncoast Drilling-Jax, LLC

Kick-off Luncheon Caitlin Breland, PE Baker Klein

Robert Jackson, PE RS&H

Happy Hour Brett Manzie, PE McCranie & Associates, Inc.

Chris Rivera Suncoast Drilling-Jax, LLC

Boy Scouts Merit Badge Suzanna Milbrandt VIA Consulting Services, Inc.

2018 E-WEEK COMMITTEE MEMBERS

Past Chairperson Janet Duffy Eisman & Russo, Inc.

Annual Awards Joe Champion, PE ECS Florida, LLC

Corey Chascin, El Amec Foster Wheeler

Robert Jackson, PE RS&H

Brett Manzie, PE McCranie & Associates, Inc.

Chris Rivera Suncoast Drilling-Jax, LLC

Mathcounts

Gabe Pastrana, PE Pastrana Engineering & Environment LLC

Pete Sheridan, PE VIA Consulting Services, Inc.

Ryan Vasile, PE RS&H

Scholarships Caitlin Breland, PE Baker Klein

Cheryl Freeman, PE RS&H

Treasurer Tina Meskel, PE Meskel & Associates Engineering

Transportation Summit Cheryl Gessling ECS Florida, LLC Newsletter Nancy Debs, PE Five Points Design Group, Inc.

Committee Members at Large

Kathie Carswell UNF

Joe Champion, PE ECS Florida, LLC

Courtney Taylor, CPSM Environmental Services, Inc.

Website Cheryl Gessling ECS Florida, LLC

Sponsorships Austin Chapman, PE, PTOE Prosser, Inc.

Nancy Debs, PE Five Points Design Group, Inc.

Gene Howerton, PE ARCADIS

Glenn Lusink, PSM DRMP

Brian McKee, PE Hanson Professional Services

Chris Rivera Suncoast Drilling-Jax, LLC

Amanda Upton DRMP

