

WM | AIA

N  
E  
W  
S  
L  
E  
T  
T  
E  
R



RHODE ISLAND WATERFRONT HOUSE  
C&H ARCHITECTS

FALL  
2018



## NCARB THINK TANK 2018

KERRY BARTINI AIA

On September 7 & 8, the 2018-2019 NCARB Think Tank had their first in-person meeting in Washington, DC. Think Tank members are candidates on the path to licensure, with some members becoming licensed during their time on the Think Tank. The feedback NCARB receives from the Think Tank is used to develop or refine tools for shaping the profession and the path to architectural licensure. It is critical information that is presented directly to the senior staff.

Each of the twelve Think Tank members were chosen based on an essay addressing the question: "NCARB is celebrating our centennial in 2019. What does licensure mean to you today, and how do you see your role as an architect evolving over the next 25 years?" The Experience Advisory Committee received the essays with the names removed ensuring that the final selections were based on essay responses.

What is remarkable about this year's Think Tank is the sheer variety that composes the group, yet the group collaborates on the tasks set out before them seamlessly. There is a general zeal in the group to make a positive impact and contribution to the profession of architecture and licensing. A diverse group of men and women, ranging in age from their 20s to 50s, from all over the United States (and beyond) convened to lend their perspective on the path to licensure. Each member revealed his/her path, whether they were just starting out on the journey to licensure or just inches away from becoming licensed, and where he/she is in their education, experience and examination.

Some of the charges this year's Think Tank is tasked with includes identifying the most successful and challenging elements of licensure, evaluating the ethical responsibilities of licensure candidates and architects, exploring how NCARB can address attrition along the path to licensure and exploring the modern definitions of health, safety and welfare.

What is incredible about the charges being examined is that it expands everyone's thought process. Looking at modern definitions of health, safety and welfare seems topical until lengthy discussion and group work reveals changing tides in the profession with a heavy focus on human experience. Which then in turn feeds into a larger discussion of the role of an architect in the past, present and future.

Alternatively, looking at statistics, how do we as a profession identify and counteract the points along the path to licensure when candidates may fall off? Keeping candidates on the path leads to greater diversity in the profession and helps build greater experiences for coming generations. This is just a very small snap shot of some of the work being done by this year's Think Tank.

Most rewarding for me was being able to serve as chair of this year's Think Tank after having served two years ago as a Think Tank member. Working with NCARB is always invigorating and constantly challenges us to participate in shaping our profession. We have the responsibility, no matter where we are in our careers, to keep learning while also holding out a hand to the generation behind us. We're all in this together and the Think Tank is critical in keeping us relevant to the challenges of the licensure process so that we may better serve our candidates.

Please visit [ncarb.org](http://ncarb.org) to find out more about the Think Tank and how to volunteer with NCARB.



## IN THIS ISSUE

**ONE** NCARB THINK TANK 2018

**TWO** COVER HOUSE: C&H ARCHITECTS

**THREE TO SIX** XTCA: CROSS TOWN CONTEMPORARY ART

**SEVEN** CELEBRATION OF A DECADE: ARCHITECTURE EL INC.

**EIGHT** TWENTY YEARS LATER: LUDMILLA PAVLOVA AIA

**ELEVEN TO FOURTEEN** PYRRHOTITE CONTAMINATED CONCRETE:

STEVEN J. O'NEILL, ATTORNEY AT LAW

**FIFTEEN** WMAIA PROGRAMS

### THE WESTERN MASSACHUSETTS CHAPTER OF THE AMERICAN INSTITUTE OF ARCHITECTS

THE WMAIA NEWSLETTER IS PUBLISHED FOUR TIMES A YEAR. IT IS CIRCULATED TO ALL MEMBERS, ADVERTISERS AND SUBSCRIBERS. PLEASE DIRECT ALL NEWSLETTER CORRESPONDENCE TO RACHAEL CHASE, AT EDITOR@WMAIA.ORG. ARTICLES, PHOTOS, NOTICES OF EVENTS AND OTHER INFORMATION ARE WELCOME. OPINIONS EXPRESSED IN THE NEWSLETTER ARE NOT NECESSARILY THOSE OF THE WMAIA.

**COVER PHOTOS:** NAT RAE

### FROM THIS ISSUE'S COVER: RHODE ISLAND WATERFRONT HOUSE C&H ARCHITECTS



The Rhode Island Waterfront House was built on the foundation of an existing underperforming and poorly constructed home. The existing structure was not worth saving, but reusing the foundation allowed greatly reduced site impact in an environmentally sensitive shoreline, and avoided the embodied energy of a new concrete foundation. Reusing the foundation required the new design to be contained within the existing 42' square footprint. The north side of the house was extended with a 3' cantilever, but otherwise held to the existing foundation plan and deck perimeter.

The client had a firm requirement to use only environmentally conscious materials to create a net-zero electricity house, with minimal future maintenance requirements for the exterior finishes. The wood structure is insulated with dense-pack cellulose and rigid polyiso insulation, resulting in a super-insulated structure with a very low infiltration rate of 0.56 ACH50.

The exterior finishes included factory coated aluminum siding and roofing, which are manufactured with recycled materials, and can be completely recycled at the end of their lifecycle. Domestic decay resistant wood products were used for the exterior decking to avoid washing harmful chemicals into the nearby bay. Interior finishes include low-VOC paints and sustainably harvested solid pine flooring.

### WMAIA

#### EXECUTIVE COMMITTEE

##### PRESIDENT:

LUDMILLA PAVLOVA AIA

##### PRESIDENT ELECT:

KRISTIAN WHITSETT AIA

##### TREASURER:

GARTH SCHWELLENBACH AIA

##### SECRETARY:

JASON NEWMAN AIA

##### PAST PRESIDENT:

HELEN FANTINI AIA

##### MEMBERS:

KERRY BARTINI AIA

CARYN BRAUSE AIA

CHRISTOPHER FARLEY AIA

CHRISTOPHER NOVELLI AIA

GARRISON PIERS-GAMBLE ASSOCIATE AIA

MORGAN SAWYER AIAS

STEPHEN SCHREIBER FAIA

##### EXECUTIVE DIRECTOR:

LORIN STARR

##### NEWSLETTER EDITOR:

RACHAEL CHASE

##### EMERGING PROFESSIONALS

##### COORDINATOR

GARRISON PIERS-GAMBLE ASSOCIATE AIA

##### ARCHITECT LICENSING ADVISOR

JASON NEWMAN AIA

##### WEBSITE MANAGER

JULIE WAGGONER

##### SOCIAL MEDIA

MORGAN SAWYER AIAS

##### FILM SERIES

ANDREW BAGGE ASSOCIATE AIA

##### DISASTER ASSISTANCE COORDINATOR

JOHN ROBINSON AIA

##### COTE COMMITTEE CO-CHAIRS

AELAN TIERNEY AIA

LAWSON WULSIN ASSOCIATE AIA



# XTCA: CROSS TOWN CONTEMPORARY ART

XTCA: Cross Town Contemporary Art is an outdoor public art exhibition of thirteen artists and architects that seeks to reveal our interconnectedness as citizens and to highlight the gateway district between downtown Amherst and the University of Massachusetts. This exhibition, presented by the University Museum of Contemporary Art (UMCA), and curated by Loretta Yarlow and Sandy Litchfield Associate AIA, Assistant Professor Department of Architecture in partnership with the Town of Amherst, seeks to build an art and culture bridge — a series of public sculptural installations — to activate the North Pleasant Street corridor and connect downtown to campus. The goal of this XTCA is to generate a robust public dialogue about the value of art and culture in building community.

Sandy reflects upon the nature of public art: “I’ve learned some very important things from this project. First, that there is support for public art; there are opportunities to find funding; most artist are eager for the opportunity to contribute with their creative visions; and many unsuspecting people will volunteer their time, energy and resources to make it happen. But, there is also a lot resistance to public art; funding is limited and hard to secure; there are naysayers, people too busy or tired to be bothered with it; there are many of hoops you need to jump through. And in meetings after meetings, there is an abundance of concern, caution and even fear. Nevertheless, I still believe in public art because art moves us. It makes us feel more deeply, it helps us reflect on ourselves, and empathize with others.

It allows us to imagine other worlds, understand other realities other cultures, other people, people different from us. We believe in art because it also shows us how we are the same— how we delight in beauty, novelty, surprise, harmony, and justice. In this way art can have a tremendous unifying effect. It can bring people together, offer meaningful experiences. It can even help heal traumatic histories, by helping us remember the past, and speculate about what we want in the future.”

The exhibition features work by nationally recognized artists, local artists and members of the academic community and is on view through November 1, 2018.

### ARTISTS

- 1 COLLECTIVE-LOK  
FRAMING
- 2 ROB SWAINSTON  
FREE THE PRESS
- 3 NAOMI DARLING AND  
DARRELL PETIT  
SOLAR TIME
- 4 JOSEPHINE HALVORSON  
TREE MEASURE (AMHERST)
- 5 PAMELA MATSUDA-DUNN  
BRIDGING OUR COMMUNITY
- 6 ROBERLEY BELL  
A VISITOR AND ONE OTHER
- 7 TOM FRIEDMAN  
GHOST SHED
- 8 BENJAMIN S. JONES  
ALL THE TIME IN THE WORLD
- 9 ERIKA ZEKOS  
COMMON SOUNDING
- 10 SARAH BRAMAN  
DAY TRIP
- 11 HAROLD GRINSPHOON  
FAMILY REUNION
- 12 GARY ORLINSKY  
GIOCO
- 13 JOSEPH KRUPCZYNSKI  
BUILDING BRIDGES  
OPENS IN THE UMCA GALLERY SEP 12

### XTCA EVENTS

Jul 1 Exhibition Opens  
 Aug 2 Amherst Arts Night Plus  
 Sep 6 Amherst Arts Night Plus  
 Sep 21 Exhibition Reception  
 Sep 22 XTCA Symposium  
 and Parade  
 Oct 4 Amherst Arts Night Plus  
 Oct 12 For Freedoms Town Hall  
 Nov 1 Exhibition Closes

For details on these and other XTCA events please visit: [UMASS.EDU/UMCA](http://UMASS.EDU/UMCA)

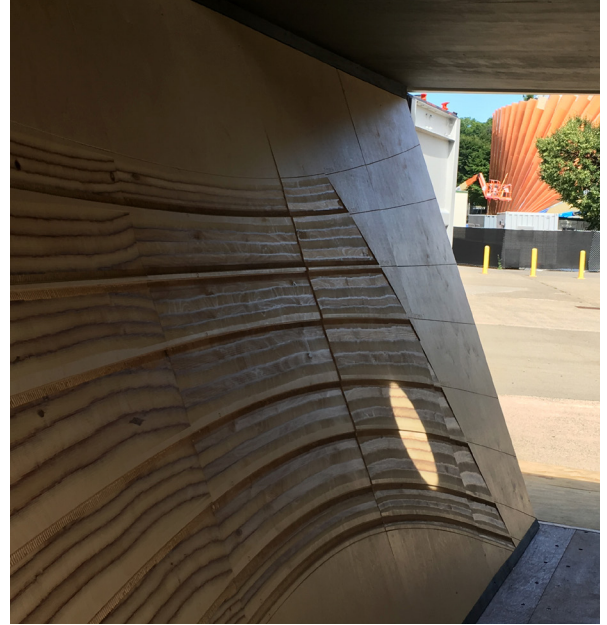
XTCA AUDIO TOUR: [SPTS.US/UMCA/XTCA](http://SPTS.US/UMCA/XTCA)



The XTCA Artists are: Roberley Bell, Sarah Braman; CLOK (Collective–LOK: Jon Lott, William O’Brien Jr., and Michael Kubo); Naomi Darling AIA; Tom Friedman; Harold Grinspoon; Josephine Halvorson; Benjamin Jones; Joseph Krupczynski; Pamela Matsuda-Dunn; Gary Orlinsky; Rob Swainston; and Erika Zekos Associate AIA.



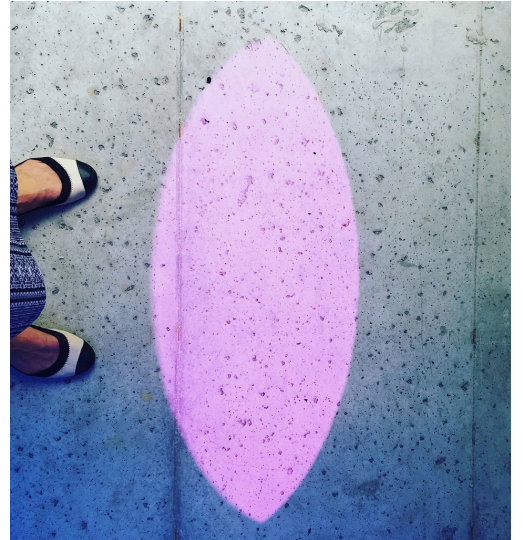
# XTCA: CROSS TOWN CONTEMPORARY ART



PHOTOS BY XTCA CURATORS



# XTCA: CROSS TOWN CONTEMPORARY ART





# XTCA: CROSS TOWN CONTEMPORARY ART





# CELEBRATION OF A DECADE: ARCHITECTURE EL INC.



This month, we celebrate the 10th anniversary of the East Longmeadow based firm, Architecture EL. Architecture EL, Inc. was founded in October 2008. A firm with diverse experience, including residential, commercial, childcare, municipal, historic, and accessibility projects, Architecture EL works in both the public and private sectors. With over 20 years of professional experience their projects range from small to large. Kevin Rothschild-Shea AIA, the firm's Principal Architect, is licensed in MA, CT, VT and NJ.

We asked Architecture EL about some of their recent work:

*"We have provided design services on a wide range of single family and multi-family projects, recently completing a partnership with non-profit Home City Development, Inc. of Springfield, Mass on E. Henry Twiggs Phases I & II, a scattered site residential renovation project, consisting of extensive renovations to 135 housing units, with a total construction cost of 25.8 million. We're in the beginning stages of a similar residential revitalization project, working with The Community Builders, Inc., another non-profit, where we will be completing Phase 2 of work to revitalize several residential apartment buildings in and around Lyman Terrace in Holyoke, Mass. With a total construction cost of 22 million. We've also worked closely with several western Mass towns designing Handicapped Accessible Improvements and Sprinklers for the Hatfield Town Hall, an addition to the Town Hall in Hampden, additions and renovations to the Town of Hampden Fire Department, and Façade restoration of the Westfield Whip Museum. Currently AEL is working with the town of East Longmeadow to design and develop a Veteran's War Memorial on the East Longmeadow town green."*

"Ten years ago when I launched ArchitectureEL, Inc., I had a simple aspiration to design beautiful buildings for the people and businesses of Western Massachusetts," said Kevin Rothschild-Shea AIA, President and Lead Architect. "What we've grown into today... well it's far surpassed my dreams, and we can't thank the community enough for their continued trust in our work and support of our designs."



"Architecture El has a staff of committed and hard-working professionals who pay close attention to the critical aspects of every project and pursue each problem to a satisfactory resolution," said Tom Kegelman of Home City Development, Inc."

"I have collaborated with Kevin and AEL, Inc. since it's beginning on many and a wide range of projects," said William A. Canon, Landscape Architect. "I have enjoyed working with Kevin and his professionalism of embracing the expertise that other consultants bring to the project team which is always restful and appreciated. I have been impressed with Kevin and the development of AEL, Inc. into a respected practice."







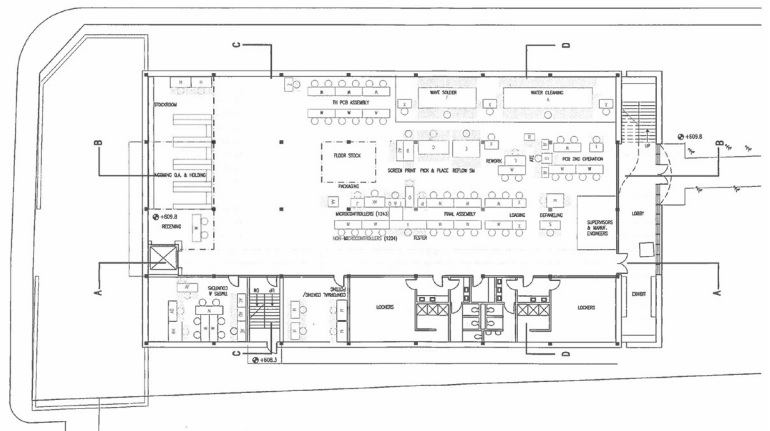
Forty five years ago, as a minor and an immigrant, I landed at Kennedy Airport on a TWA flight from Athens. I was a refugee from behind the iron curtain, smuggled under the back seat of a car trailer across the border between Bulgaria and Greece. But when I set foot on US soil and was greeted by the soaring wings of Eero Saarinen's terminal – a marvel of sinuous lines, expressionist structure and jet-age splendor – I was bedazzled. The glamour of that first experience of American architecture is with me still. It sustained me through more than a decade of studies, a rocky start as a professional in NY during the real estate crisis, and the collapse of the iron curtain, when Bulgaria established its first democracy.

In 1996 I was working with John M. Y. Lee/ Michael Timchula Associates when Edward Marwell, President of Curtis Instruments called with an unusual request: did we know of any Bulgarian architects? Both of the firm's principals had worked with Mr. Marwell on factories in the US and in China, but this commission was special – the Bulgarian factory team of the joint venture Curtis/ Balkan, under the management of Peter Popov, insisted on working with an architect who would be sensitive to the local environment and context, and could serve as a bridge between the two cultures of the partnership. And there I was - in charge of my first project as a lead designer and flying back to Bulgaria, but this time as a professional.

It was a heady experience – learning how to speak Bulgarian as an architect, working with management to develop the program of requirements and optimize the manufacturing process workflow, and interviewing multiple firms in order to put together the design and construction team. Curtis/ Balkan had purchased a long and narrow land parcel on the southwest outskirts of Sofia in a leafy neighborhood on a major boulevard. The site had many mature trees and dropped about 10' from the front to the back where a loading dock could be developed onto a road that served other industrial facilities. The new two

and a half story and 20,000 GSF facility could thus be sited to retain some of the existing landscape. It included a half story for the loading dock and service areas; a ground floor that was dedicated to manufacturing and had a two-story entry atrium, and a second floor with administrative offices and a central court/ winter garden that could serve future growth needs. The front façade and base of the building was clad in gneiss, with stucco for the back and side walls – a durable local exterior finish; and the blue of the window frames and aluminum curtain wall was a signature Curtis color. The concrete structural grid was designed on a module that was optimal for the manufacturing process. And after many discussions and debates, the team agreed to take a risk on installing a ground source heating pump HVAC system that utilized an existing water well with a ground temperature of 57 degrees F. The budget prohibited installation of PV panels on the glass roof over the winter garden, but the owners were proud to have an energy efficient system and utility bills about 20% lower than average.

This past summer I visited the facility, 20 years after its construction, and met again with Peter Popov, eager to hear how it was performing. The factory is thriving – they are proud to have what they now call a green building. The winter garden was converted to another level of manufacturing within 5 years of its opening and they wish they had built a full basement floor; the pumps are operating well, and the atrium now houses some of Mr. Marwell's art collection. And most satisfying to me, they are now working on options to install PV panels on the roof.







**ART**  
Engineering  
we build the future.

38 Front Street FL 3 Worcester, MA 01608  
t. 508-797-0333 f. 508-797-5130



**Rock Solid**  
Geotechnical Services

www.oto-env.com

**O'Reilly, Talbot & Okun**  
[ ASSOCIATES ]



**Western Builders, Inc.**

General Contractors  
since 1975 focusing on  
Academic, Commercial,  
Historical Renovation,  
Healthcare & Senior  
Living Facilities

73 Pleasant St. Granby, MA 01033  
413 467 9171  
westernbuilders.com



**mica  
blue**  
CREATIVE

Julie Waggoner  
jwaggoner@micablue.com  
413-665-2280

Graphic Design  
Web Design  
Copy Writing  
Photography



Supporting  
the  
Architectural  
Community

Dennis O'Rourke  
dorourke@184.pellapdsn.com



Photo: Lisa Volmer

**VIEWED TO BE THE BEST.®**

Dana Bixby Architecture Montessori School, Lenox MA



# ABX 2018

Boston Convention & Expo Center

## SAVE THE DATE

November 28-29, 2018

Boston Convention & Exhibition Center • Boston, Massachusetts



Fulfilling an Owner's Mission Through Leadership and Collaboration.



designLab Architects | The Hitchcock Center for the Environment

commercial | institutional | new homes | additions  
renovations | remodels | construction management

(413) 586.8287 [wright-builders.com](http://wright-builders.com)

KENT HICKS  
CONSTRUCTION CO.

## Passive Perfection

Net Zero Living Designed for New England

+ Healthy Homes + Deep Energy Retrofits  
+ Passivhaus + Historic Restorations



[KENTHICKSCONSTRUCTION.COM](http://KENTHICKSCONSTRUCTION.COM) 413.296.0123

## INTEGRITY

DEVELOPMENT & CONSTRUCTION, INC



Amherst, MA 413.549.7919  
[www.integbuild.com](http://www.integbuild.com)

INTERESTED  
IN  
ADVERTISING?  
CONTACT  
DIRECTOR@WMAIA.  
ORG!



planning  
land surveying  
civil engineering  
optical alignment  
project management  
electrical engineering  
structural engineering  
mechanical engineering



50 Depot Street • Dalton, MA 01226  
(413) 684-0925 • Fax (413) 684-0267  
e-mail [hill@hillengineers.com](mailto:hill@hillengineers.com)



# PYRRHOTITE CONTAMINATED CONCRETE – A CALL FOR COLLABORATION

In Biblical fashion, more than 34,000 residential foundations in Connecticut and Massachusetts were built on sand between 1983 and 2016. Not literally, but many if not most residential concrete foundations containing pyrrhotite aggregate from Becker's Quarry in Willington, CT and mixed by JJ Mottes Concrete in Stafford Springs, CT will need to be repaired or replaced eventually. Those that contain pyrrhotite and have not (yet) shown evidence of failure will remain suspect and likely impact the value of the real estate. This article focuses on the single-family residential sector but the problem may be wider. ConnDOT asserted that pyrrhotite concrete has not impacted its structures. However, there is visual evidence that some commercial and multi-family residential structures are showing telltale signs of pyrrhotite deterioration.

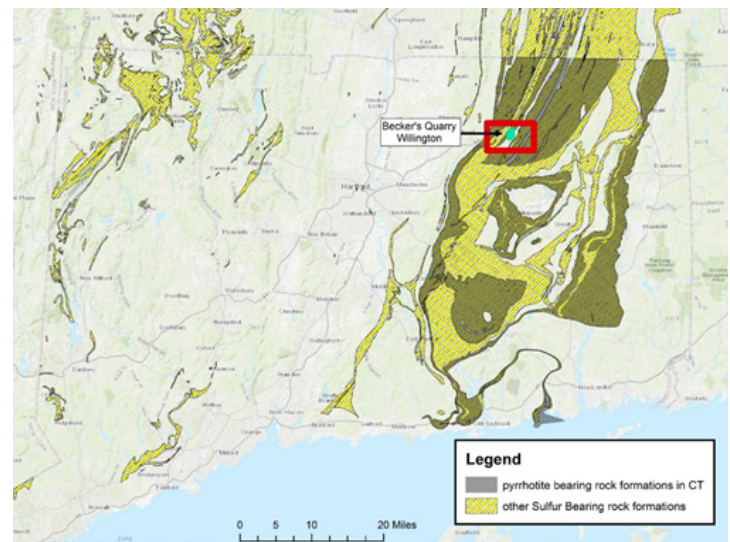
What is known is that thousands of pyrrhotite foundations are crumbling in a slow motion disaster. The cost of correction currently ranges from \$150,000 to \$350,000, for lifting and fully replacing foundations. The economic impact on the region is immense. Connecticut officials have already identified approximately 50 towns affected by pyrrhotite foundations. Only about 700 buildings have been officially reported to date in Connecticut. However, Governor Malloy estimates that over 34,000 homes might be affected. Massachusetts is quite behind the curve in determining the scope of the disaster. State and local officials in MA have no clear idea of how many homes contain pyrrhotite concrete, although the now defunct JJ Mottes Concrete company did extensive business in Massachusetts. One estimate used by CT officials is that as many as 10,000 homes in Massachusetts have pyrrhotite concrete.

Owners, through no fault of their own, will lose their equity and perhaps default on mortgages. Even where a particular foundation shows no signs of the telltale pyrrhotite “map cracking” and horizontal cracks, insurers and lenders will redline properties containing pyrrhotite foundations. Buyers will seek disclosures and representations resulting in a loss of marketability. This is not speculation, some lenders in Massachusetts are already requiring a core sample test to prove the absence of pyrrhotite before closing a loan.

The math is stunning: 34,000 homes at \$225,000 repair cost equals \$7.65 billion. In comparison, hurricane Irene caused damage of \$15.8 billion in New England and Superstorm Sandy caused damage of \$65 billion across a large swath of the Northeast. The downstream consequences are even more alarming. Insurers have thus far maneuvered to avoid coverage on homeowners policies. Connecticut legislation has barred insurers from cancelling policies for pyrrhotite but Massachusetts has not. Banks will increasingly be saddled with foreclosed properties that have zero value. Municipalities will suffer revenue loss due to tax abatements and in many cases need to deal with permanently abandoned, deteriorating homes.

## PYRRHOTITE AGGREGATE GEOLOGY

As the name suggests, Pyrrhotite is a naturally occurring iron sulfide ( $Fe_{1-x}S$ ). Most people in Western Massachusetts are familiar with Brimfield, the town famous for its massive antique shows. Fewer are familiar with a geologic feature called “Brimfield Schist.” According to the Geological Society of America, “rock aggregate in the failing concrete foundations was largely mined from a single quarry, working a stratified metamorphic unit in eastern CT mapped as Ordovician Brimfield Schist. The gray, rusty brown to orange yellow weathering rock, is a medium to coarse grained, interlayered schist and gneiss, composed of oligoclase, quartz, K-feldspar, biotite and commonly garnet, sillimanite, graphite, and pyrrhotite.”



According to Trinity geologist Dr. Jonathan Gourley, in the presence of moisture/air and calcium, the sulphur in the pyrrhotite reacts and transforms to several secondary minerals, and associated changes in volume lead to a loss of structural integrity. While current science is unable to predict whether any given concrete foundation containing pyrrhotite will fail, recent developments relying upon the magnetic properties of pyrrhotite have greatly lowered the cost of accurate testing.

On September 17, 2018, Dr. Gourley presented some of his work at the Monson Public Forum on Crumbling Foundations. In terms of risk assessment, he identified 4 important factors: 1) the percentage of pyrrhotite; 2) the source of the aggregate; 3) the interaction of the foundation with water; and 4) the age of the foundation. He added that other factors may be in play including variability in the initial concrete quality, and the water added to the original mix (related to ultimate compressive strength).





Until the predictive science advances, even very low percentages of pyrrhotite in aggregate from Becker's Quarry will place an economic cloud over tens of thousands of properties. There may be a safe level of pyrrhotite but that amount is not known yet.

### **SLOW MOTION DISASTER . . . AND RESPONSE**

This local disaster did not really start making the news until 2014, although there were earlier complaints. Connecticut is at least two years ahead of Massachusetts in attempting to address this problem. Federal aid is uncertain other than a "safe harbor" tax provision for deducting pyrrhotite repair costs as a casualty loss. There has been no FEMA disaster declaration.

In August 2015, CT Governor Malloy ordered an investigation into reports of failing concrete foundations. A report was released on December 30, 2016. The investigation was thorough. A scientific study was conducted by Kay Wille and Rui Zhong in the Department of Civil and Environmental Engineering at UConn. In addition, approximately 70 potentially affected homes were inspected. Roughly 90 contractors identified by consumer complaint forms were interviewed. The Department of Consumer Protection conducted 85 interviews with experts involved in residential construction and foundation installation. The investigation found that: 1) pyrrhotite must be present to result in the observed deterioration; 2) the minimum amount of pyrrhotite needed to trigger deterioration is not known; and 3) Becker's Quarry (the main source of aggregate used by JJ Mottes Concrete) is located in a vein of rock that contains significant amounts of pyrrhotite. JJ Mottes Concrete previously operated in Stafford Springs, CT, on the Massachusetts border. Connecticut agencies such as the Department of Housing (DOH) and the Department of Consumer Protection have established informational web pages.

Massachusetts legislators and agencies can study the efforts in Connecticut for guidance. Local State Senators Lesser and Gobi are active in this effort. In July, MA created a \$50,000 program to help homeowners pay for inspections (compared to \$5 million program in CT) within 20 miles of JJ Mottes as well as a commission to study the problem and develop solutions. The currently-forming commission would bring together the Massachusetts governor's office, lawmakers, state banking and insurance regulators, the attorney general's office, and others. Under the statute, Governor Baker is entitled to appoint 7 individuals to the commission.

### **A CALL FOR COLLABORATION – LOVE IT OR LIFT IT**

Solutions to the pyrrhotite disaster puzzle have many moving parts: design, construction, science, financial, tax, legal, and more. I recently spoke with a building code official from the

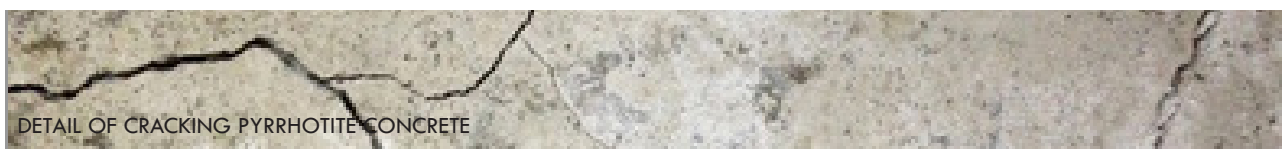
Massachusetts Office of Public Safety and Inspections to ask whether design and construction professionals had already formed a working group to consider code exemptions, waivers, or modifications that could streamline the repairs. The lack of effective action in response to a crisis prompted this article as a call for collaboration.

Almost all news reports describing the necessary repairs state something to the effect that "currently the only solution is to remove and replace the entire foundation." This appears to be the State of Connecticut's official position. According to the CT Department of Housing, the source of this recommendation was an analysis by the Army Corps of Engineers. Strangely though, the CT agency leading the pyrrhotite response did not have available and could not produce any engineering reports from the Corps.

Lifting and full replacement might make sense once actual collapse begins. Some of the most dramatic photographs in the news show severely crumbling and bulging foundation walls. There are videos of homeowners crushing pyrrhotite concrete chunks with their bare hands. Where a foundation is no longer able to carry its design loads, any competent contractor or design professional would recommend immediate shoring. In such advanced cases of deterioration, the building may have already settled/shifted and would need to be lifted back into position. In such cases the only remedy may be full foundation replacement.

In other cases when pyrrhotite is present with telltale "map cracking" and horizontal cracks appearing, but where no significant settlement has occurred, less drastic repairs may be adequate to permanently preserve the building without the expense of full replacement. As a former builder who has litigated all manner of construction defect cases for the past 26 years, I am not alone in thinking that universal full replacement is overkill. Initial discussions for this article with two licensed professional engineers, an architect, and several experienced contractors suggest that other options exist to meet codes and provide the same service life as a new foundation – without removing the defective concrete.

Foundations, which have not yet lost structural integrity, can be left in place and used as the exterior form of a new concrete wall poured on the inside, on new footings, and designed with sufficient reinforcement to resist all forces. A variety of techniques can be used to transfer loads from the sill plates, which would require careful detailing in conjunction with a structural engineer. In functional terms, the existing defective wall may or may not eventually fail. For lack of a better term it should be coined as "Becker's Backfill" material and left in place.



DETAIL OF CRACKING PYRRHOTITE CONCRETE



# PYRRHOTITE CONTAMINATED CONCRETE – A CALL FOR COLLABORATION

Case by case solutions may not require detachment and lifting of chimneys, loss of landscaping for a complete perimeter excavation, detachment of utilities, or myriad other costly complexities.

The purpose of this article is to challenge people in the design and construction industry to find alternative ways to mitigate this disaster. I urge design and construction professionals to collaborate with universities, code authorities, insurers, lenders, and government officials to mitigate the impact of this slow motion natural disaster.

There are several compelling reasons for design professionals, contractors, scientists, and building code officials to collaborate to develop adequate repair solutions short of full replacement.

1. Most homeowners can neither afford repairs out of pocket nor borrow against a worthless asset. Insurance may not be available.
2. If all or part of a foundation can be permanently shored or repaired, the repair costs would be substantially lower.
3. Is it justifiable or economically wasteful to spend \$250,000 to repair a building with a \$250,000 market value?
4. If foundation repair plans and specifications are designed and stamped by a licensed professional engineer, if those plans fully function to meet relevant building code requirements, if the plans are executed by a competent contractor, and finally inspected by the design professional and code enforcement officer, is the building still defective?

The last question is critical. Further scientific study may develop accurate predictions of structural failure based on varying percentages of pyrrhotite and other measurable factors (e.g., compressive strength).

Predictions and statistics alone may not remove the perception of defects. Aside from a complete government bailout, wherever possible we need to devise repair solutions that are economical.

As professionals involved with the built environment, we must help drive the debate to convince the public that there are options short of throwing good money after bad.



## PROFESSIONAL CONSTRUCTION SERVICES

- New Construction
- Remodeling
- Additions

Florence, MA • 413-586-8600  
KeiterBuilders.com

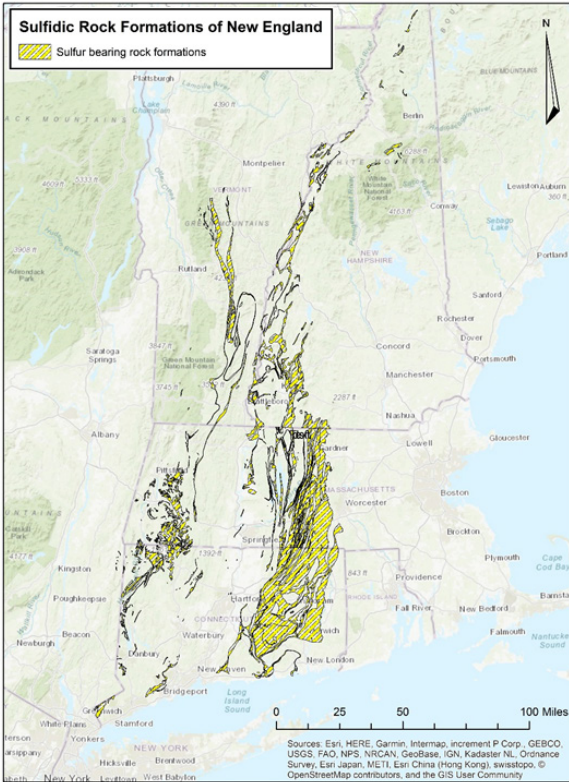


New Home, Leeds, MA

# 13

FOR STEVE O'NEILL'S MORE COMPREHENSIVE ARTICLE ON THIS TOPIC,  
SEE WMAIA.ORG





Map prepared by Jonathan Gourley,  
Trinity College Environmental Science Program, Hartford, CT May 29, 2018.  
Sulfidic Rock layer compiled by Margaret Thomas, Connecticut State Geologist.



COURTESY, NBC CONNECTICUT

**STEVEN J. O'NEILL** lives close to pyrrhotite ground-zero in Monson, MA. Prior to 26 years of law practice focusing on design and construction issues, he was a licensed builder and construction manager. He can be reached at [soneill@attorneyoneill.com](mailto:soneill@attorneyoneill.com). For more information and updates see <https://attorneyoneill.com/pyrrhotite-foundations/>.

**DISCLAIMER:** This article is for informational and educational purposes only and does not constitute legal advice or create any attorney-client relationship. Opinions expressed herein are solely those of the author and may not necessarily reflect the position of the firm on any issue or that of any current or former clients of the firm. © 2018 Steven J. O'Neill

# GREAT DESIGN BEGINS WITH A GEORGEIOUS FINISH

ALL ULTREX EBONY INTERIOR



Built to perform:



LET'S EXPLORE SOLUTIONS FOR YOUR NEXT PROJECT. CONTACT ME.

Contact Jason Chizmar at 802.760.7925

or [jchizmar@awhastings.com](mailto:jchizmar@awhastings.com)



DETAIL OF CRACKING PYRRHOTITE CONCRETE

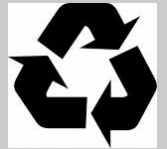




# AIA Western Massachusetts newsletter

71 SOUTH MAIN STREET SUNDERLAND MASSACHUSETTS 01375

Prsrt Std  
US Postage  
PAID  
Permit 183  
Greenfield MA



## WMAIA PROGRAMS FALL 2018

### WMAIA DESIGN AWARDS: SUBMISSIONS DUE OCTOBER 19TH!

#### WMAIA/FIVE COLLEGE ARCHITECTURE FILM SERIES

Film Series Special Event At the UMass Design Building Atrium:

**KEVIN ROCHE (THE QUIET ARCHITECT):** To be screened at UMass, in the shadow of Roche's Fine Arts Center, which is featured in the film

Saturday, October 20 | 4:30 PM | UMass Design Building Atrium | 1.5 LUs

**MICROTOPIA:** Wednesday, October 24 | 6:30 PM | Room 113, Fayerweather Hall, Amherst College | 1.5 LUs

### WMAIA ANNUAL MEETING

- DECEMBER 2018 -

**DATE WILL BE  
ANNOUNCED SOON!**

#### UMASS BCT LECTURES

October 15 | 4:00-5:15 | 162 Design Building/UMass

##### **BUILDING AT THE EDGE OF SUSTAINABILITY**

Jonathan A. Wright, Wright Builders

Monday, October 29 | 4:00-5:15 | 170 Design Building UMass/Amherst

##### **DESIGNING ENERGY PROCUREMENT STRATEGIES**

Zac Bloom, M.S., LEED Green Associate

Monday, November 26 | 4:00-5:15 | 170 Design Building UMass/Amherst

##### **DESIGNING TO NET ZERO ENERGY AND BEYOND**

Steven J. Strong, President of Solar Design Associates

#### SAVE THE DATE -

##### **DETAILED INFO SOON!**

WMAIA COTE Committee program

Tour: BENSONWOOD

Friday, November 2nd at 2 PM

A behind the scenes tour of Bensonwood's facilities in Keene and Walpole, New Hampshire.



