cross sections

Magazine for the Structural Engineers Association of New York

2018 VOLUME 23 NO. 4

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SEAoNY
536 LaGuardia Place
New York, NY 10012

www.seaony.org

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President's Message

One of the SEAoNY Sustaining Member Firms was honored during the Excellence in Structural Engineering Awards Banquet during the Summit. Silman was nominated for two projects in New York. The SEAoNY Excellence in Structural Engineering Awards format is patterned after the NCSEA format so I encourage our member firms to continue to submit their projects not only to the SEAoNY EISE Awards but also to NCSEA. This is a great way of sharing with our colleagues the great work we do in New York.

Two members of the SEAoNY SEER (Structural Engineer Emergency Response) Committee participated in the DOB COOP (Continuity of Operations Program) 2018 Full Scale Exercise in collaboration with FDNY. This was a full day of lectures on Post Disaster Structural Rapid Assessment and hands-on evaluation of existing structures in the Fort Totten Area. Trainees were introduced to the DOB Collector Program which is based on GPS Technology providing the Team an accurate location of the structure being evaluated and instantly providing feedback to the Incident Command Center. This system was successfully used by volunteers from the DOB in the Rapid Assessments for the Hurricane ravaged neighborhoods in Puerto Rico. I am happy to see that collaboration between SEAoNY and the DOB has increased, and this is a positive development for the Profession and the City.

I am looking forward to our planned activities in the first quarter of 2019. The Programs Committee has put together a great series of talks for our all-day seminar on February 7. I am sure that it will be another fully booked event that will provide a venue for learning but also for meeting our fellow structural engineers and practitioners. I hope to see you there.

Here's wishing you all a joyful and a peaceful holiday and a prosperous New Year.

Jonathan C. Hernandez P.E., SECB

Editor's Message

Hello Friends and Readers,

I am honored to be the new Editor-in-Chief and am thankful to everyone who has helped this committee to be fun, educational, and most importantly, serve as a medium to bring SEAoNY together. I wish to give a special shout-out to Adam Kirk, who led this committee for 2 years and was vital to the Publications Committee to reach new heights. Best of luck in your new chapter of life out in Texas!

This issue begins by introducing our newly formed chapters—the Central NY Chapter and the Cooper Union Student Chapter. I am excited to befriend and collaborate closely with them. Read on to learn more about what they are all about!

Please enjoy this final issue of 2018, and I look forward to serving SEAoNY to the best of my ability! If you are even a little interested in this committee or have questions or comments, please feel free to reach out at ***publications@seaony.org***. We could use your help and insight!

Happy Holidays to everyone!

Dan Ki

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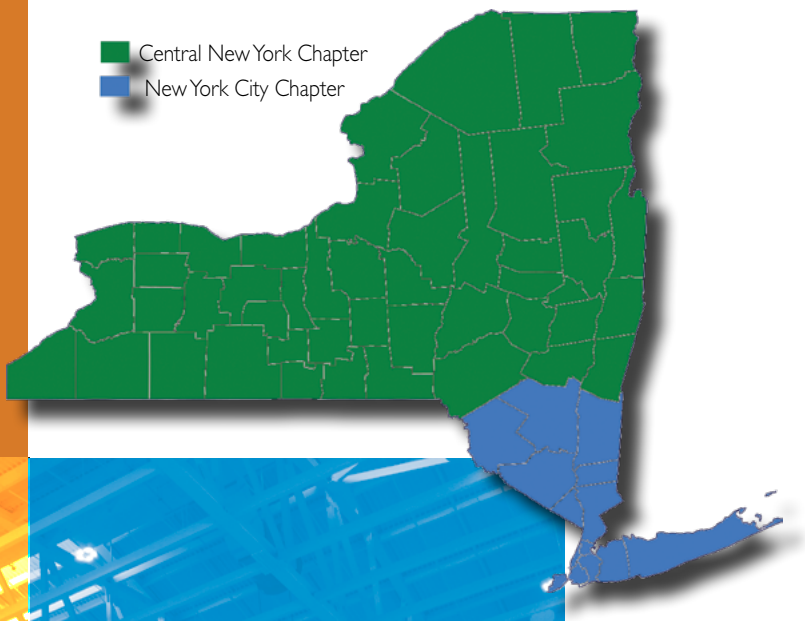
CENTRAL NY CHAPTER

Through a combined Upstate and Downstate effort, the SEAoNY Expansion Committee has officially created a new chapter within the SEAoNY member organization titled the Central New York Chapter. To make this happen we reviewed the bylaws and made proposed changes to allow for the creation of additional chapters within New York State. Early in November the bylaws were officially voted on by current SEAoNY members and the bylaws were changed based on enough qualifying votes. Around the same time, we circulated a petition to create a new chapter and it received enough member signatures to make it official. Currently there are approximately 30 SEAoNY Upstate members. Officially our territory covers areas of New York State north of Sullivan, Ulster, and Dutchess counties and we are based out of Syracuse. Our territory can be modified as new chapters are created in other Upstate New York cities and we hope to see this in coming years. We expect continued membership growth as SEAoNY provides education programs and helpful services to aid the structural engineering community in our Central New York region.

As we have worked towards creating an official Central New York Chapter, we have also coordinated events for current and prospective SEAoNY members to attend in the Central New York region.

This past year we hosted a half-day seminar in March that consisted of two separate presentations. C&S Companies generously provided the venue and lunch for the event. The first presentation was offered via live webinar with the second presentation in person. The event was well attended with approximately 25 attendees from the Syracuse area. We hosted a second event in May with an on-site tour of the NYS Fair Expo Center during construction. SEAoNY brought 15 attendees that joined a substantial architectural group for the tour. A site walk-through was followed by an in-depth discussion with the structural engineer, Stopen Engineering, and architectural design team about the design and delivery of the largest structure at the New York State Fairgrounds.

Our third event of 2018 was our largest - a full day of diverse seminars with 7 sessions offering PDHs (6 structural and 1 ethics) at an event known as the CNY Engineering Expo at the OnCenter in downtown Syracuse. This event hosts multiple disciplines of engineering at one event with different tracts curated by affiliated professional organizations. This was SEAoNY's second year being involved in the annual November event hosting a structural tract which did not exist before SEAoNY's involvement. Previously, structural presentations would fall under other tracts such as the civil tract, but structural engineers



Currently there are approximately 30 SEAoNY Upstate members.

did not attend in high numbers since the number of structural topics could be limited. By SEAoNY becoming a contributor the event, the CNY Engineering Expo has seen record attendance with the total reaching over 550 engineers for the first time the last two years (event has been occurring for 15 years). This year we were provided a larger room due to last year attendees stretching out the door. Our most attended presentation of this year's event, with 100+ attendees, was discussing the designing the same building we had toured in the Spring, the NYS Fair Expo Center. A reason for the popularity of this presentation is due to how well it is known locally for being a large construction project.

As the Expansion Committee transforms into CNY Chapter board, we have discussed means of increasing presence and membership. These ideas include holding SEAoNY events at least four times per year (one per quarter), showcasing the benefits of joining SEAoNY to local firms, and promoting the use of the SEAoNY website, including updates for activities in the Central New York region. To date, we have heard from engineers of multiple local firms that Upstate New York has historically lacked an organization dedicated to structural engineers, and we are excited to provide just such an organization to our colleagues through SEAoNY as the new CNY Chapter.

COOPER-UNION-SEAoNY

A group of students at the Cooper Union noticed a lack of direct exposure and interaction with the structural engineers around the city. In order to bridge that gap between theory and practice, we founded the Cooper Union SEAoNY Chapter in the Summer of 2018 with the intent of creating more opportunities for students to discover and explore structural engineering. Our Chapter, guided and helped by the SEAoNY Education Committee, has hosted a number of events that have provided civil engineering students a better understanding of structural engineering in the field.

OUR EVENTS:

1 High Line Tour –
September 7th, 2018

In tandem with Cooper's ASCE Chapter, SEAoNY held its High Line Tour, where the chapter board members and upperclassmen welcomed first-year students and gave them a chance to explore the city while munching on some cookies. The upperclassmen introduced what studying civil and structural engineering at Cooper Union is like and encouraged first-year students to join SEAoNY if they want to explore structural engineering.

2 SEAoNY General Meeting – *September 13th, 2018*

The Chapter board members officially welcomed and introduced themselves to the student body and announced the events planned for the semester. The chapter aims to provide information in the various disciplines of civil engineering, focusing in structural engineering. Students participated in a marshmallow bridge building contest that promoted creativity and sparked interest for structural engineering in the first event hosted by Cooper Union SEAoNY Chapter.

3 SEAoNY Resume Workshop – *September 20th, 2018*

A panel of professional engineers from SEAoNY came to Cooper and helped students improve their resumes. The professionals provided a presentation containing guidelines and tips to refine a resume. After the presentation, students had the opportunity to review their resumes with the professional engineers. A number of students from outside of Cooper Union also attended the event.

4 Mega Contracting Site Tour – *September 21st, 2018*

The student chapter coordinated with Cooper Union ASCE and MEGA Contracting Group to take Cooper students to one of their active construction sites on the Upper East Side. For many of the students, it was their first time out at a construction site, and this allowed them to see and understand how buildings are constructed, which is a very critical part of civil engineering, even if they want to work with design.

5 SEAoNY Revit Tutorial – *October 9th, 2018*

A fourth year student introduced Revit to the students in order to give them a first step into BIM software. Simple structural elements such as steel beams, columns, and foundations were shown to the students, and they were able to create a structural model of a simple steel building.

6 SEAoNY Resume Workshop at Thornton Tomasetti – *October 15th, 2018*

The SEAoNY Education Committee hosted a resume workshop event at Thornton Tomasetti's Midtown office. This event was open to students from various colleges in NYC, and the student chapters coordinated with the committee in order to incentivize attendance. Professional engineers provided a presentation containing guidelines and tips to refine a resume, and students later had the opportunity to ask the engineers for one-on-one advice to help improve their resumes.

7 Current Student Internship Panel – *October 30th, 2018*

The current student internship panel is a yearly event hosted with ASCE in which civil engineering upperclassmen share their internship experiences with underclassmen. The students talked about where they worked, how they got their internships, the kind of work they performed daily, and more. They gave out advice based on their own experiences in the internship process. Additionally, underclassmen asked any questions they had about internships in a casual, unintimidating setting.

8 Structure Quest – *November 3rd, 2018*

Structure Quest is SEAoNY Education Committee's biggest annual event, where students team up with professionals and are sent on a quest that tests their knowledge of structural engineering and the history of NYC's most iconic structures. Students ran around Manhattan, took pictures with monuments and tried to figure out the structures behind the dozens of clues and riddles that told students to go from Central Park all the way to lower Manhattan in a matter of a few hours!

9 Severud Associates Company Visit – *November 16th, 2018*

Severud Associates held a company presentation at their office for students to find out about the type of work that they do and the projects that they have worked on in the past. Students had the opportunity to take a look at what a structural engineering firm's office looks like, as well as talk to professionals with years of experience and knowledge to share.

Our chapter is interested in hosting company presentations or networking events at Cooper Union. If any SEAoNY member or company sponsor is interested in collaborating on an event, feel free to email our chapter at cuseaony@gmail.com.

WOOD CONDITION ASSESSMENT

By Ron Anthony, Anthony & Associates, Inc.

Why do an assessment?

Existing buildings account for a significant percentage of the built environment and of time spent by engineers. Understanding the condition and behavior of wood in existing buildings is essential for making informed decisions based on sound assessment data. Without such understanding, health, life and property can be at risk.

Wood is a biological material with inherent variability in its physical and mechanical properties. It is that variability relative to use of wood in existing structures that we need to understand. Conducting an assessment enables someone to make more informed decisions regarding structural adequacy and repair needs. If the assessment does not provide information that will allow for a more-informed decision, there is no technical reason to do the assessment.

Although a wood assessment can be conducted for a number of reasons, the most common technical reasons:

- Need to know wood species – There is a need to know the wood species to better understand density for determining connector capacity, ability of the wood to resist biological deterioration, or shrinkage and swelling behavior for repairs.
- Moisture concerns – There is a need to identify sources of moisture and investigate moisture stains on wood or to determine the moisture content to assess whether the wood provides a favorable environment for active wood decay or insect attack.
- Deterioration concerns – There is a need to determine whether biological deterioration may be present, to locate and quantify the extent of deterioration.
- Strength or stiffness questions – There is a need to determine the structural grade of wood members for assessing capacity.

There is often a need to verify the presence of connectors, determine whether metal, wood, adhesive or other fastener types that form joints between wood and / or other types of structural members are deteriorated, or assess the capacity of the connection, but this task involves engineering judgement that is typically outside of a wood assessment.

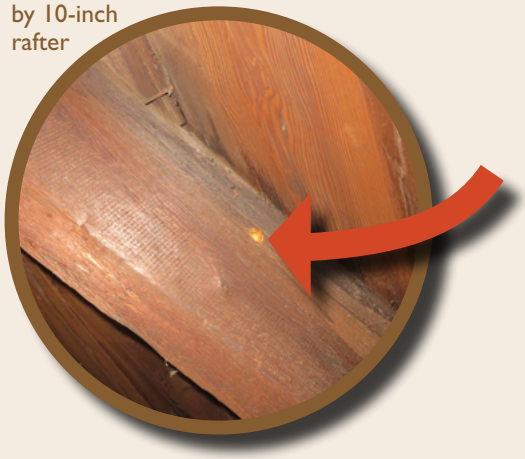
Assessment techniques

There are typically four basic assessment techniques used during a wood assessment:

- Wood identification
- Visual inspection and probing
- Moisture content measurement
- Visual grading

Determining wood species is best accomplished by removing small samples to be examined microscopically by someone experienced in wood identification. The sample can be 1-2 inches in length and ½-inch by ½-inch in cross section. It must be of sound wood, free of decay.

Sample removed for species identification from a 2-inch by 10-inch rafter



Visual examination of the wood allows for identifying components that are missing, altered, failed, or in an advanced state of deterioration. Missing components are those which have been removed or have fallen away because of deterioration, structural failure, or vandalism. Altered components may have been cut during prior construction campaigns or for installation of plumbing or mechanical equipment. If missing or altered components were intended to provide structural support or protection from the elements (i.e., to prevent moisture intrusion), their replacement may be essential to prevent long-term damage to the structure. Visual

inspection also allows for the detection of past or current moisture problems, as evidenced by moisture stains on the exposed surface of the wood. Further, visual inspection enables detection of external wood decay fungi or insect activity as determined by the presence of decay fruiting bodies, fungal growth, insect bore holes or wood substance removed by wood-destroying insects.

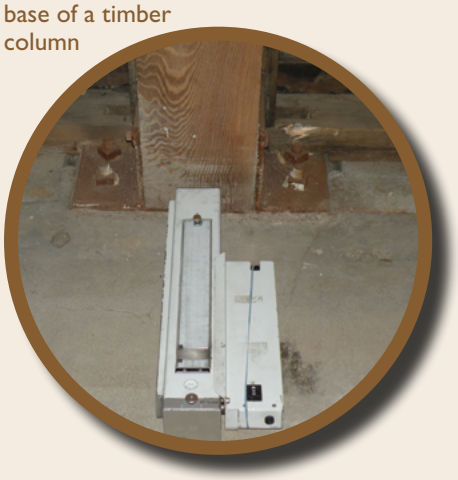
Internal decay and insect damage are often difficult to detect due to the lack of evidence on the exposed surface of the wood. Probing the wood with an awl enables rapid detection of voids just below the wood surface that may not be visible. It can also indicate the approximate depth of any deterioration that is visible on the surface. Visual inspection and probing provide a rapid means of identifying areas that may need further investigation.

Prolonged exposure to moisture can produce undesirable conditions and long-term maintenance issues for wood in a structure. Excessive shrinkage or swelling, checking, loose connections, and decay are typical problems. Moisture content can be measured on thin members (e.g. dimension lumber and millwork) using a capacitance-type meter (pinless) meter or on thicker members using a resistance-type meter with pins inserted in to the wood. Moisture content measurements identify wood with favorable moisture levels for the growth of wood-decay fungi. Generally, if the moisture content is less than 20 percent wood-decay fungi are unable to grow. While fungi may be present at lower moisture contents they are unable to continue to deteriorate the wood without sufficient moisture. Moisture contents from 20 to 30 percent indicate areas of concern where sufficient moisture is present for fungi to grow but not sufficient to indicate advanced decay. Moisture contents above 30 percent are often an indication of advanced decay with internal voids and / or surface deterioration.

Checking the moisture content of a timber column using a resistance-type meter

The detection of hidden deterioration using nondestructive testing (NDT) has been practiced for decades. Unfortunately, detection alone is insufficient to address the concerns of practicing engineers. Quantifying the extent of deterioration is paramount to making reliable decisions about the capability of existing structural wood members to carry required loads. The use of resistance drilling is the primary tool for quantifying deterioration. For decades, wood researchers have published papers on the ability of various technologies to quantify the extent of deterioration due to decay or insect damage but the reality is that practitioners do not use those technologies to make decisions about repair and replacement, except in isolated instances. Resistance drilling is the only field technique in practice today that readily can identify both the location and extent of deterioration. Knowing whether a girder has two inches of sound wood on the tension face or six inches makes a considerable difference to an engineer calculating section modulus of a beam.

Resistance drilling used to quantify deterioration at the base of a timber column



While useful in identifying the location and extent of deterioration at a specific location, resistance drilling is unable to either provide the ability to rapidly assess an entire structure or investigate inaccessible locations. Rapid assessment is desirable to reduce cost. Although a complete assessment of every member in a large industrial building with heavy timber framing may take several weeks, the cost of the assessment is a small fraction of the cost of rehabilitating or renovating the building, but such an extensive survey is seldom needed. It is, therefore, important to have a well-defined scope of work that focuses the assessment on the key areas of concern in the structure.

Inaccessible locations have presented problems during assessment of existing buildings. The most common areas are beam pockets where timbers bear on masonry walls and where roof rafters or trusses bear on a top plate. Connections are also difficult to assess in-situ, either beam-column

connections or timbers connected to other materials. Unfortunately, these are areas where moisture penetrates porous bricks or mortar joints and where roof leaks or ice dams provide means of water ingress. Deterioration is often the result. Yet we have no reliable means to locate and quantify this deterioration. While probing, resistance drilling, digital radioscopy and stress wave measurements can shed light on whether problems are present, they fail to give us the complete information we desire to determine whether the wood is sound and if adequate bearing exists. In those cases, probes may be necessary to gain a better understanding of conditions.

Unknown
beam condition
and bearing area within masonry wall

Lumber and timber grading

Lumber used in new construction is intended to comply with the relevant building code for that jurisdiction. For wood construction, structural engineers rely on design values referenced in the building code to determine an acceptable species, size and grade for a particular load condition. The design values given in the building code for solid wood products are established by the American Wood Council and published as the National Design Specification for Wood Construction. The published design values are based on test data and procedures published by the American Society for Testing and Materials (ASTM) that demonstrate the engineering performance of the material. Wood products are graded in accordance with procedures promulgated by one of several forest products industry associations, such as the Northeastern Lumber Manufacturers Association, Southern Pine Inspection Bureau or Western Wood Products Association. Visual grading is an industry standard for determining design values for lumber and timber.

For existing structures, the engineer often relies on available species and current standards to determine the adequacy of the wood members to remain in service. Since many older buildings were built before building codes or design values for wood products were established (and, thus, before grade stamps were used), engineers are often in a quandary when determining what design values are appropriate. There are three generally accepted means of establishing the strength or stiffness of timber in-situ: destructive testing, nondestructive testing, and visual grading. While each of these approaches is technically sound, it is this author's opinion that visual grading provides for the most cost-effective means of determining the appropriate structural grade and, thus, allowable design stresses. Visual grading may seem archaic but has the benefit of having no negative impacts on the existing material (it is nondestructive). It also can be conducted at various levels of detail; for example, as simple as an overall assessment of a well-defined sample of wood members to grading all accessible joists within a building, or focusing on highly-loaded individual members.

In-situ visual grading following the procedures established by the various industry associations responsible for establishing grading rules, and ASTM D245 "Standard Practice for Establishing Structural Grades and Related Allowable Properties for Visually Graded Lumber", can allow for engineers to make more informed decisions regarding the capacity of existing wood framing. The size and quantity of defects and natural growth characteristics, such as knots and slope of grain, determine the structural grade and, therefore, the allowable stresses to be assigned to an individual timber. Due to uncertainties about the allowable design stresses that can be assigned to structural timbers, very conservative decisions to replace or reinforce these members are often made, even though the timbers are "working," i.e. they have and will continue to safely carry the loads imposed upon them. Too many decisions result in the replacement or reinforcement of existing material that could, in fact, remain in service without compromising structural integrity.

Example of
an edge knot on a rafter

Evidence of slope of grain on a rafter as indicated by the seasoning checks

Considerations for Historical Wood

Prior to conducting an assessment and any repairs, the historic status of an existing structure should be determined, and the impacts of the repairs on that status evaluated. But regardless of any formally recognized historic status, many structures are recognized as places of regional, cultural, and personal significance. As such, every effort should be made to adhere to the Secretary of the Interior's Standards for the Treatment of Historic Properties, which require that the historic character of a property be retained and preserved and prohibit the replacement of intact or repairable historic materials. This includes the character-defining features of a structure, such as exposed framing or roof trusses.

Research on the tensile strength of dimension lumber led to a reduction in 1976 of reference design values for tension parallel to grain. Prior to the reduction in design values, particularly post-World War II, it was assumed that tensile strength was equal to the modulus of rupture from bending tests. Since most bending tests resulted in failure on the tension face of the specimen, it was assumed that tensile strength governed the capacity of the piece. This was due, in part, to testing of clear wood and lumber that was free of defects permitted in full-size lumber. Testing of full-size lumber revealed that tension parallel to grain strength was, in fact, less than the bending strength and various reduction factors were applied to bending strength to provide more realistic design properties. Up until the time when reduction factors were implemented, many structures built to the design loads in tension were found to be overloaded and some resulted in failure. This behavior was more prevalent in bowstring trusses and glued laminated timber than other engineered wood products. For structures built in that era that are subjected to a condition assessment, caution should be observed when bowstring trusses or glued laminated timber are involved.

Summary

A wood condition assessment is the basis for understanding the condition and behavior of wood in existing buildings. Conducting an assessment enables stakeholders to make more informed decisions regarding structural adequacy and repair needs.

Supplemental Reading

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Ronald W. Anthony
Anthony & Associates, Inc.
Fort Collins, CO 80527
Ph: 970-377-2453
woodguy@anthony-associates.com

Ron Anthony is a Fellow in the Association for Preservation Technology and recipient of APTI's Harley J. McKee Award; recipient of the James Marston Fitch mid-career grant for his work on assessing timber structures; Past Chair of ACSE's Forensic Engineering Division, and a member of the Timber Frame Engineering Council.

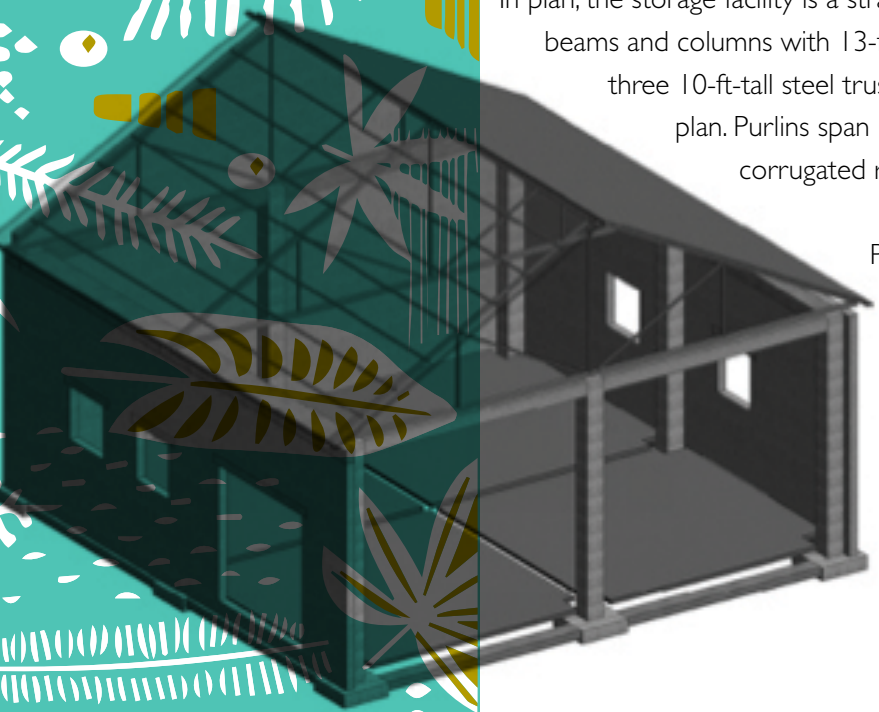
MANUAL FEATS:

Overcoming Basic Construction Challenges in Isolated, Rural Communities

By Ethan Cotton, LERA

Rubaya, Rwanda is a vibrant but isolated community situated in a lush valley on the border between Rwanda and Uganda. The rich soil and consistent rainfall enable maize and tea to grow in abundance. However, local farmers were lacking a suitable facility to store their maize after harvesting it. As a result, surplus harvest would regularly go to waste. In a community where the average income is $34 USD per month, the potential profit gained from selling that surplus would offer a boon to the quality of life in the community. Engineers Without Borders (EWB) sought to address the farmers' need. The New York City professional chapter of EWB resolved to design and oversee the construction of a new maize storage facility in Rubaya that would provide the needed space for the farmers. A team of volunteer engineers worked for two years to gather data from the community, design the facility, perform analysis of the building's structure, and raise the funds needed to construct the building. This effort culminated in March and April of 2018, when six engineers traveled from New York City to Rwanda to oversee the construction of the facility. Each team on the ground enlisted the help of students from a local technical university throughout their stay to act as both language interpreters and cultural liaisons. This article attempts to highlight some of the discoveries made and peculiarities encountered when constructing a building in a community so isolated that only one or two cars pass through its gravel roads daily (each time, to great excitement by hordes of gleefully screaming children).

In plan, the storage facility is a straightforward 40-ft x 40-ft square, framed by concrete beams and columns with 13-ft-high CMU side walls. A gabled roof supported by three 10-ft-tall steel trusses, consisting of HSS square tubes, span the 40-ft plan. Purlins span between the trusses to allow for the attachment of corrugated roof sheeting.



Problem solving in the field was paramount to keeping the project moving forward. For instance, the team arrived to find that thousands of pre-ordered and prefabricated CMU blocks were essentially molded sand sculptures that disintegrated on impact when dropped from waist level. It was discovered that the builder of these CMU blocks had cut corners, as they had very little cement content. The sand blocks were re-purposed as infill later as nothing goes unused in this community. EWB was forced to order higher quality CMU blocks from the country's capital, Kigali, at a high cost premium.

Like any building project, scaffolding was needed to build vertically. Unlike typical building projects in the United States, however, scaffolding in Rubaya was made from pieced-together lumber sourced from a nearby forest, obtained by individual laborers, who ventured into the forest, manually chopped down a tree and carried it back to the site at a cost of $3 per tree (including labor). This was a huge task, resulting in an underestimation of the amount of time it would take to erect scaffolding around the perimeter of the building footprint. Furthermore, the scaffolding would get drenched during afternoon rainstorms, causing the wood to split where pieces were nailed together. (The locals found these incidents very entertaining; the volunteers less so, as one of them was standing on the portion that collapsed! Thankfully, no one was injured, and the joints were reinforced.)

Concrete was hand mixed on site in small batches, then lifted in jerry cans to place it into the formwork. Pieces of rebar were used by laborers to consolidate concrete, along with others hitting the side of the formwork with hammers. Cement bags were delivered in the back of a minivan that came from Uganda. The aggregates were roughly graded and delivered from Kigali (a 2.5 hour drive away) because local aggregates were not of adequate gradation. Water, sourced from a creek nearby, had to be collected early in the day, before the afternoon thunderstorms, as the creek would become too silty after the storms. Since cement is the most expensive part of a concrete mix, the team had to proportion the mix appropriately to achieve adequate strength and workability. This became a cultural balancing act between what the local laborers were accustomed to doing and what the volunteers needed to do to achieve the strength they had designed for. Hand mixing and placing cement is incredibly arduous, and even with a crew of 12 to 15 workers, only a maximum of 4 yd3 of cement could be mixed and placed in one full day of work. EWB recommends using an f'c=1250psi for design. The Rubaya team made cubes for testing that broke at about 1500psi. This "hands-on" experience gave the volunteers an appreciation of the modern machinery available in the US to produce, move and place concrete.

The roof trusses are comprised of field welded HSS square tubes (ranging from 3"- 6"). Since everything had to be manually lifted, the trusses were constructed in the air instead of pre-assembling them on the ground. The design had embedded steel plates to receive the bottom chord of the trusses, but due to a lack of construction tolerances, the bottom chord did not sit flush with the embedded plates. A combination of shimming and chipping away at the concrete allowed for the connection. Another consideration, atypical to that of US projects, was the cost of labor versus the cost of materials. In the US, labor is the most expensive component, so members are almost always assembled in a shop. The opposite holds true in the developing world,

Continued from page 11

where labor is the cheapest component and materials are the most expensive. For this reason, field welding was utilized, and the steel materials shipped from Kigali were used sparingly and carefully, as the cost and lead time needed to get more materials from Kigali would be difficult to work into the budget and schedule.

The design and construction of the Rubaya maize storage facility illustrates how the most basic of construction tasks can become serious obstacles to the success of a project when working in an isolated community in a developing nation.

EWB's team of volunteers left Rubaya with a sense of awe at the natural beauty of the countryside and the attitude of the locals, who, though communicating through translators, were exceptionally friendly and welcoming throughout the entire process. Overall, one of the greatest challenges was trying not to micro-manage the local workers while at the same time ensuring that the construction fulfilled the design intent. The old adage, "There's more than one way to skin a cat," came to mind as the team learned time and time again that there are many ways to solve a problem. Often, when they believed they had the best solution to a problem, the people in Rubaya came up with a much more efficient solution. Given the constraints of their location, the locals constantly solve problems in ways that construction professionals in the developed world wouldn't consider, since they have access to modern machinery to make things easier.

The EWB team went to Rubaya to oversee the construction of their design. They left with a greater understanding of how people without access to modern mechanical assistance and technology solve problems to build structures. That lesson, as well as the knowledge that the maize storage facility will be a valuable asset to the community, make this a project that will hold a special place in the careers and lives of everyone involved.

SEAoNY Education Committee Hosts Annual Structure Quest

By Miles Barber, Thornton Tomasetti

Structure Quest is a scavenger hunt that challenges teams of students and professionals to search for NYC buildings and landmarks. Each team is given a set of clues and five hours to find as many answers as possible. These clues range from naming iconic buildings to finding everyday structural items like built-up girders and braced frames. Each team takes a picture in front of what they think is the answer to a given clue and submit it for approval. Each clue is given a certain point value and the team that accrues the most points in the allotted time is crowned the victor.

As a student, Structure Quest taught me a lot about structural engineering and about the buildings in New York. The first year I participated, my team included an architect who told a short story in front of every building we walked past. This definitely didn't help us win, but it taught us a lot - it was the first time I learned about the story behind the Citigroup Center Building and the value of double-checking your work.

This year, the clues to Structure Quest had a clear theme - transportation. Almost all of the bridges connecting Manhattan to the other boroughs were included in the clues along with both the Holland and Lincoln Tunnels, Penn Station, Grand Central Terminal, the Staten Island Ferry, and the Roosevelt Island Tram. Did you know that there's a map of the NYC subway engraved in a sidewalk in SoHo?

Special thanks to committee chairs Matthew Sangen, Jason Fiore, and Jack Greenberg for organizing this event once again. Thanks to all of the professionals who competed and especially to the professionals who helped set up the event, write questions, and grade clue submissions. I would highly encourage anyone interested in participating for next year to reach out to the Education Committee!

CANSTRUCTION

Photo Credit: Ashok Sinha

This past November, 11 SEAoNY sustaining member companies participated in the 26th annual CANstruction New York charity competition. In the competition, teams of architects, engineers, and contractors compete to design and build sculptures composed of canned foods. All food is subsequently donated to City Harvest after a two-week public display and jury review.

The jury this year consisted of 7 culinary and AEC industry professionals. The sculptures are judged and winners determined in the following categories: Best Original Design, Structural Ingenuity, Best Meal, Most Cans, Cheri C. Melillo Award, Best Use of Labels, and Honorable Mention. Of the SEAoNY participants, LERA was awarded an Honorable Mention for their sculpture entitled "Outrunning Hunger" while WSP USA took home the awards for Most Cans and Best Use of Labels for their sculpture entitled "Grand CANyon".

Though structural engineers are not typically lauded for aesthetic creativity, their work often hidden behind a façade, CANstruction provides an opportunity to stretch beyond the numbers and into the world of art. This has been noticed by the event's committee members. "What I am most impressed with (while) participating in Canstruction New York, is that the architectural firms are getting more daring with structural risks and the … engineering firms are getting more daring with the design and color in their structures. It's been a lovely evolution and one that I look forward to each year." said Katie Devlin, AIA, President of Canstruction New York Inc.

The evolving competition requires teams spend months perfecting the design of their sculpture in order to ensure that every last detail is correct. Their work results in a beautiful, eye-catching exhibit for the public to enjoy, but more importantly, it results in the charitable donation of high-quality canned foods that will help feed the food-insecure of New York City. See below for the complete list of SEAoNY sustaining member companies that participated.

~ Phil Bellis, Severud

Gilsanz Murray Steficek LLP
Severud Associates
Silman
Thornton Tomasetti
SOM
Arup
GACE
LERA
McNamara Salvia
Simpson Gumpertz & Heger
WSP USA

SEAoNY YMG celebrates the beginning of "Year 3"

PUB TRIVIA with NIGHT

By Samantha Brummell, Thornton Tomasetti

On October 4th, SEAoNY's Young Members Group hosted its third annual Pub Trivia Night at O'Lunney's in Times Square. This year, 40 young professionals came out to enjoy an evening of socializing, refreshments and friendly competition.

Team names were on par with previous years, including "Architect to Verify", "The Pile Drivers", and "I Like Big Buttresses", among others. The questions were drawn from well-worn trivia categories like sports, celebrities/pop culture, and NYC history along with the now-infamous photo round featuring iconic structures. Bonus points were awarded for listing the structures' architect and engineer (also making it the round with the most spelling errors). The question-writers got creative with a new music round, featuring song snippets spanning several decades, stumping many teams.

With scores close at the end of the last round, a tiebreaker was introduced. The theme was "Board Games" and included on three questions... could you have pulled through for the win? The questions were: 1) "Who are the six characters in the game Clue?", 2) "What is it called when a player uses all their tiles in Scrabble?", and 3) "What was the first non-coffee product sold in Starbucks, which was also the first game sold on Amazon?"

Prizes this year included complementary tour passes to the AIA's Annual "Archtober" tours. Previous years have included donations from the NYC Transit Museum and Queens Museum's "Never Build" exhibit.

Pub Trivia Night was YMG's first ever eent for the 2018-2019 year, meaning we have officially made it to Year3! The committee has exciting plans to host many more events throughout the year, including our annual Holiday Party and Brendan's on Dec 6th. Check the SEAoNY website or our Facebook page for details or email our group at seaonyYM@gmail.com to learn about other ways to get involved.

SEAoNY
536 LaGuardia Place
New York, NY 10012

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