

Feb. 15-16, 2018 E-Week Seminar Descriptions

Introductory = New to the engineering field, with little or no experience such as students.
Intermediate = A few years of experience in the field of engineering with a desire to build on it.
Advanced = A “seasoned” engineering professional with many years of experience.

T = Thursday Seminar and **F** = Friday Seminar

Note: Some of these seminars might have been offered at other locations. It is your responsibility to determine what seminars you want to attend.

BRIDGES

T - Maintaining Historic Aesthetics While Addressing Safety & Structural Integrity - *Intermediate*

By: Gerard Sentz; Foit Albert Associates – gsentz@foit-albert.com; Vance Carpenter – vancec@co.jefferson.ny.us

This presentation will begin with a brief description of the lengthy design alternative evaluation and then construction of the rehabilitated culvert in Burrville, NY. With several unique limitations including a vital business to the community on one of the quadrants of the project as well as the need to maintain a limited budget by having County forces construct the project, the project followed a unique delivery method of design which follows more along a Design-Build philosophy. The presentation will also describe many of the details of design and construction including re-routing utilities, construction of retaining walls in each quadrant tied to the existing walls and use of a steel liner culvert pipe with both ends skewed at different angles. Public amenities such as an overlook over the Falls and additional on-street parking were critical to meeting the project objectives.

T - Value Engineering Redesign of the Replacement of the City Island Road Bridge over Eastchester Bay – *Intermediate*

By: Cagri Ozgur, PE, PhD and Greg Fisher; Henningson, Durham & Richardson Architecture and Engineering, P.C. (HDR) - Cagri.Ozgur@hdrinc.com; Greg.Fisher@hdrinc.com

Following community concerns after the start of the project, HDR redesigned the replacement of the City Island Road Bridge (CIB) under value engineering (VE) provisions. The as-bid contract documents for the CIB replacement specified construction of a single tower, asymmetrical, cable-stayed bridge spanning Eastchester Bay and connecting City Island with Pelham Bay Park. After mobilization, residents objected to the height of the proposed cable-stayed bridge tower as not conforming to the context of the existing community. NYCDOT asked the contractor, Tutor Perini Corporation (TPC), to investigate alternative structure types under the contract’s VE provisions as a compromise with the City Island Civic Association, and HDR was retained by TPC to develop the redesign. The VE bridge offered several advantages over the cable-stayed bridge, namely schedule benefit, cost savings, economy of operations and ease of maintenance. Delivery of the CIB redesign necessitated solving numerous challenges, including plate girder design to use steel plates procured for the cable-stayed bridge tower, rigid geometric constraints, scour in a tidal water body and steel erection. In addition, a deep foundation system comprised of both drilled shafts and micropiles was designed to overcome tight construction limits, address design scour and accelerate the schedule. This presentation will present the challenges and solutions regarding the hydrodynamic modeling and scour analysis, superstructure and substructure design and the 3D FEA steel erection analyses. The presentation will also provide insight on how the designer and contractor worked in a design-build manner to deliver a bridge design that met the owner’s requirements.

T - Design-Build 48 hour Replacement of LIRR Post Avenue Bridge using SPMT – Intermediate

By: Gerard Bartucci, PE; McLaren Engineering Group - gbartucci@mgmclaren.com

McLaren Engineering Group as Lead Designer was awarded this Long Island Rail Road design-build contract for the Replacement of the Post Avenue Bridge in the Village of Westbury, Long Island, NY. The bridge carries LIRR over Post Avenue and was in need of structural repair and replacement. The existing bridge was built in 1914, and is a 63-foot long single span structure which carries 2 tracks supported by steel thru plate girders with a concrete deck, supported on reinforced concrete abutments. In an effort to minimize impact to the LIRR Commuters and Community because this bridge is a critical lifeline to hundreds of thousands of commuters, LIRR has specified that the existing bridge shall be removed and the new one installed during one 48 hour period beginning at 1:00 am on Saturday and through 1:00 am on Monday on the weekend on October 21st & 22nd, 2017. In the months leading up to this weekend, there is a series of activities which must be accomplished in preparation for the bridge replacement. In addition, the project is using a SPMT to pick up the old bridge and “drive it” down the road, then pick up the new bridge and placing it in position. The new Bridge had been designed to service a future third track, as well as meets the vertical clearance of 14'- 0” as required by the NYSDOT. This presentation will address the technical, quality and planning challenges of replacing this high-volume LIRR railroad bridge in one weekend.

T - The Governor Mario M. Cuomo Bridge – Structural Health Monitoring and Service Life Design - Intermediate

By: Preston Vineyard, PE; COWI North America - prvd@cowi.com

The Governor Mario M. Cuomo Bridge has been designed for a 100-year service life before major maintenance for non-replaceable components, such as the foundations, sub-and superstructures. This presentation describes the probabilistic-based service life design approach that was implemented to determine the concrete quality requirements and cover thickness. The new bridge also has one of the largest and most sophisticated Structural Health Monitoring System on a bridge structure in the United States. This presentation describes how the system will measure the bridge’s structural behavior under traffic and weather conditions.

BUILDINGS

F – Building Information Modeling for Masonry-BIM- M- Model Driven Design & Construction – Intermediate

By: Jamie Davis, PE, LEED – Ryan Biggs/Clark Davis – jdavis@ryanbiggs.com & Tom Cuneio; CAD Blox, LLC – tom@cadblox.com

This seminar will provide an overview of BIM-M (building information modeling for masonry) and will present new tools available to designers for modeling masonry. A case Study will be presenting showing the use of some of these tools/technologies.

F - A Case Narrative of an Indoor Odor Investigation – Introductory

By: Todd Crawford; NYSDOH - todd.crawford@health.ny.gov

A persistent, pervasive odor was reported in a 2-year-old, unoccupied model home. The complainant suspected the odor originated from spray polyurethane foam (SPF) insulation, but as our investigation progressed we noted several reasons why SPF was unlikely to be the primary source. Background research indicated that autoxidation of long chain fatty acids in wooden construction materials would generate pungent carbonyl compounds, suggesting both a source and a chemical mechanism for odorous chemical formation inside a finished wood-frame building. A sampling and analysis plan confirmed our hypothesis that, indoor air was contaminated by emissions from the composite wood products used to construct the home.

F - How do you move an Eight-Story building a city block! - *Introductory*

By: Harris Sanders; Harris A. Sanders, Architects, PC - hsanders@sandersarchitects.com and Anthony Opalka - Anthony.Opalka@parks.ny.gov

In the mid-1920's, an eight-story residential building located in Albany, NY was put on railroad tracks and moved, intact, one city block. This giant *mobile home* is the Fort Frederick Apartments and is presently located at 248 State St., diagonal to the West Capital Park. The speakers will take us through the process of how this was done and also special design considerations that were implemented years later in the 1950's when a new building was erected close to the relocated Fort Frederick Apartment building.

F - Roof Reinforcing: Concepts & Schemes – *Intermediate*

By: James D'Aloisio, PE, SECB, LEED AP; Klepper, Hahn & Hyatt– jad@khhpc.com

After a building is reroofed, more snow can build up due to the roof's increased thermal resistance. This has led to numerous structural roof failures, especially since older roofs were not adequately designed for snowdrift loading. Undetected design and construction flaws have also revealed themselves. This type of engineering work - investigation and analysis, and the design and construction of solutions, is some of our most challenging and interesting work. We'll briefly share some roof collapse examples, review analysis methods, then present several case studies of recent and current projects that illustrate some of the types of possible solutions.

F - Frost-Protected Shallow Foundations: Design & Construction - *Intermediate*

By: James D'Aloisio, PE, SECB, LEED AP; Klepper, Hahn & Hyatt– jad@khhpc.com

A frost-protected shallow foundation system (FPSF) is an alternative to extending footings below the frost line to avoid foundation frost heave. The design methodology uses insulation and proper backfill selection to prevent the soils below the foundations, which can be set at a much shallower depth than conventional foundations, from freezing. Use of FPSF can reduce a project's required excavation depth and allow reduced use of concrete, which saves construction time and money, in addition to other benefits. We will present an overview of the concept, summarize the benefits and potential challenges for design and construction, and review the design methodology.

CHEMICAL/Other

F - Stop Knocking Your Condensate Lines – Achieving A More Reliable Steam System - *Intermediate*

By: Richard Newbegin, C.E.M; TLV CORPORATION - Newbegin@tlvengineering.com

This presentation is intended for those who seek additional insight and understanding of the causes and effects of condensate system water hammer and thereby increasing their understanding of the steam condensate return system in the process

F - Chemical Engineering Fundamentals Applied to Brewing and Craft Beer - *Introductory*

By: Adam Brown; Stantec - Adam.Brown2@stantec.com

A review of the chemical processes, reactions, and heat transfer operations occurring in the progression from malted grain to pint glass. A level discussion applicable topics including of enzyme kinetics, fermentation, and Henry's law coefficients.

F - Active Waste and pH Neutralization System Design and Theory - Advanced

By: Mark Girgenti; Burt Process Equipment - markgirgenti@burtprocess.com

The requirement for pH adjustment and waste treatment is a common demand that spans various industries including biotechnology, pharmaceuticals, manufacturing facilities, research laboratories, semiconductor manufacturers, food processing/bottling plants, and higher education institutions. While discharge limits vary from region to region the side effects of discharging outside these limits are the same, possible fines and damage to the environment. There are a number of different treatment schemes and equipment that can be applied to prevent effluent excursions. Active waste treatment systems offer the widest versatility in treatment options. These include; batch treatment systems, single/dual/three stage continuous flow systems, and hybrid designs. The presentation will focus on the theory of pH adjustment including understanding the nature of the waste stream with specific focus paid to batch systems, continuous flow systems, residence time, treatment chemistry selections, process design, titration data, and control schemes. Several case studies will be reviewed exploring many of the facets of designing a system in different industries. In addition, alternate and advanced treatment schemes will be discussed including thermal waste treatment, membrane systems, precipitation, waste transport and organics removal.

F - Engineering Approach to Recreational Water Spray Ground Regulations – Introductory

By: John Paccione & Russ Reeves - University at Albany - jpaccione@albany.edu, reeves2@nycap.rr.com

Spray grounds offer significant entertainment value, but also have special water treatment challenges. New York State has used an engineering approach to develop and implement spray ground regulations that are protective of public health

CIVIL

T - Guide Rail and Foundation Considerations – Introductory to Advanced

By: Terry Hale, PE; NYSDOT - Terry.Hale@dot.ny.gov

Covers details of the design, function, and performance limitations of guide rail and how function may be adversely affected by a variety of foundation issues.

T - Use of Porous Asphalt Pavement In The Hudson Valley - Advanced

By: Paul Salchert, PE; NYSDOT - psalchert@frontiernet.net

Porous Asphalt Pavement has been used in various applications around the Hudson Valley as a means to improve the quality of runoff originating from a paved surface. This presentation will discuss the current practices commonly used in the planning, design, construction, and maintenance of porous asphalt pavement.

T - Sustainability of Hot Dipped Galvanizing and Other Building Materials – Intermediate

By: Frank Gerace; Hubbell Galvanizing - geracefp@whyrust.com

This seminar presents an emerging method of assessing sustainability including LEED®v4. Specifically, it will address after-fabrication hot-dip galvanizing. The purpose of this seminar is to educate engineers and other specifiers about the sustainability of hot-dip galvanized steel by examining both the life-cycle assessment (LCA) and life-cycle cost (LCC). More specifically, the presentation will discuss: Sustainability terms and methods. Environmental costs (primary energy demand, global warming potential, etc.) for hot-dip galvanized steel from production through end-of-life. The environmental differences between painted steel and galvanized steel. Incorporation of life-cycle cost analysis into the evaluation of steel corrosion protection methods.

T - sUAS Applications for Surveying and Mapping- *Introductory*

By: James Thew, PLS; & John Gustafson -Thew Associates PE-LS, PLLC - jthew@thewassociates.com; jgustafson@thewassociates.com

Discussion regarding various Unmanned aerial vehicle (UAV) mounted LiDAR sensors and UAV platforms, system performance and accuracy, integrating LiDAR and photogrammetry and applications.

T - Planning Tools to Mitigate SSO Events - *Introductory*

By: Michael Ivory; Godwin Pumps a Xylem Brand – Michael.ivory@xyleminc.com

Planning tools to mitigate sanitary sewer overflows (SSO) events by using temporary pumping, monitoring, controls and testing technology. The use of Diesel Backup Pump Systems (DBS) units in lieu of generators as an overflow mitigation tool to prevent overflows in the case of a power or mechanical failures.

F - Utility Infrastructure Mapping and Data Modeling in GIS – *Intermediate*

By: Kenneth Kerr, PE; InfraMap Corp. - kkerr@inframap.net

Unknown existing underground utilities can have a significant negative impact and create risk on improvement projects during construction. Schedule delays and cost overruns can occur, resulting in time lost waiting for utility companies to relocate their facilities, design changes during construction, and contractor claims and change orders. Inaccurate or outdated utility records and/or “as-built” data increase this risk during construction. In addition, unknown existing underground utilities pose a worker safety risk as the potential for accidents or even death can occur. The more complete and accurate the depiction of these underground utility networks, the more informed the design engineer and owner are to make important risk management decisions and develop effective strategies to evaluate, mitigate, accommodate or relocate utilities during design phase and not wait until construction. Incorporating into a GIS utility data model can allow for more accurate utility data versus traditional GIS, allows for connectivity of utility networks, ability to populate metadata, and accurate for design and operations.

F - Manufactured Water Quality Solutions & Best Management Practices – *Intermediate*

By: Ian Kuchman; Advanced Drainage Systems – ian.kuchman@ads-pipe.com

With the value of land on the rise and developers looking for innovative solutions to maximum their return on investment, engineers and manufacturers are being tasked with providing innovative solutions to their required stormwater management practices. Advanced Drainage Systems will be providing a course on proprietary Water Quality Solutions and how they can be used in accordance with New York State DEC performance criteria for Total Suspended Solids (TSS) separation and Total Phosphorous (TP) filtration. This course will target New York State specific requirements on Green Infrastructure design, new construction design, and redevelopment design solutions.

F - Subgrade Improvement to Improve Asphalt Pavement Performance – *Introductory to Advanced*

By: William Maier; Tensar - wmaier@tensarcorp.com

The presentation will discuss why subgrade improvement as an important factor when designing pavement for longer service life. Ways to compare geogrid with other methods for improving soft subgrades.

F - Temporary Bypass Pumping Systems - Introductory

By: Seth Morris, PE; Godwin Pumps a Xylem Brand – seth.morris@xylem.com

Designing a temporary pumping system must be approached with the same level of engineering fundamentals that would be applied to a permanent solution. All bypass pumping systems require an understanding of system components, pump size selection, quantity, product pumped, economics, and environmental regulations.

F - Addressing Large Diameter Infrastructure Needs Utilizing CCCP and CCFRMP Technologies – Intermediate

By: Tom Perry; Multi Utilities Ventures - tom@multiutilitiesventures.com

Discuss large diameter storm and sanitary sewer pipeline rehabilitation utilizing Centrifugally Cast Concrete Pipe (CCCP) and Centrifugally Cast Fiber Reinforced Polymer Mortar Pipe (CCFRMP) technologies.

CONCRETE

F - The Benefits of Slag Cement in Concrete - Advanced

By: Ray Henderson; Lehigh Cement, SCA Volunteer - ray.henderson@lehighhanson.com

The Slag Cement Association presents an informative look at how slag cement impacts the durability, strength, and consistent performance of concrete in commercial, infrastructure and residential projects. Discussions will highlight award-winning case study examples on specific topics like increasing concrete durability, mass concrete, high performance concrete, sustainability, and finishing practices.

F - Structural and Geotechnical Applications of Shotcrete - Intermediate

By: Charles Hanskat, PE; American Shotcrete Association - Charles.Hanskat@Shotcrete.org

This presentation will introduce the audience to the shotcrete process for placing concrete in a wide variety of structural and geotechnical applications. Though the shotcrete process is over 100 years old, it draws on new concrete technologies for efficient and cost-effective placement of concrete with a minimum of formwork, while meeting or exceeding the strength of form-and-pour concrete. Shotcrete inherently provides enhanced sustainability benefits in comparison to form-and-pour concrete, and allows the designer maximum flexibility in shape and thickness of their concrete sections.

F - Precast Pavement Construction Using the Super-Slab System – Introductory to Advanced

By: Dan Moellman; The Fort Miller Co., Inc. - dmoellman@super-slab.com

Using fully-cured precast concrete slabs for overnight repair of highway “trouble spots” that are too busy to take out of service. Super-Slab® panels are precisely cast as planar slabs for intermittent patch repairs or as a combination of planar and non-planar slabs for continuous replacement of complex geometry pavement making it possible to replace entire mainlines, ramps, intersections, crosswalks, utility cuts, bridge approach slabs, and airport runways in a series of 8-hour or less overnight work windows and minimize user delay costs. New developments include Smart Patching for total incremental replacement and Super Pavers for renewable urban pavement. In 120+ projects to date, over 30,000 slabs or 50 lane-miles of Super-Slab® System have been successfully installed for 32 Owner Agencies in 20 states and 2 Canadian provinces.

ELECTRICAL

T - Understanding Input Harmonics & Techniques to Mitigate Them - *Intermediate*

By: Kevin Diehl; kevin_diehl@yaskawa.com

The presentation will refer to how harmonics are created by drives, why are they bad, how to mitigate them. Harmonics are created by AC drives and affect the power grid and equipment. Review includes multiple ways to decrease harmonics and lessen their effect.

T - Variable Frequency Drives in HVAC Applications - *Intermediate*

By: Ted Firnstein; Siemens Industry - Theodore.firnstein@siemens.com

Implementing Variable Frequency Drives (VFD) has proven to be an effective strategy for reducing a facility's energy consumption during part-load conditions, but VFD technology has evolved over time and recent advancements and code updates have had an impact on the use of VFDs in HVAC applications. This presentation will explore the various components that make up an "HVAC Drive", how they work, applications, and facilitate a discussion on best practices for specifying VFDs.

T - Grid Codes and Wind Farm Interconnections – *Intermediate*

By: Peter Sutherland, PE; GE Industrial Solutions - Peter.sutherland@ieee.org

Grid codes are published by utilities and system operators to define the requirements for interconnection of generation and other facilities to the grid. This presentation will cover the important requirements of grid codes when applied to power generation facilities, especially wind farms.

T - Power Quality Impacts of DER Interconnection - *Intermediate*

By: Reigh Walling; Walling Energy Syst. Consulting - rwalling@wesconsult.com

The impact of distributed energy resources on the quality of electric service to other customers has been a contentious topic that has received specific attention in the forthcoming revision of IEEE Standard 1547. This seminar will provide technical background on the topic, discussing the various aspects of power quality and how they are affected by various types of DER, and relates these issues to the requirements of IEEE 1547 and the interconnection approval process.

T - Specifying Synchronous Condensers for Electric Transmission Grid Applications - *Advanced*

By: Arthur Depoian, PE; General Electric - Arthur.Depoian@ge.com

Synchronous Condensers are being installed to support the changing Electric Transmission Grid; however, most specifiers have little experience. The presentation will include an overview of key criteria that should be considered to ensure that transmission grid requirements are met as well as long term operating costs and reliability.

ENERGY

T - Design & Control of a Floor Heating System Supplied by a Pellet-Fueled Boiler - Intermediate

By: John Siegenthaler, PE; Appropriate Designs - siggy0269@gmail.com

New York State has an abundance of fuel-grade wood, and a developing infrastructure to convert some of that wood into pellets. This carbon-neutral fuel provides a sustainable and cost competitive option to fossil fuels in a wide variety of applications, especially those without access to natural gas. This session describes the generic design of a floor heating system for a commercial garage facility that combines a pellet-fuel boiler as the primary heat source, with high efficiency propane auxiliary boilers. It presents the piping and control concepts, and describes specific design elements that optimize system operation and avoid common pitfalls. The generic design presented can serve as a starting template for specific system installations.

T - Elements of Electricity Market Design – Intermediate

By: Rana Mukerji; NYISO - rmukerji@nyiso.com

More than \$7 billion is traded in the NYISO run electricity markets. As electricity cannot be easily stored in large quantities, the products that are traded have to be designed to recognize the unique physical characteristics of the electric grid. The fundamentals of the current market design and consideration for future enhancements are covered in this seminar.

T - Standards and Codes for Data Center Cooling - Advanced

By: Jason Koo; Lynn Associates/STULZ USA - jkoo@stulz-ats.com

Presentation on the ever-changing requirements and regulations for energy efficiencies from CEC, DOE and ASHRAE recommendations. This seminar will discuss advances in technology that allow for cooling solutions in this changing environment.

T - Renewable Energy Storage – Intermediate

By: Charles Bertuch, PE; Bergmann Associates - cbertuch@bergmannpc.com

While the technology and application of renewable energy rapidly advances, its full potential is often limited by the inability to practically store on site-generated energy for later use. This presentation examines the benefits of on-site energy storage; an overview of current storage technologies; and new technologies under development. Comparative analyses will be presented to demonstrate the financial and operational impacts of various technologies in a variety of use cases.

ENVIRONMENTAL

T - Raingarden & Bioswale Implementation at Lake Erie Beaches - Introductory

By: James Taravella, PE, ENV SP; Ecology and Environment - JTaravella@ene.com

This seminar will discuss how waters of New York State are monitored for indicator bacteria that impact the use of public beaches. It will also discuss how raingardens and bioswales reduce the impacts of surface water runoff and how to site and design these practices to reduce the impacts from upland areas. Siting and design of raingardens and bioswales will be shown for two sites in Western New York.

T - Vapor Intrusion Laboratory Data Collection: What have we learnt? - Advanced

By: Will Ecoate; Alpha Analytical - welcoate@alphalab.com

An overview of the best practices and science in chemical data collection when conduct a Vapor Intrusion investigation. The decision making may have significant Health and financial implications. So confidence in the laboratory data is key to the decision making process.

T - Nitrogen Removal in Wastewater – Why and How? – Intermediate

By: Julie Barown, PE; J. Andrew Lange, Inc. – jbarown@gmail.com

This presentation will discuss the basics of the nitrogen cycle and methods to remove nitrogen in wastewater discharges, particularly in recirculating media filters used for secondary wastewater treatment. Some of the common causes of ineffective nitrogen removal and how to address them will also be discussed.

T - Reducing Nitrogen Loadings in the Chesapeake Bay Using an Economical, Low-Impact Sewer Solution: A Case Study in South Kent Island, MD – Intermediate

By: Julie Barown, PE; J. Andrew Lange, Inc. – jbarown@gmail.com

For many years, community leaders on South Kent Island (SKI) in Queen Anne's County had serious concerns about public health and the environment due to the large number (70%-90%) of failing septic systems in the area. County staff researched public sewer collection systems nationwide to select an appropriate technology for this unique island peninsula. Estimated project capital and operation and maintenance costs were reduced significantly by choosing a septic tank effluent pumping (STEP) sewer system.

F - Wastewater in Brewing - Intermediate

By: Jim King; Eljen Corporation - jking@eljen.com

Wastewater in Brewing looks at unique challenges and waste streams that come from the 1,000's of craft breweries that are in operation across the nation. The class discusses the sources of the high strength waste and the current techniques for addressing these challenges.

F - Chemistry and Analytical Methodology Review of 1,4 Dioxane and PFAS – Advanced

By: Jim Occhialini; Alpha Analytical - jocchialini@alphalab.com

Emerging contaminants such as PFAS and 1,4 dioxane are being widely discussed in the media and environmental community. The presentation will focus on an overview of the potential sources of these contaminants and the analytical methods options that are available to address these substances.

F - A Primer on PFOA and the Critical Role of Hydrogeology in Interpreting Drinking Water Data – Introductory-Intermediate

By: Jean Patota, PG; Alpha Geoscience - jpatota@alphageoscience.com

Perfluorooctanoic Acid (PFOA) is a persistent chemical with properties that make it difficult and expensive to remediate. This seminar presents the field and laboratory protocols, describes treatment technologies, and the role of hydrogeology in investigating PFOA with discussion of why and how ground water sampling data can appear to be conflicting.

F - Septic Drain Field Restoration – Intermediate

By: Mark Reynolds; RCS II, Inc - mark.reynolds@septicdrainer.com

Septic Drain Field Restoration is possible, why do drain fields fail, what you can do to restore a septic drain field and what you can do to prevent septic drain field failures.

F - Low Pressure Sewer Systems: Providing a Sustainable Solution for Sewer Renewal– Intermediate

By: Keith McHall; kmchale@eone.com

As municipalities and sewer utilities move to repair, rehabilitate, or replace aging and failing sewer systems, many are starting to put an emphasis on providing a sustainable solution. Pressure sewer systems can be a viable solution to replacing failing septic systems or in place of rehabilitating old gravity sewer systems. Pressure sewers are a sustainable solution that optimize economic and social costs and provide environmental benefits.

GEOTECHNICAL

T - Geotechnical Construction, Rigid Inclusions – Intermediate

By: David Mazzei; Hayward Baker - dpmazzei@haywardbaker.com

Subsurface soil, bedrock, and groundwater conditions drive foundation selection. Where relatively near surface unsuitable soil is encountered, such as undocumented fill, compressible organics or soft clay, deep foundations (e.g, driven piles) are often proposed. For consideration, this presentation will describe the use of rigid inclusion (RI) ground modification techniques which, when designed and constructed properly, can allow the design of traditional, cost-effective spread footing and slab-on-grade foundation support, in lieu of the more expensive deep structural solution. The presentation will define the ground improvement technique, review common applications, design methodologies, quality control advances, and conclude with a few recent case studies involving projects in New York and other regions within the Northeastern United States.

T - Geology for Engineers: Preparation Through Identification- Geologic Hazards I – Intermediate

By: Christopher Kelson, PG, PhD; Atlantic Testing Laboratories - ckelson@atlantictesting.com

This presentation provides geologic insight into some of the most common engineering hazards (expansive soils, toxic soils, faults, liquefaction, karst, and rock properties) associated with earth materials, events, and processes, and how to identify and prepare for them.

T - Geology for Engineers: Preparation Through Identification- Geologic Hazards II -- Intermediate

By: Christopher Kelson, PG, PhD; Atlantic Testing Laboratories – ckelson@atlantictesting.com

This presentation provides geologic insight into some of the most common engineering hazards associated with earth materials, events and processes, and how to identify and prepare for them. Part II of this presentation will cover how to mitigate and prepare for flooding, and erosion.

T - Helical Products for Foundation and Tension Applications – Introductory to Intermediate

By: Ryan Scall, Premium Technical Services Corp – ryan@premiumtechnical.com

Since Hurricane Sandy in 2012, we have seen a rapid growth in the use of helical piles in the Northeast. This presentation will focus on giving design professionals a basic, yet comprehensive overview of proper helical pile design and applications.

T - Best Practices for Segmental Retaining Wall Design – Intermediate to Advanced

By: Ryan Miller; Allan Block Corporation - rmiller@allanblock.com

The Best Practice presentation is intended to communicate the design of Segmental Retaining Walls (SRW) based on 25 plus years of research, design and field experience. Twelve different design topics will be introduced that will cover topics from initial design considerations to how the top of the wall will be finished. Each topic is discussed by examining specific details and expanded information presented for each.

MASONRY

T - Effective Building Designs with Concrete Masonry – Introducing the Next Generation of CMU – Introductory-Advanced

By: Nicholas F. Carparelli, Executive Director, NYSCMA - ncarparelli@nys-cma.org

A new generation of Concrete Masonry Units (CMU) is creating a significant impact on load bearing masonry construction. Thanks to changes in ASTM C-90, the Standard Specification for Load Bearing Concrete Masonry Units, several new, innovative and more efficient configurations of CMU are now more widely available. Changes in TMS402/602 Building Code Requirements and Specifications for Masonry Structures, allow for more efficient design of masonry structures, due to reduced reinforcement requirements. This presentation will explain these changes in detail, and will feature a case study illustrating significant cost savings thanks to the more efficient design allowed by TMS 402/602. The program will also chronicle the evolution of the CMU manufacturing process, and we will compare and contrast early production methods with modern technology used today.

MECHANICAL

T - Microturbine Combined Heat and Power Systems - Intermediate

By: Lauren Ray; GEM Energy - Lauren.Ray@rlqbuilds.com

The course covers the concept and benefits of combined (cooling,) heat and power (CHP/CCHP) systems and microturbine technology and its use in these systems. Integration of microturbine-powered CHP/CCHP systems within commercial and industrial, mission critical, and biogas generation facilities is discussed and several case studies are presented.

T - Concerned about Aging Machinery – Intermediate

By: Neville Sachs, PE – newsachseng@gmail.com

This session reviews what are considered to be the most common areas of machinery degradation and how to deal with them to increase the mechanical reliability.

Other/Misc. Tracks

F - How & Why Accidents Happen – Intermediate

By: Neville Sachs, PE – nevsachseng@gmail.com

A discussion of physical, human, and latent errors and how they link up in a chains that often result in accidents or failures. Although these errors are present in all human activity, the session focused on how engineers and engineering supervisors can work to minimize them.

F - Precast Utility Structures Design and Installation – Introductory

By: Ronald Thornton; Precast Concrete Association of NY, Inc. - precast@pcany.org

Much of our nation's utilities are located below ground and the need for structures to transmit and provide access for maintaining utilities is steadily increasing. This course will identify a variety of available precast utility products and provide guidance on specifying, designing, manufacturing, and installing these products

F - Ramifications Arising from Contractual ambiguities of Terms and Specifications - Introductory

By: Ashraf Ghaly, PhD, PE; Union College - ghalya@union.edu

Unnecessary conflicts that can lead to costly and lengthy litigation usually arise from ambiguities of terms and specifications in written contracts. This presentation will detail real world cases of litigated conflicts that resulted, mainly, from different interpretation of clauses in signed contracts. It will be demonstrated that less-than-clear language was always the source of conflict. The presentation will also illustrate the lessons learned and show how to avert similar occurrences through stressing clarity and avoiding complex terms and specifications.

F - How to Score the Disaster Resiliency of Community Transportation Systems – Intermediate

By: Joe Englot, PE; HNTB Corporation - jenglot@hntb.com

The anticipated performance of transportation systems within a community, during and after a disaster, is a function of existing conditions, the magnitude and type of local hazards, and system vulnerabilities. This seminar provides planning steps using a FEMA how-to-guide as a tool. It demonstrates by example how a community can score the “disaster resiliency” of its transportation systems with the intention of identifying inherent weaknesses that need to be improved.

STRUCTURAL

F - Post-Installed Reinforcing Bar Design: Anchor or Rebar – Intermediate

By: Brian Callaghan; Hilti - brian.callaghan@hilti.com

Explain post-installed rebar design using the anchoring-to-concrete provisions of ACI 318 and post-installed rebar design using the development and splice provisions of ACI 318. Examine the code landscape for adhesive anchor system approvals. Clarify and elaborate on key installation parameters for post-installed reinforcing bars and provide examples of post-installed reinforcing bar applications when the bars are designed using anchoring-to-concrete provisions and when they are designed using development and splice provisions.

F - Anchor Principles and Design – *Introductory to Intermediate*

By: Jason Curry; Hilti - Jason.Curry@hilti.com

This presentation will provide an introductory overview of the adhesive and mechanical anchor market, including the fundamental principles of anchor theory, which includes applications and design basis. Various types of anchors, including product specifications and selection criteria, will also be covered.

F - Modern Work on the Historic Canalized Mohawk River Section of the Erie Canal - Intermediate

By: Todd Mueller, PE; Bergmann - tmueller@bergmannpc.com

The eastern section of the Barge Canal from Waterford to Utica includes the canalized length of the Mohawk River. Case histories will be used to illustrate the engineering challenges of working on the variety of historic structures (movable dams, guard gates, fixed crest dams, locks, and submersible crest dam). The success of projects depends on developing unique solutions to these challenges including water control during construction on a riverine setting, using modern analysis techniques to design upgraded structures to avoid flooding potential, and collaborative structural and hydraulic analysis to prevent future flood damage.

F - BLS 710 The Advantages of Solid Section Beams and Columns - *Intermediate*

By: Drexel Hermann; Trus Joist Weyerhaeuser - drexel.hermann@weyerhaeuser.com

This course highlights unique design advantages of solid section engineered lumber products versus built-up members. Participants come away with a strong understanding of how and when to use solid section beams and cautions and considerations with built-up members in design and installation for beams & columns.

F - Cold Formed Steel Framing Floor Systems – *Introductory*

By: Antony Stazzone; Marino Ware – amstazzone@marinoware.com

An Engineers guide to steel framed floor systems.

Discuss LEED™, and the recyclability of cold formed steel products.

- Inform of the uses and methods for cold formed floor systems.
- Inform and identify alternative floor framing products that cold formed steel can efficiently replace.
- Provide basic design guidelines for what needs to appear on your construction documents.
- Provide resources you can use to help your design effort for cold formed steel floor systems

TRANSPORTATION

F - Planning and Implementing Cashless Open Road Tolling Zones - *Intermediate*

By William Gorton, PE; WSP – bill.gorton@wsp.com

This presentation is an introduction to Cashless (Open Road) Tolling Zones, identifying what components make up an Open Road Tolling Zone and implementation of Cashless Open Road Tolling Zone on existing highways. This presentation will highlight the design and engineering considerations for developing Open Road Tolling Zones, issues affecting planning, operation, construction and implementation of the Open Road Tolling zones. Cashless Open Road Tolling is a technology based engineering application which improves mobility and safety while maintaining the financial feasibility for toll agencies.

F - The Growth of Urban Gondolas Worldwide – Intermediate

By: Peter Melewski, PE; McLaren Engineering Group - pmelewski@mgmclaren.com & Tom Sanford; Doppelmayr USA - Tom.Sanford@doppelmayrusa.com

This program will discuss the evolution and growth of aerial gondolas as an urban transportation solution. Several examples of operating gondola systems from around the world will be profiled and gondola technology (mechanical/structural) and transportation aspects will be examined. The proposed Capital District Gondola, which would span the Hudson River to connect commercial, cultural, residential and transportation destinations in the cities of Albany and Rensselaer, will also be examined as a case study.

F - Self-Leveling Manhole Technology – Protecting the Integrity of Your Roadways and Minimizing Maintenance Costs - Intermediate

By: Brian Steitz; EJ - Brian.steitz@ejco.com and Tim McKernan – tim.mckernan@ejco.com

The presentation will provide an introduction and overview of the self-leveling manhole technology, it's materials, components, functionality and applications. The attendees will gain an understanding of the roadways problems this technology is designed to address, as well as current progress with the NYS DOT as it relates to this technology.