R.E. WARNER
& ASSOCIATES INC.

ENGINEERS
ARCHITECTS
SURVEYORS
CONSTRUCTION MANAGERS

Excellence BY DESIGN

WINTER 2018

A DIGITAL MAGAZINE FOR CLIENTS AND FRIENDS OF R.E. WARNER & ASSOCIATES, INC.

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ON THE COVER: SUBSTATION IMPROVEMENTS ARE JUST SOME OF DOZENS OF PROJECTS COMPLETED FOR CLIENTS IN THE ENERGY SECTOR THIS YEAR (READ MORE ON PAGES 4-5)

PRESIDENT'S MESSAGE

by Ted Beltavski, PE, MS

ELECTRICAL ENGINEERING

Spotlighting our growing electrical department

As a multi-discipline firm with talented professionals across all our departments, we always enjoy highlighting the exciting projects being handled for our clients. Most recently, for example, we discussed our firm's 3D scanning capabilities.

In this issue, we focus on our electrical engineering team. This is a key moment in our firm's history as we grow our electrical group in order to assist our major energy clients. Energy projects across multiple markets in the last year have precipitated growth and the hiring of excellent new technical talent. Industrial power feed, owner and utility system optimization, power grid protection equipment upgrades and more have given us the ability to assist our clients in ways never imagined.

Valued clients, such as FirstEnergy, have entrusted to our firm the responsibility to assist them on projects that make a difference to our entire region. As we continue to grow in support of our vision to provide technical solutions for our clients, it is our honor to be the consultant of choice for this industry.

Read about our electrical department's recent work and news of note on pages 4-5.

Best wishes,

Ted A. Beltavski, PE, MS
President

FOCUS ON: ELECTRICAL ENGINEERING

Featured work and news of note in the electrical department

2018 has been a busy year in the electrical department, and with the team's recent growth, we are ready to take on even more in 2019.

Some of our most significant work over the past year has been assisting FirstEnergy with various substation improvement projects in order to meet its maintenance obligations set by FERC and NERC. These substation maintenance and improvement tasks have included equipment replacements, upgrades, and additions, including: batteries, reclosers, current transformers, potential transformers, and SCADA/RTUs. Project Manager Wayne Gallion, who joined R.E. Warner in July, has put in place processes and quality control procedures that help our team accurately and efficiently complete these tasks in order to meet the client's stringent project requirements and quick turnaround times.

Of note is that these are not cookie cutter projects. Not only is the specific improvement different at each substation, each one also has different existing equipment, different ways components are hooked up and installed, different wiring, and different external factors affecting the project (e.g. ground work needs). So, while we've developed efficiencies in procedures, each project still requires careful scheduling and engineering design analysis. The fact that all projects have been completed successfully speaks to the team's attention to detail and to dedication to not just getting the job done, but getting the job done right.

In addition to substation improvements, we have also been providing engineering support

TYPICAL ELECTRICAL ENGINEERING SERVICES PROVIDED

Studies
- Power System Computer Modeling
- Short Circuit Analysis
- Load Flow Analysis
- Protective Device Coordination
- Power Factor Correction
- Harmonic Filtering
- Power Quality Metering
- Arc Flash Studies
- Energy Audits
- Economic Evaluations & Planning
- Probable Cost of Construction Estimates
- Hazardous Area Classification

Power Systems
- High Voltage Transmission
- Medium Voltage Distribution
- Low Voltage Distribution
- Substation & Distribution Equipment Specification
- Emergency Generators
- Uninterruptible Power Supplies
- DC Rectifiers/Substations

Lighting & Communications
- Indoor and Outdoor
- Commercial and Industrial
- Emergency Lighting
- High Mast Lighting
- Fire Protection Systems
- Security & Alarm Systems
- Communication Systems
- Fiber Optic Networks

System Installation
- Conduit & Cable Tray Raceway Systems
- Hazardous Area Equipment, Raceways, & Cable Systems
- Intrinsically Safe Systems
- Database Conduit & Cable Schedules
- Motor Control Systems
- AC Drive Systems
- DC Drive Systems
- Heat Trace Systems
- Grounding
- Lightning Protection
- Leak Detection Systems

Start-Up & Commissioning
- Substation & Motor Control Commissioning
- Protective Device Setting & Calibration
- System Construction Support & Commissioning
- Design Build

to the Energy Delivery Planning & Protection – Data and Reporting Group. Our associates have been using FirstEnergy's proprietary software (K03) to provide transmission loadability data, as well as assisting with transmittals and package coordination.

Outside of the Energy market, recent electrical engineering projects have included:

- Electrical, power and control systems for new municipal and industrial facilities
- Arc Flash Studies
- Low and medium voltage power supply studies, recommendations and design
- Power supply additions
- Power distribution systems modeling, studies, upgrades, repairs, modifications
- Emergency generator installations/replacements
- Powerhouse "cold idling"
- Electrical grid improvements
- and many more.

Other happenings in this department include the addition of six new team members to complement our existing associates' capabilities and add "horsepower" to serve our clients' expanding needs. Wayne Gallion and Electrical Engineer Alex Libby were featured in the previous issue of *Excellence by Design*. Read about our newest hires on pages 14-15 of this issue. They include electrical engineers Fatima Ayoubi, Gustavo Ramirez and Tony Pavlosky.

Need help with your next electrical project? Contact R.E. Warner Vice President Frank Johnson, PE, MS.

WHAT WE'RE WORKING ON

Featured recent projects across our markets

METALS MARKET

MILL MODIFICATIONS ENGINEERING

R.E. Warner is providing **multi-discipline services for a rolling mill capacity expansion project** that will increase the mill's structural and merchant steel capacity. Our team has been contracted for mill modifications engineering to update preliminary drawings and specifications for mechanical, piping, process, structural, electrical and automation disciplines. The project includes equipment installation of three new mill stands, a new cold saw, and a new roller straightener machine. Also included is equipment demolition.

ROLLING MILL INSTALLATION ENGINEERING

Civil, structural and MEP **engineering services in preparation for the installation and commissioning of a new rolling mill and other equipment** in connection with a forge press shop building expansion and a PC facility improvement project at a producer of titanium and engineered products' Martinsville Virginia Plant. R.E. Warner was the engineer of record of the single-story metal building constructed in 2009.

POWER MARKET

NEORSD LOW VOLTAGE EQUIPMENT REPLACEMENT

As part of the Lake Erie Electric/Osborn/R.E. Warner design-build team, R.E. Warner is providing professional design **services for the Northeast Ohio Regional Sewer District's Easterly/Westerly Low Voltage Equipment Replacement Project**. Our team is completing the majority of the tasks at the Westerly Wastewater Treatment Plant which include providing electrical engineering services to perform a field review of the existing low voltage equipment and documentation for new equipment quotes. This information will be used to allow Lake Erie Electric to determine a Guaranteed Maximum Price for the NEORSD. In addition, we are producing drawings for the MCC, panelboards/transformers, and operator station equipment package.

CHEMICAL PROCESS MARKET

BOAT LOADING SYSTEM UPGRADE

R.E. Warner is providing **architectural and multi-discipline engineering services in connection with a salt mining company's boat loading system upgrade**. The existing system is not adequate to distribute salt in new, larger shipping boats and the structure supporting the conveying system is also in question due to excessive corrosion caused by over 50 years of exposure to elements and salt. Our team has provided inspection and structural drawings for reinforcement of the existing structure, and has now been contracted to produce 30% Cost Estimate and Construction Drawings including process, electrical, HVAC, architectural, piping and structural for the replacement boat load conveyor and support structure.

AUTO & MANUFACTURING MARKET

AUTO COMPONENT FACILITY 3D LASER SCANNING

R.E. Warner is **providing a multinational auto component manufacturing company with 3D laser scanning services**. Our team has been at sites in Eastern and Western Europe producing 3D scans of manufacturing buildings and equipment, storage buildings, and other areas of the manufacturing campuses.

BUCKLING WALL STUDY

C&K Industrial contracted with R.E. Warner & Associates, Inc. to evaluate the structural integrity of a wall that is part of a building it leases. Recently a project was undertaken to add windows to the building with existing doors also being replaced. During the project, the unreinforced masonry wall on the south side of the building was noted to be out of plumb. The wall bowed to the extent that work was challenging and the wall's stability was questioned. Our team **conducted a wall survey to determine dimensions and masonry properties, completed an analysis of the wall to determine methods of reinforcement, and created drawings** for wall reinforcement construction. We also provided a 3D scan and drawings of the existing building, a topographic survey, drainage redesign, and civil design of landscape and parking lot options.

GOVERNMENT MARKET

CITY OF LORAIN PRIMARY DIGESTER EQUIPMENT AND ROOF EVALUATION

The City of Lorain has awarded R.E. Warner a project to perform an **equipment and roof evaluation of their existing primary digester system**. The components included are two heat exchangers, three digester mixers, digester roofing system and the cleaning of the digester itself.

CITY OF CLEVELAND NORTH POINT TRANSITIONAL HOUSING REPAIRS & RENOVATIONS

R.E. Warner is providing the City of Cleveland with **multi-discipline engineering and architectural services for repairs and renovations at the North Point Transitional Housing building**. Our scope of work includes producing construction documents for the boiler replacement, circulation piping repair/replacement, chiller replacement, and cooling tower rehabilitation/restart. We will also be providing scopes of work and guide specifications for the City to obtain opinions of probable cost for several other repairs and renovations that have been identified.

BRATENAHL SERVICE GARAGE COMPLETED

Village of Bratenahl community leaders and personnel, neighbors, and the design/construction team gathered in early October for the ribbon cutting celebrating the completion of The Village of Bratenahl's new Service Garage & Salt Dome – the first building project the Village had undertaken since the 1930s.

Project Manager and Architect Jen Kalin, RA, NCARB, LEED AP was happy to report to the management team that this project was an all-around success. It was completed two weeks ahead of schedule, on budget, and fulfilled or surpassed the client's objectives. Furthermore, the design and construction process went smoothly with no major issues requiring resolution.

The Village of Bratenahl is a very small "bedroom" community located just east of Downtown Cleveland. Encompassing 1.6 square miles and home to 1,200 residents, the municipality has few public buildings and seldom initiates construction projects. Thus, it was a big deal when in 2015 the Village commissioned a facility assessment for its service garage and salt dome, which discovered the facilities to be in such poor condition and in need of such costly repairs that a new facility was recommended. Thus, the journey to complete the Village's first major building project in nearly 90 years began.

The Village opted to complete the project via the Design/Build delivery method, selecting Van Auken Aikens (VAA) as the criteria architect to help them prepare to undertake the project and develop the conceptual design. VAA's plans called for a new 1,600-square-foot salt dome, a new 10,000-square-foot service garage, a secure vehicle storage area, a secure above-ground storage tank area, and all associated site work as well as demolition of the existing service garage.

When R.E. Warner and contractor Cold Harbor Building Company were selected to be the design/build team in the spring of 2017, we immediately began our due diligence to develop the final design and construction documents. Through our review of the conceptual design, the site, and interviews with stakeholders, we ended up making several changes to accomplish the client's objectives.

Spurring these changes was the client's desire to store more salt than originally discussed with VAA

in order to obtain bulk purchasing savings. This meant our designers had to find a way to accommodate a larger salt dome on the site. Complicating matters were the site's small size (1.26 acres), shape (a sort-of trapezoid), and other functions – an impound lot and fueling station are also on-site at the location.

After sketching a few different layouts, we found that by rotating the service garage 90 degrees on the site, we were able to not only fit a larger salt dome, but also improve the flow. With the change, the impound lot became tucked away from view and the front entrance (the most aesthetically pleasing part of the building) became the "face" of the site, which was important to the residents of Bratenahl.

Another change to the criteria plans was the project's phasing. Because the site serves multiple purposes, it had to remain accessible throughout construction. We adjusted the phasing to ensure that day-to-day operations would be minimally impacted. The salt dome was constructed first since it is located out of the way. It then became contractor storage so that the site was not cluttered with construction items impeding truck traffic. Next came the service garage, and finally the stormwater pond, demolition of the existing building, and installation of the fueling station and impound lot. Constructing the pond, completing the demolition, and building the site amenities near the end of the project enabled that land to be available as "swing space" for construction or Village operations' needs.

We credit the success of this project to having top-notch team members to work with. The criteria architect – VAA – provided clear direction with the documents that were provided in the RFP as well as support throughout design and construction. In addition, Cold Harbor is experienced in the construction of municipal buildings, including service garages, and we have completed several projects with them. As a result, we all knew what to expect and our past experiences helped us to avoid potential hiccups in the process. In fact, only one issue came up in the field and we were able to resolve it without bothering the client.

"By far, we are most proud that we were able to save our client design and construction costs, resulting in a small project savings that the client was able to put towards FF&E expenses they otherwise would not have been able to afford."

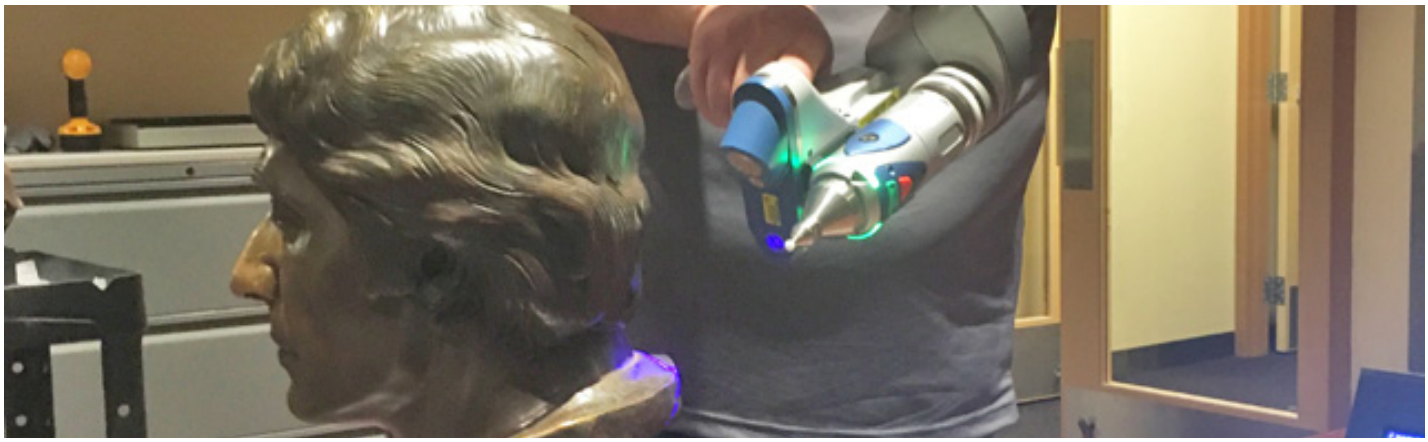
Communication was another key to success. As with all our projects, we took care to communicate frequently and fully with all applicable parties. For this project, that meant daily phones calls with the mayor, standing meetings with all relevant design/build team and client representatives, and as-needed meetings with sub-groups for specialized topics. It also meant taking and distributing comprehensive meeting notes.

Further, since this client was not as experienced with public design/construction, we frequently served as an advisor for navigating the process and permitting/reviews logistics, providing education and helping to plan and strategize to shepherd the project along to completion. In particular, we had to work very closely with the client to gain community buy-in and Architectural Review Board approval. The community felt strongly that the aesthetic of the facilities should be in keeping with Village's existing buildings; however, there was not enough budget to include the desired details. With our creativity and the client's knowledge of their citizens, we were able to develop a compromise satisfying all.

By far, we are most proud that we were able to save our client design and construction costs, resulting in a small project savings that the client was able to put towards FF&E expenses they otherwise would not have been able to afford, including equipment such as lifts in the maintenance area as well as shelving in the storage area, and furniture for the break room and office. We achieved this savings by working efficiently and carefully selecting materials/processes that made sense and were cost effective. Further, we eliminated extensive RFIs and minimized downtime through close collaboration with the team. This attention to detail as well as the ability to partner with a proven contractor with whom we had worked before, and who prequalified all subcontractors, resulted in cost effectiveness on all aspects of the project while still achieving or exceeding the overall goals for the new building.

FUN ON THE JOB

3D Scanning at the Pro Football Hall of Fame



Although useful for a wide variety of applications, most clients in need of R.E. Warner's 3D scanning and modeling services have come from the industrial sector. So, when 3D Scanning Coordinator Dave Andrews received a call from Saleem Choudhry, Director - Exhibits/Museum Services at the Pro Football Hall of Fame in Canton, Ohio, he was excited.

"I spend most of my time in steel or chemical processing plants, or other heavy industrial manufacturing type facilities," Dave said. "As a football enthusiast, it was very exciting to be asked to help develop the pieces for a new fan experience and get to go behind the scenes."

Saleem contacted Dave to ask R.E. Warner to complete 3D scanning of the John Madden, Joe Namath and Tony Dungy bronze busts. 3D scanning is the process of using a special device to capture data about a physical object's size, shape and appearance, which is then used to create a 3D, digital representation of the object – called a "point cloud."

The scans were completed for use in creating a new visitor experience that is yet to be unveiled. It's a secret, so even we don't know the exact details, despite having provided these services.

What was the process of scanning the bronze busts like? In a word, time-consuming, but not as much as you might think. Madden took the longest at about 90 minutes, Namath took 60 minutes and Dungy took 45 minutes. Dave used a 9' Faro Edge Articulating Arm with a Blue Light Scanner attachment – the first time R.E. Warner put such a piece of equipment to use. The equipment has scanning accuracy of 0.001," which made the project successful.

In addition to being time-consuming, the busts were extremely tricky to scan. When first looking at them, small things like overlapping hair or an area behind the ear covered with hair are not necessarily noticed; however, if not captured in the scan there will be a gap in the point cloud. Such attributes required extreme attention to detail to make sure the entire appearance was accounted for, which is crucial to the success of the technology that will power the new fan experience.

To wrap up the project, Dave had to take the data from the scans and process it into a model the Pro Football HOF could use. Dave used two pieces of software to create the models – Polyworks and Meshlabs. Polyworks was used to capture the point clouds and wrap a mesh around them, with each mesh creation taking about 30 minutes. Once created, the file was imported into Meshlabs for the final touches. The deliverable was an Object File (.obj) that is usable across many platforms including Photoshop. The challenge of this part of the process was the file size. Each bust had between 21-30 million points when scanned. The key was to parse the data so it was more manageable and still provided a great product.

We're looking forward to seeing what the HOF has in store!

PERSPECTIVES & INSIGHTS

SAFETY

ENCOURAGING A SAFETY MINDSET - "BE SMART/BE SAFE"

This article is by Dave Brunner, Mechanical Designer and Safety Coordinator. Dave has more than 30 years experience in mechanical and HVAC design and coordination for new construction and renovations in the commercial, municipal, and industrial sectors. Dave also serves as R.E. Warner Safety Coordinator and is credited with developing our safety program, documentation and training program, as well as managing various other safety-related tasks. He recently completed the OSHA 30-Hour General Industry training.

"Safety Culture" has become the go-to phrase for most safety programs in today's businesses. But at what level is a "culture" operating, and how is it maintained? At R.E. Warner & Associates, we believe that safety is not just something to be thought about during work hours, but a continuous mindset that should be part of daily life – whether inspecting a boiler furnace duct on a cold winter day or grilling steaks with family and friends on a hot summer evening.

Being smart about safety entails more than taking a test once a year and knowing the ABCs of basic safety. It is about understanding the present dangers involved in the work or activities you are about to engage in, and what tools should be available to successfully and safely complete your endeavor. We advocate for always being aware of your environment, including the actions of other people around you, and always having a plan for emergencies should something arise that puts you or others in harms' way.

To encourage a safety mindset, our firm has 21 mandatory training courses, with another 38 additional project- and discipline-specific training programs. We work with third party qualifiers like Avetta, Gatefeed, and ISNetworld to maintain the safety requirements specified by our clients. We use Health and Safety Procedures (HASP) on every job along with the client's Job Safety Analysis (JSA) and/or Job Hazardous Analysis (JHA). We also have toolbox talks, weekly safety messages and safety incentive programs.

The result, we hope, is that each of our team members when engaged in a task – whether work-related or not – is aware of what they need to do to keep themselves and others safe.

Even better – we hope they are taking steps to educate others about safety too, as we encourage all colleagues, friends and loved ones of the R.E. Warner team to "Be Smart/Be Safe"!

NEWS OF NOTE

DUSTIN ADDAIR IS R.E. WARNER'S NEWEST PS

We are pleased to announce that Dustin Addair, PS, has passed the Principles and Practice of Surveying Examination, earning him the title of Professional Surveyor! He is now a Registered Professional Surveyor in the State of Ohio. To earn their PS, surveyors must: earn a four-year degree in land surveying from an accredited engineering technology program; pass the Fundamentals of Surveying (FS) exam; complete four years of progressive work experience under a PS; and pass the Principles and Practice of Surveying (PS) exam.

Dustin started with R.E. Warner in March 2014 as a member of the survey department's field crew and has since become a Survey Crew Chief. Dustin holds a Bachelor's Degree in Surveying and Mapping from the University of Akron and an Associate's Degree in Civil Engineering Technology from Lakeland Community College. He is FAA registered and licensed to fly a drone and has 10 years' experience in surveying, mapping design, and construction layout and staking. His experience includes maintaining positional control for layout and construction of elevator cores, post-tension beams and decks, columns and walls, caissons, and grade-beams including concrete forms and anchor bolts using a Trimble robotic total station. Dustin served as survey crew chief for the Cleveland Museum of Natural History Site Staking, One University Circle Apartment Building Construction Layout, Independence All-Purpose Trail Surveying, and the Opportunity Corridor Layout and Staking projects, to name a few.

GORDON MELLEN CELEBRATES 40 YEARS AT R.E. WARNER

R.E. WARNER & ASSOCIATES INC.
40 YEARS ANNIVERSARY

We are pleased to recognize Gordon "Gordie" Mellen for his 40-year anniversary with R.E. Warner. Gordie joined the firm on October 16, 1978.

Gordie is highly proficient in the structural design of complex steel, automotive and chemical production facilities. He has been an integral member of the team for many of the the firm's large industrial projects, including the award-winning Ameristeel Melt Shop Modernization, the Ross Air Pollution Control Upgrade, RTI's new Titanium Plate Rolling & Finishing and Titanium Forging & Grinding Facilities, TimkenSteel's In-Line Forge Press & Soaking Pit Equipment Installation, ASHTA Chemicals' HCL Production Upgrades, and CMC's new Micro Mill, to name a few. He also routinely works on automotive plant projects for Ford and Honda, and most recently the Leadec Merecedes Plant Monorail Upgrade.

"Gordie's exceptional attention to detail and technical capabilities make him an asset to our department. He is a dedicated, hard worker and it's pleasure to have him as part of the structural engineering team," said Dave Ferencik, Structural Department Manager.

Please join us in congratulating Gordie on his 40-year anniversary and his many contributions to R.E. Warner.

PROFESSIONAL INVOLVEMENT

Highlights of recent industry participation

AIST TECHNICAL REPORT PREPARATION

Senior Project Manager Matt Benovic, PE, SE, LEED AP is a member of the AIST Mill Building subcommittee preparing updates to Technical Report 13 - which gives guidance on the design and construction of mill buildings. The group is currently in the final stages of preparing the report for release.

LOCAL SCHOOL GUEST SPEAKING

In late September, President & CEO Ted Beltavski, PE spoke to Benedictine students studying business to provide a real-world account of professional service business ownership, including the ups and downs over the years and future business plans.

In October, Senior Project Manager Jen Kalin, RA, NCARB, LEED AP spoke to students at Cleveland Heights-University Heights Middle School about "green" architecture. Check out her presentation!

SHPE CONFERENCE

Structural Engineer Ryan O'Hearn, PE attended the Society for Hispanic Professional Engineers national convention in Cleveland to speak to college students about careers in civil engineering. It's always rewarding to share advice with up-and-comers!

ASCE GBE AWARD

Senior Project Manager Matt Benovic, PE, SE, LEED AP, who is Past President of ASCE Cleveland, attended the GBE Technical Lecture Award Dinner where Karen Kabbes was recognized with the 2018 G. Brooks Earnest Award.

VEX ROBOTICS

Vice President Matt Barratt, PE was a judge at the 2018 VEX Robotics Competition held at Brecksville-Broadview Heights High School in early November. Over 75 teams participated in the competition in which they were given a challenge, and had to design, build, program, and drive a robot to complete it.

ASCE STEAM EXPO

Structural Engineer Ryan O'Hearn, PE volunteered at ASCE Cleveland's STEAM Expo for kids at Cuyahoga County Public Library Parma-Snow. During this career-day style event, volunteers provided engineering demos and hands-on activities for all ages, including K'nex, Kiva planks, Squishy Circuits, Foil Boats, and Craft-stick Catapults. The objective of the event was to inspire interest in engineering as a future career path.

FIREFISH FESTIVAL

Vice President Matt Barratt, PE is serving as a board member of FireFish Arts which puts on the FireFish Festival in Lorain each September. FireFish Arts is a non-profit community-based art, civic and economic development initiative. The festival transforms downtown Lorain into a dynamic artistic experience that engages all of the senses and is the impetus for the reinvention of Lorain as a dynamic, artistic mecca.

NEW TEAM MEMBERS

R.E. Warner welcomes the following team members, adding to the experience and capabilities of our growing organization.

FATIMA AYOUBI // ELECTRICAL ENGINEER

Please join us in welcoming Fatima Ayoubi as a new member of our team. Fatima joins us as an Electrical Engineer reporting to David Walls. She will be primarily focused on FirstEnergy TLL work.

Fatima is a recent graduate of Cleveland State University, holding a Bachelor's Degree in Electrical Engineering. Her engineering experience includes working as a Department of Electrical Engineering and Computer Science Student Research Assistant, serving as Team Lead for a student design project for Rockwell Automation, and working as an Engineering Associate at Xellia Pharmaceuticals. In addition to achieving several years of engineering experience as a student, while at Cleveland State, Fatima also participated in the Institute of Electrical and Electronic Engineers, served in Student Government, was a Boat Captain on the rowing team, and was on the fencing team receiving NCAA Division I Fencing Athletic Honors and a Scholarship. Further, she was routinely on the Dean's List and was the recipient of an Honors Scholarship.

TONY PAVLOSKY // ELECTRICAL ENGINEER

Tony Pavlosky joins us as an Electrical Engineer reporting to David Walls. He will be primarily focused on work in our Power market.

Tony joins us from another local firm, where he had worked since graduating from Cleveland State University in 2013. His experience includes working with project teams to create and revise design documents and drawings such as one and three-line diagrams, protection and control schematics, wiring diagrams, substation layout plans, section and detail drawings, and application of mark-ups for project built drawings. He is proficient in PSpice, MATLAB Simulink, Maple 15, PowerWorld Simulator, and MathCad.

Tony holds both a Bachelor's and Master's Degree in Electrical Engineering from Cleveland State University.

GUSTAVO RAMIREZ // ELECTRICAL ENGINEER

Gustavo Ramirez joins us as an Electrical Engineer reporting to David Walls. He will be focused on work in our Power market.

Most of Gustavo's experience has been with power systems, particularly projects involving high voltage substation. In addition to project management and design reviews, Gustavo's experience includes collecting and preparing data and information to perform detailed engineering calculations for electrical substations, including, one line and three line diagrams, schematic and wiring diagrams, above and below electrical layouts, bill of materials, conduit list, circuit lists, battery calculations, etc. He has also performed electromechanical and protection and control design for high voltage electrical substation projects, including major equipment replacements (circuit breakers, switches, voltage and current transformers, wave traps, etc.), new relaying install, RTUs and SCADA Replacements, line relay replacements, and others. His design software experience includes Matlab, SIMULINK, Excel, PowerPoint, Pspice, Microsoft Project, and AutoCAD.

Gustavo is a certified EIT and is pursuing his PE license. He holds a Bachelor's Degree in Electrical Engineering from Purdue University, where he concentrated his studies on power electronics and power systems in general.

OUR MISSION IS TO PROVIDE TECHNICAL SOLUTIONS THROUGH TEAMWORK AND A PASSION FOR SERVICE.

Since our founding in 1951, R.E. Warner & Associates, Inc. has experienced steady and continuous growth. Building on our traditional strengths and values, we have entered into new fields only when it is consistent with the basic mission of our company. Today, R.E. Warner is a full service, multi-discipline consulting firm serving both public and private clients.

We call ourselves multi-discipline because we offer professional services in civil, structural, mechanical, electrical and process engineering; architecture and planning; surveying; and environmental science and engineering.

Our impressive list of clients includes many of our nation's largest steel, automotive and chemical producers, electric power companies, health and educational facilities, and various agencies of the federal, state and local governments.

R.E. Warner's mission is to provide technical solutions through teamwork and a passion for service. Our areas of practice include buildings and facilities, industrial operations and process engineering, infrastructure, transportation, energy management, surveying, environmental and construction services.

In order to fulfill our mission to our clients, R.E. Warner consistently recruits, hires and retains the leaders in our profession. In recognition of our great workplace, R.E. Warner has been named a multi-year winner of the NorthCoast 99 Award, presented annually by the Employers Resource Council to the top 99 companies to work for in Northeast, Ohio.

We invite you to contact many of our peers to discover how working with R.E. Warner can be economical, efficient, professional and down right pleasant!

LOCATIONS:

Westlake
LA Office Plaza II @ LA Centre
25777 Detroit Road, Suite 200
Westlake, Ohio 44145
Phone: 440.835.9400
Fax: 440.835.9474

Canton
5800 Navarre Road S.W.
Canton, Ohio 44706
Phone: 330.478.9313
Fax: 330.478.9314

R.E. WARNER & ASSOCIATES INC.

ENGINEERS
ARCHITECTS
SURVEYORS
CONSTRUCTION MANAGERS

www.rewarner.com

If you would like a printed version of this publication, please email Lydia Janis at ljanis@rewarner.com.