Evaluation of Process
For Assessments Of
Structural Flood Damage Claims
After
Hurricane Sandy

Second Edition
November 20, 2017

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Foreword

I have been working as structural engineer going on 40 years, living continuously in New Jersey since about 1957 at 15 houses, apartments and condos, not including dorm rooms, within 12 boroughs, townships and even one “city” along the way.

We lost power for 10 days after Hurricane Sandy, but I was lucky. One rental house I had previously lived in, not that long before storm, was destroyed by floodwater; two others were flooded. Floodwater covered large areas of Belmar, reaching to within 100 feet of my first-floor office.

For several months after Hurricane Sandy, I was immersed in work evaluating structural flood damage claims for HiRise Engineering, firm in Long Island that would later be at center of “altered reports” controversy.

While performing inspections for 119 flood-damaged houses and buildings, I saw mayhem and destruction along entire New Jersey coast, from Union Beach & Keansburg on Raritan Bay, to Sea Bright at north end of ocean beach, on down to Belmar and Point Pleasant, then through “red zone” of surreal devastation in Mantoloking and Ortley Beach, with National Guard on patrol, and even further south to Long Beach Island and way down to Brigantine and Wildwood.

I twisted and contorted myself in many wet crawlspaces, often in quite cold temperatures in winter of early 2013. For houses along Raritan Bay, crawlspaces were shallow, muddy and foreboding.

One point is that I know the difference between real structural damage caused by floodwater and less-than-persuasive claims of damage. Call me crazy, but I also have this innate belief that only the real kind of damage should be covered by insurance, unless we openly change the rules to rain down money from helicopters, for any reason.

Most importantly, the process for assessment of structural flood damage claims must be fair and based on adequate engineering analysis performed by qualified engineers.

In all cases, my approach was to try and inform owners about actual conditions, whether they thought such “real deal” was favorable for them or not at the time. Many owners were relieved when informed that, what they thought was (or might be) major structural damage, was in fact not major damage. Others, perhaps entertaining lottery-ticket hopes, were not so pleased.

Another point is that grossly inept services by engineers should be identified, with the goal of (at least) greatly reducing major errors before misinformation causes mayhem for homeowners and everyone else involved in damage claims.

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Late in 2014, I became aware of controversy, with so-called “altered” engineering reports, relative to flood damage claim assessments after Hurricane Sandy.

In early 2015, I had phone discussions with reporters, followed news reports, reviewed one especially defective engineering report and fired off several long emails. I watched 60 Minutes presentation on March 1, 2015 and sent long email to producer, without receiving any response. Then, realizing my notes of protest were being drowned by thunder of politically charged tidal wave, I set it all aside, noting only occasional news reports……until 5-year anniversary of Hurricane Sandy.

Article on front page of Asbury Park Press caught my attention. When I read part about flood damage claim here in Belmar, with update of ridiculous events that I had first read about in reports back in January 2015, I decided it was time to do more.

I do not know any of the engineers whose reports I have reviewed for this evaluation. To my knowledge, I have not reviewed any previous work by these engineers.

I realize that it is much easier to criticize those you do not know compared to those you know and are at least on cordial terms. I have tried to be fair.

Comments in this report, which may seem harsh at times, are intended as wake-up call for FEMA, insurance companies, reporters, attorneys and, most importantly, for engineering profession.

As you should discover by reading this report, I learned long ago that, especially for unvarnished truth, and structural engineering, details matter.

<u>First Edition</u>

First Edition of this report, dated November 9, 2017, was based on documents available at that point.

I did not realize then that set of documents relative to key case (Mero claim), including original and revised engineering reports at center of controversy, was available online.

Initial report was issued to 18 persons and organizations listed at end of cover letter, addressed to FEMA, including 6 hardcopies with PE seal. Others received pdf files via email.

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Second Edition

Several days after issuing First Edition, I came across web link that quite unexpectedly produced key reports and documents for "Mero claim" which, as I understand, was "ground zero" for "altered reports" cases.

The following changes have been made compared to First Edition, using revised page numbers in this Second Edition;

- Revised Contents
- Added Foreword, including key conclusions for Mero claim.
- General: New page numbers & format.
- Page 1: Listed additional reports reviewed.
- Page 2: Added technical references
- Pages 3 & 4: Added discussion of earth movement
- Pages 5 – 8: Added discussion of settlement due to floodwater
- Pages 9 & 10: Added information by FEMA
- Page 11: Added information for Experience & Background
- Added pages 12 – 18: Summary & key points relative to evaluation of reports and documents for Mero claim, as well as process for flood damage claims.
- Page 19; revised Recommendations

- Pages 23 – 29: Revised to reflect discussion in new Appendix B.

- Added Appendix B: Detailed discussion about process of assessment for structural flood damage for Mero claim, including, most importantly, original report by Andrew S Braum, PE (highlighted in 60 Minutes presentation), as well as modified version of Braum report by HiRise Engineering which set stage for entire "altered reports" controversy and extended legal process that is not yet entirely complete.

Evaluation of Reports For Mero Claim

I am not aware of any other report describing documents relative to Mero claim, including report by Joel W Schachter PE, original report by Andrew S Braum PE or modified ("altered") report by HiRise Engineering.

Conclusions about evaluation of events and results for assessment of flood damage for Mero claim are important enough to be highlighted in this Foreword.

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Key Conclusions – Mero Claim

Evaluation of original report by Andrew S Braum, PE, as well as modified ("altered") version of that report by HiRise Engineering, and other related documents, has resulted in the following key conclusions, based on available information;

- Overall conclusion is that process used for assessment (evaluation) of structural flood damage claim for Mero house resulted in complete fiasco that should be an embarrassment for FEMA. Reforms must prevent further such travesties.

- Original report by Mr. Braum for Mero claim was grossly deficient such that conclusions were completely unsubstantiated and without merit.

- Mr. Braum, with background as mechanical engineer specializing in air quality issues, was not qualified (at the time) to perform evaluations for structural flood damage claims.

- HiRise Engineering should have known that Mr. Braum was not qualified to perform engineering services for structural flood damage claims.

- HiRise Engineering failed to provide adequate checking, by qualified professional engineer, of original report by Mr. Braum.

- HiRise Engineering did not have authority to modify or revise report by Mr. Braum, especially without his knowledge and consent, and did not have authority to issue such modified report to insurance company.

- Key claim by Mr. Braum, that HiRise Engineering "altered" his conclusions, was essentially false since his primary conclusion remained the same in HiRise report. However, to complain about "altering" nonsensical conclusion is ridiculous.

- Report by HiRise Engineering, which was modified version of original report by Mr. Braum, was grossly deficient and without merit, for the same reasons that original report by Mr. Braum was grossly deficient and without merit.

- Insurance company and NFIP failed to provide proper checking, by qualified engineer, to verify that report submitted by HiRise Engineering was technically adequate for making decisions about structural flood damage claim.

- Insurance company and, especially NFIP, should have insisted that report submitted by HiRise Engineering have PE seal or stamp by Mr. Braum.

- NFIP should not have used report by HiRise Engineering as basis for any decisions about structural flood damage claim, especially without PE seal.

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Introduction

Purpose & Limits of Evaluation

This report describes evaluation of process, used by firms working for FEMA, for assessment of structural flood damage claims after Hurricane Sandy (October 29, 2012) in New Jersey and New York.

Detailed evaluation of process for two flood damage claims is discussed, based on review of engineer reports and other documents.

Evaluation is based on available information including the following documents;

1. Media reports from January 5, 2015 to November 8, 2017
2. Report by Office of New York State Attorney General
3. Report by engineer for owner of single-family house; Belmar NJ
4. Original report by Andrew S Braum, PE for flood damage claim for house in East Rockaway NY (Mero claim).
5. Report issued by HiRise Engineering, based on original report by Andrew S Braum, PE, for Mero claim, without prior approval of Mr. Braum. This is key report that started "altered reports" controversy.
6. Town of Hempstead "Substantial Damage Assessment" letter; Mero house
7. Report by Joel W Schachter, PE; Mero house
8. Letter from FEMA to owners (Mero); August 20, 2013

Results for evaluation of report by engineer for owner of single-family house in Brick NJ are summarized (one page) in Appendix A.

Engineering & Technical References

The following engineering and technical references have been used for this evaluation;

Doc-1 "Coastal Construction Manual", Fourth Edition (2011), by FEMA

Doc-2 "A Study on the Influence of Ground Water Level on Foundation Settlement in Cohesionless Soil"; by B M Das, California State University et al; Proceedings of the 18th International Conference On Soil Mechanics and Geotechnical Engineering, Paris 2013.

Doc-3 "Foundation Analysis & Design", Fourth Edition (1988), by Joseph E Bowles

Terms & Conventions

Definitions for terms are as follows, unless defined otherwise in discussion;

Hurricane Sandy	Major named storm that occurred on October 29, 2012 in New Jersey and New York.
This writer	John F Mann, PE
This report	Refers to this written report prepared by this writer.
This discussion	Refers to discussion for this report.
This evaluation	Refers to evaluation made for, or described in, this report.
Engineer	Professional engineer for other party; in context of specific discussion.
NFIP	National Flood Insurance Program
SFIP	Standard Flood Insurance Policy

Additional terms are defined within report to be more useful for understanding intent of immediate discussion.

Long quotes from other documents are generally shown as indented paragraphs. Different font, such as italics, is used for primary source. Quotation marks are generally not used to separate such long quotes from text of this report. Any quotation marks within such long quotes are generally those already within quoted text from other report.

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Definition of Earth Movement

As explained below, NFIP has, incredibly, not defined term "earth movement" in SFIP, even though exact meaning and application of that term is often critical for determination of coverage for flood damage, as demonstrated for Mero claim.

This writer has also not found any definition of "earth movement" in readily available FEMA publications.

The following definition of "earth movement" is provided by online version of Merriam Webster Dictionary;

> *Differential movement of the earth's crust: elevation or subsidence of the land.*

The following definition is from online version of Duhaime's Law Dictionary, at the following link, which also provides quotes from two relevant legal cases along with brief discussion;

> http://www.duhaime.org/LegalDictionary/E/EarthMovement.aspx
>
> Earth Movement Definition:
> *Phenomena related to forces operating within the earth itself, and not to the merely superficial effects of external forces, such as erosion by run-off rainwater.*

Discussion of first case is confusing due to highly confusing double-negative in quote and mistake of author contending Justice Ginsburg did not favor insured.

Discussion of second case notes the following definition of "earth movement" used by court, even though "definition" includes term itself;

> *Spontaneous, natural catastrophic earth movement*

Based on these definitions, as well as similar definitions from other sources, it is reasonable to conclude that "earth movement" has the following essential features;

1. Large scale movement as caused by earthquakes and mudslides.
2. Caused only by events that occur within the mass of earth (soil & rock).
3. Not caused by conditions or events external to mass of soil ("earth"), such as flowing water that causes erosion of soil or force from weight of building that causes compression of soil.

Of course, due to lack of any definition in SFIP, each court has at least some leeway to conjure up whatever definition for "earth movement" that court deems appropriate when case is adjudicated.

However, considering evidence available for this evaluation, it is reasonable to conclude the following;

- Using definitions that have meaning and intent similar to those discussed above, relatively small-scale settlement of soil caused by weight (load) from building does not qualify as "earth movement".

It is then also reasonable to conclude that relatively small-scale settlement (compression) of soil caused by floodwater that is initially external to mass of soil should also not qualify as "earth movement".

Remaining issue is then to decipher intent of exclusion (in SFIP) for earth movement "caused by flood". Whatever author of this paradoxical phrase meant, such "meaning" has apparently been lost in the fog.

Considering that essential feature of "earth movement", as defined above, is large-scale movement similar to that caused by earthquakes or mud slides, it is reasonable to conclude that whatever "earth movement" might be "caused by flood" should also have to cause such large-scale movement to qualify for exclusion. Since there is no obvious reason for "earth movement caused by flood" other than erosion caused by flowing water (which is covered), such phrase appears to be essentially meaningless.

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Settlement of Soil Due To Floodwater

"Common sense" seems to dictate that downward movement (settlement) of buildings might (or even "should") occur when soil supporting foundations is saturated from floodwater.

Yet, there is not much published information about such settlement for buildings that have been subjected to flooding. Considering hundreds of thousands of soil-supported buildings, including many heavy masonry buildings, that have been subjected to floodwater over the past hundred years in the United States alone, lack of reports describing large-scale settlement due to flooding lends credence to conclusion that settlement due to floodwater must not be major problem.

This writer is (and has been for many years) aware of several well-known texts on foundation design and soil mechanics, none of which address this issue in any depth. They all simply note that rise in groundwater should be expected to lower "bearing capacity" of soil. Various suggestions are made to help quantify amount of such reduction for initial design purposes only. However, "bearing capacity" is generally focused on shear-failure of soil and does not really focus on settlement potential.

The following statement is from relatively recent (2013) research report (Doc-2; page 954) about this issue;

> *Very few works have been found in the literature investigating the influence of fluctuating water level on shallow foundation settlements.*

However, even in that report, and in other research reports published in recent times (since 2000) about this issue, none address behavior of soil-supported foundations due to cycles of repeated high groundwater conditions. They only address single occurrence of groundwater rising above some initial baseline elevation for which groundwater is considered to have no effect on settlement.

As discussed in recent research reports, for the single-cycle event, rise of groundwater causes reduction in "stiffness" of soil within zone below footing that is generally agreed to be "influence zone" contributing to settlement of soil. Such zone is typically taken as depth (below base of footing) of 4B for "strip" or wall footings that support foundation wall, or 2B for square footings that support column or pier, using B for width of footing.

Therefore, for wall footing having relatively large width of 2 feet, influence zone is only about 8 feet below footing. For most older houses, built before 1960, width of wall footing (if there is even any footing) is not more than about 16 inches, such that depth of influence zone is only about 5 feet or less. This is important since total settlement is function of thickness of soil that is within influence zone.

Term “consolidation”, when used in context of soil mechanics and geotechnical engineering, is not always defined precisely or concisely (surprise, surprise!).

First note that “soil” is actually an assembly (mixture) consisting of solid particles, air spaces between particles and water that fills (or partially fills) some or all air spaces.

The following basic definition of “consolidation” is from classic text by Terzaghi (“Theoretical Soil Mechanics”; 1943);

> *Any process which involves a decrease in water content of saturated soil without replacement of water by air.*

More recent definitions of “consolidation” in context of soil mechanics and geotechnical engineering are variations on this classic definition.

Essential feature of “soil consolidation” is forcing of water out of soil due to load on soil. This is of course opposite to saturation of soil caused by flooding.

- ➡ Using “consolidation of soil” to describe behavior of soil subjected to flooding condition is grossly inconsistent with essential feature of definition used by authorities on soil mechanics and geotechnical engineering.

The following discussion in Bowles (Doc-3; page 241) about foundation settlement applies the term “consolidation” as modifier (underline made for this discussion);

> *Settlements are usually classified as:*
>
> 1. *Immediate, or those which take place as the load is applied or within a time period of about 7 days.*
>
> 2. *Consolidation, or those which are time-dependent and taking months to years to develop.*
>
> *Immediate settlement analyses are used for all fine-grained soils including silts and clays with a degree of saturation S< 90 percent (approximately) and for all coarse grained soils with a large coefficient of permeability.*
>
> *<u>Consolidation settlement</u> analyses are used for all saturated, or nearly saturated, fine-grained soils where the consolidation theory of Sec 2-10 applies. This is because for these soils we want estimates of both settlement Delta-H and how long it will take for the settlement to occur.*

- In report by HiRise Engineering, “Settlement due to consolidation of soil”, though technically incorrect, should reasonably be considered to have been intended to primarily mean “settlement of soil”, which, although still not correct, was attempt to mitigate grossly flawed codewords used by Mr. Braum.

Essential feature that defines “settlement” is compression of soil.

In general, except in areas such as Mexico City and Venice, Italy which have experienced true consolidation of clay-type soils over very long time, amount of settlement that occurs for low-scale buildings (over time) is on the order of a few inches at most. “Immediate” settlement is on the scale of one-inch or less. Such amounts are clearly very small compared to large-scale movement that occurs during events that cause “earth movement”.

Floodwater extending over large area, and occurring for more than short period of time (such as for “flash flood”) generally causes rise of groundwater (in soil) to grade (ground surface).

For this analysis, the following key issues must now be addressed;

1. Whether, in general, floodwater causes settlement of soil.

2. Whether, for particular case, floodwater could have caused settlement of soil that was large enough to cause significant structural damage.

Expanding on prior research, authors of Doc-2 describe how rise of groundwater causes increased settlement of soil, compared to conditions for groundwater at lower elevation. However, the following key issues are not addressed in Doc-2 (or prior research);

1. Absolute amount of additional settlement (due to rise of groundwater) for typical buildings.
2. Behavior of soil in response to cycles of groundwater rise, not just single event.

Settlement of soil due to high groundwater occurs quickly for sandy-soil conditions but slowly for clay-soil conditions. Since insurance coverage is generally intended for sudden events, only settlement for sandy-soil conditions would seem to qualify.

Therefore, if damage to insured building is due to settlement of sandy-soil caused by floodwater, structural damage caused by such event should be covered by NFIP for the following reasons;

1. Conclusion that settlement of soil does not qualify as “earth movement”.
2. Lack of any exclusion, in SFIP, for damage due to settlement of soil (contrary to assertion in NFIP letter).

However, complicating issue that then must be considered is whether rise of groundwater to any particular level (elevation) is first such event that has ever occurred for soil that supports building at that location.

If groundwater has previously risen to grade (ground surface) or above, resulting in settlement of soil under building, then subsequent events of high groundwater could only cause lesser amounts of settlement and, most likely, would cause almost no additional settlement, especially after several cycles.

As noted above, there is (apparently) no research to address settlement effects of cycles of flooding.

However, as also noted above, lack of reports showing major problems due to settlement after flooding indicates that additional settlement after cycles of flooding must be very small or even negligent.

For Mero house, built in 1925, it is reasonable to conclude that several cycles of flooding (at least) had occurred which caused groundwater to rise to bottom of footings or higher. Therefore, flooding during Hurricane Sandy could not have caused significant settlement of underlying soil.

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FEMA – Standard Definitions

Standard definitions used by FEMA are provided online at the following link;

https://www.fema.gov/national-flood-insurance-program/definitions#E

Standard definitions listed below are most relevant for this evaluation. As far as this writer has been able to determine, these definitions are not provided anywhere in SFIP, legislation that sets up NFIP or readily available FEMA publications.

Hydrodynamic Forces
Hydrodynamic forces are imposed on an object, such as a building, by water flowing against and around it. Among the forces are positive frontal pressure against the structure, drag effect along the sides, and negative pressure in the downstream side. Hydrodynamic forces are one of the main causes of flood damage. Typical areas where hydrodynamic forces are of particular concern are along rivers and streams with high velocity floodwaters and coastal and other areas subject to wave forces.

Hydrostatic Forces
Standing water or slowly moving water can induce horizontal hydrostatic forces against a structure, especially when floodwater levels on different sides of a wall are not equal. Also flooding can cause vertical hydrostatic forces, or flotation. Hydrostatic forces are one of the main causes of flood damage.

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FEMA – Frequently Asked Questions

Answers to "frequently asked questions" (listed below & numbered for this discussion) are provided online at the following link;

https://www.fema.gov/hurricane-sandy-claims-review-frequently-asked-questions

Incredible as this sounds, "earth movement" is not defined by FEMA in any readily available documents. Perhaps even more incredibly, FEMA does not explain that critical and bizarre fact in their ambiguous "answer" which only raises more questions.

1. *How will you evaluate claims involving earth movement?*

   Earth movement is not covered under the Standard Flood Insurance Policy, even if flooding caused the earth movement. Engineers will work with the adjuster and will review the previous engineering reports to verify accuracy. The engineers assigned to this review are not related to engineering firms currently under investigation.

Inexplicably, for second question, which apparently is intended as response to questions about "altered report" cases, meaning of "this" is not explained.

2. *What is FEMA doing to prevent this from happening again?*

   FEMA is conducting an internal review of its processes to reform the NFIP program for the claims and appeal process. The NFIP Transformation Task Force has identified three areas where it is focusing its internal reviews. These include:

   - *overhauling the claims and appeals process,*
   - *aligning management of litigation in a way that puts the flood survivor first, and*
   - *improving the customer experience throughout the entire claims process.*

   FEMA's goals are excellent customer experience, responsiveness, transparency, low risk of waste, fraud and abuse, and continuous improvement. As part of our effort to reform the NFIP, FEMA notified Write Your Own (WYO) insurance companies of changes in the process for things such as seeking reimbursement for expenses. Pending further guidance, FEMA will review and approve all proposed engineering costs to ensure that WYOs, as fiscal agents for the U.S. Government, are fulfilling their role by guaranteeing that taxpayer funds are being appropriately expended and their work is consistent with putting policyholders first.

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Experience & Background Information

I ("this writer") am approaching 40 years as structural engineer, including 24 years operating as consulting structural engineer based in New Jersey.

Further information about experience is on the following web site;
www.structural101.com

Starting in June 1977, fresh out of college, I spent unique year working, literally, on the railroad to learn "maintenance of way"; one of these new years I may pen story of those wild & crazy days before PCs and "smart" phones and constant communications. Then, after learning enough to realize I was not all that eager to try "managing" rambunctious "tie gang", I managed to land job in railroad design & construction office in Philadelphia.

Back in 1993 I started consulting practice, working out of long, narrow loft office in Haddon Township. Since then, I have been drafting, the old-fashion way, at my vintage oak drafting board in Voorhees, Stirling, Bordentown and, since 2006, in sunny Belmar.

For few years in late 1990s, I worked for major consulting firm, in charge of bridge design for "light rail" project between Trenton and Camden. I played key role in conceptual and preliminary design for light blue steel arch-like railroad bridge over Rancocas Creek which is, I believe, the only steel tied-arch railroad bridge supporting freight rail in North America. I also persuaded NJ Transit to build new laminated wood-deck bridge over Crosswicks Creek in Bordentown, to keep historic character of old wood-trestle bridge that had to be replaced.

I have performed structural evaluation inspections and assessments for 1,500 or more houses and other residential buildings as well as hundreds of commercial buildings.

After Hurricane Sandy, I performed inspections and prepared 119 evaluation reports for HiRise Engineering, firm at epicenter of controversy with "altered engineering reports". At my insistence, reports were submitted, via email, to HiRise Engineering as independent documents using my letterhead. HiRise Engineering attached their cover letter for submittal of report to their client which was generally United Technical Consultants (UTC). Signed and sealed reports were mailed to HiRise Engineering.

Many flood damage reports prepared by this writer recommended remedial work to repair structural damage determined (by this writer) to have been caused by floodwater during Hurricane Sandy. Many other reports included recommendation for no remedial work, either because no structural damage was observed or because any structurally deficient conditions found were determined to have been the result of other causes.

I have no evidence that any reports prepared by this writer, for flood damage assessments, were altered by HiRise Engineering or anyone.

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Effects of Report Modifications - General

The word “alterations” has been used in media reports, as well as legal proceedings, to describe changes made to engineering reports for Hurricane Sandy related flood damage claims.

However, I have chosen to use (primarily) words “modify” and “modifications” to reflect more neutral opinion, considering the following definitions;

> Cambridge Dictionary
> *Modify: To change something such as a plan, opinion, law, or way of behavior slightly, usually to improve it or make it more acceptable.*
>
> Dictionary.com
> *Modify: To change somewhat the form or qualities of; alter partially; amend.*
>
> Merriam Webster Dictionary
> *Modify: To make less extreme*

Complete effects resulting from modifications (“alterations”) made by HiRise Engineering to all reports prepared by Andrew S Braum, PE and other engineers (if and as applicable) are not known by this writer.

However, the following is known based on available information;

- Since second half of 2014, numerous media reports have described extensive problems with “altered” engineering reports for Sandy flood damage claims, even though there has been general lack of details for specific cases.

- Per media reports, Federal court ordered reopening of 144,000 Sandy flood damage claims. About 19,000 claims were filed for additional review.

- In January of 2017, Matt Pappalardo, formerly with HiRise Engineering, was sentenced to 3-years probation for his role in “altering” engineering reports. HiRise Engineering was fined and barred from performing further work for flood damage claims.

Based on recent media reports (which should of course be assessed carefully), FEMA has made some changes to process of assessing flood damage claims. However, key problems appear not to have been addressed.

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Importance of Report by Andrew S Braum PE for Mero Claim

Original report prepared by Andrews S Braum, PE, for evaluation of structural flood damage claim for Mero house, is important because it was the key document that started investigations which eventually became “altered engineering reports” controversy, reported on by many media sources. Hearing were conducted by US Senators from New Jersey and others. High-profile legal process began.

The following is quote from 60 Minutes presentation, “Storm After The Storm”, first aired on March 1, 2015;

> Of the thousands of cases lawyer Steve Mostyn says he's found, electrician John Mero and his wife Gail's is the most revealing. Their house is in East Rockaway, New York.

Quality of Engineering Services for Structural Flood Damage Claims

As discussed below, and elsewhere in this report (Appendix B), conclusions in original report by Mr. Braum (for Mero claim) were grossly defective.

In retrospect, this should not have been any big surprise considering that Mr. Braum did not have adequate experience to be performing evaluation of structural flood damage claims, especially during intense period after Hurricane Sandy.

- ➡ Key conclusion of this report is that process for assessment of structural flood damage claims failed to provide sufficient (or any) supervision and checking, by qualified engineers, of evaluations performed by engineers that performed inspections.

Failure to provide proper checking of initial evaluation was feature of entire process or "system", resulting in gross errors for large numbers (probably thousands) of flood damage claims along with confusion and frustration for owners and insurance company representatives.

Detailed evaluation (described in this report) of reports by three professional engineers (Mr. Braum, Mr. Schachter, Mr. Schkeeper) does not substantiate any general conclusion about quality of engineering services and reports by multitude of engineers that provided evaluations of structural flood damage claims after Hurricane Sandy.

However, considering importance of report by Mr. Braum (for Mero claim), results of this report should reasonably be considered to raise significant concerns about overall quality of engineering services for flood damage claims.

This writer has reviewed many other deficient and even nonsensical "reports" that demonstrate gross incompetence for engineer-authors that should not be the case. Appendix A includes summary review comments for one such grossly inept report.

One wonders why FEMA has been paying for such incredibly inadequate "work product", especially considering relatively high fees that have very likely been charged.

- ☑ Enacting recommendations of this report should reduce gross errors and greatly improve future handling of structural flood damage claims for FEMA.

Evaluation of Conclusions in Reports by Engineers & Others

The following terms are defined for use in this report as follows;

Insurance codeword	Word, term or phrase that has specific meaning or importance for insurance claim.
Codeword conclusion	Conclusion described in report using one or more insurance codewords, without also describing detailed engineering analysis in report.
Engineering analysis	Analysis based on reasonable application of scientific and engineering principles.

As demonstrated by inadequate and deficient reports by Mr. Braum and HiRise Engineering, engineers and others sometimes try to "game" the system by plugging in codewords to their stated conclusions. They of course realize that such codewords may have important effects on decisions to be made by insurance representatives and others using their report.

However, use of codewords without also providing detailed description of adequate engineering analysis amounts to pandering tantamount to fraud, even if "lighter-shade" variety.

In report for Mero claim, Mr. Braum engaged in just this type of "Codeword Conclusion" pandering. In conclusion on page 1, Mr. Braum tosses out the following codewords;

"Hydrodynamic forces"
"Hydrostatic forces"

Though this may be exaggeration, I doubt Mr. Braum had used such terms in any other report he had ever produced (except maybe in college?) prior to his work for evaluation of flood damage claims after Hurricane Sandy.

In nearly-invisible three-sentence paragraph that constituted his entire "analysis", Mr. Braum did not even use "hydrodynamic forces". He bizarrely notes "hydrostatic pressure" as being caused by "saturated" soil, awkwardly described as "property land".

Most important however, as is hallmark of deficient analysis, there are no details to explain scientific and engineering basis for claimed conclusions. Desperate deployment of codewords does not save such "analysis" from being reasonably classified as useless gibberish.

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Effects of Report Modifications – Mero Claim

Complete effects resulting from modification ("alterations") made by HiRise Engineering to original report prepared by Andrew S Braum, PE, for Mero claim, are not known by this writer.

In particular, whether owners (for Mero claim) received additional insurance payment is not known. Status of flood-damaged house is not known.

However, the following is known based on available information;

- National Flood Insurance Program (NFIP) issued letter to owners (Mero), dated August 20, 2013, explaining reasons for denial of coverage for claimed flood damage to foundations and framing elements. Decision was based, in part, on conclusion on page 1 of modified ("altered") report that cracks in foundation walls were due to "consolidation of soil", which resulted in determination that foundation cracks had been caused by "earth movement", an event or condition that is not covered per provisions of Standard Flood Insurance Policy (SFIP).

Key issue to be considered is; If NFIP had used original report by Mr. Braum, whether NFIP should have decided that coverage would be provided.

Of course, without explicit information from NFIP, which is not expected now, we can only speculate how events in the past might have been different. However, it may be useful for modifying process of assessing structural flood damage claims to consider whether events should have been altered.

As discussed in detail later in this report (Appendix B), primary conclusion developed by Mr. Braum (even though completely unsubstantiated) was that saturation of soil due to flooding was essential condition resulting in foundation cracks. This primary conclusion remained in "Analysis" section of revised ("altered") report.

However, summarized conclusion, on page 1 of modified report (by HiRise Engineering), highlighted "settlement due to consolidation of soil" as primary cause of claimed damage, without noting primary conclusion (by Mr. Braum) and without any further discussion to explain how settlement of soil (inserted by HiRise) remained entirely dependent on primary conclusion (saturated soil), even in "altered" report.

Media reports have contended, or at least implied, that flood insurance company (working for NFIP) would, almost of necessity, have had to provide additional payment to owners if original report by Mr. Braum (instead of "altered" report) had been used to develop decision about coverage.

Yet, as discussed in this report, descriptions of reasons for foundation cracks (and other "presumed" damage) in original Braum report were so defective that there is more than sufficient basis to conclude that NFIP should still have denied coverage. Whether NFIP would have denied coverage using original report, even with political pressure to "cave" and provide coverage, is another matter.

Even though, for original report, term "hydrodynamic forces" was noted in summary of conclusions (page 1), that term was not used anywhere else in the entire report, and, most importantly, was not used in Analysis section which formed (or should have formed) basis for summary conclusions on page 1.

In 60 Minutes presentation, Mr. Braum focused, almost exclusively, on mere use of terms "hydrodynamic forces" and "hydrostatic forces" in summary conclusions of his original report, as if the act of stating such codewords should work like magic to not only persuade anyone that claim of structural flood damage must be true, even without convincing evidence, but also to force NFIP to open floodgates holding back compensation.

Yet, consideration of the following essential facts, "glossed over" by 60 Minutes and other enablers, should provide any objective reader insight into reasons that the FEMA flood damage claim process has been failing;

1. Scale and application of forces allegedly caused by flowing water ("hydrodynamic forces") were not discussed in original Braum report. In fact, Mr. Braum did not discuss flowing water at all.

2. Quality of original report was grossly deficient due to lack of basic information and lack of any description of real engineering analysis. Conclusions stated in three-sentence "analysis" were grossly incorrect.

3. Within Analysis section in original report and revised report, "Saturated soil due to floodwater" was offered as basic underlying reason for "flood damage" to foundation elements, even though there was no discussion to explain how "saturated soil" would have caused claimed damage.

4. Mr. Braum did not actually report any conditions that he claimed to be structural damage, other than three minor cracks on outside face of block foundation walls (without details) and ambiguous claim of "tilted piers" (without details).

5. Cracks in foundation walls reported by Mr. Braum did not reduce structural capacity of foundation walls. Mr. Braum did not describe reasons that minor cracks should be considered significant structural damage.

6. Recommended repairs for foundation cracks, in original report, revealed that Mr. Braum did not believe any significant foundation movement had occurred.

7. Experience of Mr. Braum was almost entirely in mechanical engineering, not structural engineering. Even within mechanical engineering, his experience was focused on air quality which is very far from structural engineering. He had no demonstrated experience inspecting buildings in general or damaged buildings in particular. Essentially, he did not have qualifications to be performing flood damage assessments.

Recommendations

The following changes should be implemented by FEMA and firms working for FEMA relative to flood damage assessments of structural elements and systems;

1. Set up structured peer review process for all structural damage claims. Professional engineer (PE) must perform peer review. Such process should allow for debate and communications, arbitrated as necessary, to provide at least some checks on gross errors which have occurred all-too-often.

2. Require that decisions about structural damage claims, made by insurance companies, must be based only on certified ("signed and sealed") reports from qualified professional engineers licensed in applicable state. Additional safeguards to prevent forgery should also be considered.

3. Implement procedures intended to ensure that insurance companies do not make decisions about structural damage claims based on grossly deficient engineering reports. Process must ensure that "Codeword Conclusions" that do not have supporting, detailed analysis in writing by responsible engineer are rejected by insurance companies as grossly inadequate.

4. Produce standard manual intended for engineers, adjusters and insurance representatives charged with making decisions about structural flood damage claims, showing examples of common conditions and listing necessary information to be determined and reported by engineers.

5. Require periodic inspections of insured buildings, focusing especially on foundation elements and conditions. Interval of inspections should be not more than 10 years or whenever property is sold. Coordination with general home inspection firms and engineering firms could result in efficient process. Photos and other documentation of existing conditions found during inspection should be obtained and stored to provide baseline for future comparison.

6. Produce standard manual intended for homeowners, with illustrations and photos to explain basic issues that repeatedly arise with flood damage assessments of structural elements, such as benign cracks in foundation walls.

7. Have qualified, experienced engineers provide webinars for adjusters and less experienced engineers before heading out on inspections after major storms and throughout the year as well. Such engineers should also serve as mentors that provide assistance with flood damage evaluations, especially after major storms.

Media Reports

Several media reports and presentations are discussed, from earliest to latest.

Asbury Park Press – January 5, 2015

Front-page article by reporter Russ Zimmer, published in Asbury Park Press (APP) on January 5, 2015, entitled *"Reports to be opened in Sandy suit",* discussed issues with flood insurance coverage for single-family house in Belmar, New Jersey.

Discussion for evaluation of this article is provided elsewhere in this report, along with evaluation of later APP article. Also see comments emailed to reporter at the time (Appendix A).

Article included the following, with underlines made for this discussion;

> *Sperber's insurer, Selective Insurance, which didn't respond to requests for comment, paid them for the contents of the home but denied most of their claim for structural damage, providing the family with $600 to buy stucco and paint to cover the cracks in a home that is no longer safe to live in.*
>
> *"I had it for 10 years," Sperber said of her flood insurance policy. "They had no problems taking my money, but when I make a claim, they act like thy haven't heard of me."*
>
> *US Forensics, the engineering firm in the middle of that New York case, was retained by Selective to do the review on Sperber's home. The engineering report it released to her stated that the damage to the foundation mortar was caused by age, not by the rushing floodwaters from Sandy.*
>
> *A second report, prepared by SDII Global for the insurer, wavered a little more, acknowledging some evidence of erosion as a result of Sandy but concluding that the damage was more attributable to pre-existing conditions.*
>
> *Sperber hired Schkeeper Professional Engineering to look at her home and to critique the reports prepared at the behest of Selective. Schkeeper concluded in August 2013 – before the questionable revisions exhibited in the Long Beach case were made public – that "it appears (the US Forensics) report was prepared by someone other than the engineer (of record)."*

> *Schkeeper referred to US Forensic's report as "totally unreliable" in the report it wrote for Sperber. It found the damage to her foundation was indeed due to Sandy, whose salty floodwaters had eaten away – and even eight months later were still eating away because of remaining moisture – at the brick mortar. Another firm hired by Sperber, KSI Professional Engineers, reached similar conclusions.*
>
> *Sperber's property was assessed by Monmouth County at a value of $223,900 before the storm. Now it's worth $88,800 less, and the family lives in a rental around the block while still paying the mortgage on their uninhabitable home – a double whammy on their life savings.*
>
> *They're also paying out of pocket for those engineering reports they commissioned to dispute what US Forensic and SDII Global concluded. One-third of whatever the family is able to squeeze out of Selective through the courts – they filed suit in February 2014 – goes to their attorney.*

Small photo included with article shows what appears to be point of screwdriver or edge of steel trowel inserted into partially open (unfilled) mortar joint at inside face of brick wall, with awkward caption;

> *An angle hangs from where mortar is no longer present between bricks in the basement of Mike Irwin and Krista Sperber's house.*

New York Times – February 16, 2015

Article of February 16, 2015, "Hurricane Sandy Victims Say Damage Reports Were Altered", by David W Chen, describes details of how altered engineering reports were initially discovered along with early events in legal proceedings.

Among various media reports on this issue, the following is relatively unique;

> *In March 2013, Stephen and Sarise Dweck, whose home in Manhattan Beach, Brooklyn, flooded during the hurricane, were surprised when they learned that a report written by an engineer hired by their insurer, the Hartford Financial Services Group, had determined that cracks to the foundation of their house had not been caused by the storm. The engineer, hired by HiRise Engineering, had indicated otherwise during his visit.*
>
> *The Dwecks contacted the engineer, Harold Weinberg, who lives nearby. He, too, was perplexed, because the final report differed from his submission, yet included his signature and professional seal. "The false report issued by HiRise, purportedly in my name, is a forgery," Mr. Weinberg later wrote in an affidavit.*

"Seal" in this context could mean compression seal or rubber stamp, both allowed by New York PE regulations. Most likely way this could happen is if alterations to text were made on page that did not include signature and seal or stamp of engineer. Regulations generally require that, for reports (as opposed to plans), only one page of report must be certified ("signed and sealed") by engineer. However, altering report with engineer seal indicates greater level of deception compared to other "altered report" cases.

The following is then reported;

> *The Dweck's lawyer, Mitchell B Shpelfogel, informed Harford of what he believed was fraud in July 2013. After a lawyer for Hartford warmed that the Dwecks' claim would be denied unless another opinion was sought, they relented, and that second engineer agreed with the insurer. The family filed an administrative appeal with FEMA but was denied.*
>
> *Now, newly discovered correspondence filed in federal court raise serious questions about the manner in which the Dwecks' claim was handled and is being cited by the plaintiffs in the suits as part of a broader allegation of racketeering.*

Report then turns towards speculating on motives of engineers;

> *David R Charles, a longtime claims adjuster in Jersey City, said insurance companies were naturally oriented towards minimizing payments.*

Mr. Charles later appears in Front Line program by PBS as described elsewhere in this report. Description of Mr. Charles as "claims adjuster" is misleading, since he was operating public adjustment firm, which works for homeowners, not insurance companies, as hinted at but not fully explained in the following at end of article;

> *"The reason that the engineering reports are like this is they know where their bread is buttered," said Mr. Charles, now president of Master Claims Consultants. "It's a sword that dangles over the head of every adjuster, every engineer."*

Accusation of conflict of interest charged by Mr. Charles is self-serving and biased itself, since his entire business is based on trying to shake as much money out of insurance companies as possible, using "whatever-it-takes" methods. Yet, the point of potential conflict of interest remains valid, for those on each side of claims evaluation, and should be addressed by FEMA and other relevant government agencies.

60 Minutes – March 1, 2015

On March 1, 2015, TV program 60 Minutes aired segment entitled “The Storm After The Storm”, narrated by correspondent Sharyn Alfonsi, about issues with Sandy-generated flood insurance coverage.

This writer watched this presentation during original airing and then again online. Transcript, available online, has also been reviewed. Comments sent (via email) to producer after original presentation are included in Appendix.

Recently, in wake of Hurricane Harvey, 60 Minutes showed this presentation again, with minor discussion before and after.

Description of evaluation (by this writer) is provided in separate section after description of presentation.

Segment begins with views of small single-family house in Long Beach, New York. There is no apparent damage, yet narrator claims the following dramatic events;

> *The city condemned Kaible’s home, saying it was damaged beyond repair. The house had been knocked off its foundation.*

Very brief scene, showing conditions in shallow crawlspace, does not show any obvious damage to foundation wall or wood beam. No specific damage is described by narrator.

Presentation then turns to issue of engineering reports alleged to have been altered by insurance companies, with discussion between Ms. Alfonsi and attorney Steve Mostyn;

> Steve Mostyn: There's been systematic fraud on the policyholders who've filed flood claims from Sandy.
>
> Sharyn Alfonsi: What's the fraud?
>
> Steve Mostyn: The fraud is taking engineers' reports and changing them from saying there was structural damage to saying there's no structural damage, or giving the engineers a form to fill out that already has the conclusion of no structural damage.
>
> Sharyn Alfonsi: Why would anyone do that?
>
> Steve Mostyn: Save money. The biggest ticket item inside a claim, for a flood claim, is the structural damage. And so when they don't pay for structural damage, they save hundreds of thousands of dollars on each claim.
>
> Of the thousands of cases lawyer Steve Mostyn says he's found, electrician John Mero and his wife Gail's is the most revealing. Their house is in East Rockaway, New York.

Presentation then shows Ms. Alfonsi talking with homeowners and discussing conditions during Hurricane Sandy;

Sharyn Alfonsi: What was this street like in the days, the day after Sandy?
Gail Mero: Six-foot-high water in the street.

John Mero: Well, the day after, it was like Armageddon.

The Mero's house had to be torn down after the storm. Their insurance company paid them just $80,000 and now they're buried in debt after rebuilding their home.

John Mero: I was like how can you tell me that you're not gonna cover this, that I'm not gonna get the full amount of my insurance? I says, "You got my payments every month." Said, "It's time for you to pay and here's what you're gonna tell me?"

It was two years later that the Meros felt a second wave hit them, when the engineer who assessed their home after the storm called them out of the blue.

John Mero: The engineer sent his report in to the insurance company saying that the house was damaged due to flood. The structural damage is caused by the flood. And from what I understand, the insurance company changed it, changed his words, without him knowing.

This is Andrew Braum, the engineer who could no longer stay silent.

Scene then shifts to discussion between Ms. Alfonsi and professional engineer Andrew Braum, PE, starting with discussion about Hero-house in Long Beach, New York inspected by Mr. Braum;

Braum told us not only were changes made to his engineering reports, but he was asked to cover it up. He showed us the original report he'd written about the damage to John and Gail Mero's house.

Andrew Braum: We assess in the conclusions hydrodynamic forces, hydrostatic forces due to the flood, caused a cracking and shifting throughout the foundation.

Sharyn Alfonsi: So you're saying the flood caused this damage?

Andrew Braum: Correct. And then, in the revised or the altered report, it says, "Settlement due to consolidation of soil caused the foundation wall to crack." That's not what I wrote. It's completely altered.

Braum inspected more than 180 homes after Sandy, working for a company called HiRise Engineering. After he discovered the changes made to the report he wrote about the Mero's home, he went back to check all the copies of his original reports against the final copies that the homeowners received.

Sharyn Alfonsi: How many of those reports were doctored?

Andrew Braum: At least 175 of them or approximately 96 percent is the number that I calculated.

Sharyn Alfonsi: A hundred and seventy-five of your reports were doctored?

Andrew Braum: Correct. They were altered.

Evaluation – 60 Minutes

Presentation by 60 Minutes is underwhelming at best, making one wonder (and hum tune by Peggy Lee)……Is that all there is?

Key issues are not clearly reported.

Basic contention we hear over and over is synthesized into the buzzword-like phrase "structural damage", without any specific, verifiable details. That phrase is then used, almost as campaign slogan, to justify claim for large-scale compensation, including the maximum $250,000 amount.

Levels of "structural damage" are almost not even considered.

For Kaible house, 60 Minutes did not show or discuss any written report by "the city" or even mention any municipal inspector or engineer. There was no description of sloping floors, wide cracks in finish materials or any other obvious adverse condition that would have occurred and been observed for house "knocked off its foundation."

Limited views in crawlspace showed no obvious damage. If there was damage, the narrator should have described, but that did not happen.

- ➡ 60 Minutes did not show any evidence whatsoever to demonstrate any structural damage at all, let alone severe, almost catastrophic structural damage as claimed.

60 Minutes failed to demonstrate that house was "knocked off foundation", which should have been easy to show.

- ➡ For any house that has been "knocked off foundation", there must be some part of foundation that is exposed. Damage to top of foundation walls very often occurs also, as anchor bolts are broken out of walls. Failure to show such exposed foundation or damage very likely means that such claim was false. At the very least, such failure in reporting raises very big red flags about validity of claims and quality of reporting.

Attorney Steve Mostyn claims that engineering reports were altered to state "no structural damage". However, he does not explain whether any such alterations were for no structural damage caused by floodwater during storm. While shorthand descriptions are often useful, they can also mislead and even distort events and conclusions.

Although undoubtedly limited by legal constraints, it would have been much more enlightening to see, or at least hear about, details of claims by Mr. Mostyn, who, unfortunately for objectivity, had very large incentive to make the most out of such claims. Yet, Ms. Alfonsi failed to challenge Mr. Mostyn in any way on screen.

Similar to others, Mr. Mostyn discusses “structural damage” as if that term should trigger lights and buzzers of slot machine. He expresses no understanding that there could be various degrees or levels of damage, which, for any objective onlooker, might range from minimal to major.

60 Minutes reports that Mero house “had to be torn down”, yet the only “reason” hinted at was relatively deep floodwater that had occurred around house. They could have referenced “substantial damage” letter from “Chief Plan Examiner”, however they may have realized that claims of structural damage in that letter were so grossly incorrect that quoting letter might have raised major questions about their entire presentation.

Age, size and condition of house before storm is not reported. Basis for amount of $80,000 paid by insurance company is not discussed at all. Value of property is not revealed; almost always the case in reports about flood damage, perhaps to avoid risk of embarrassing owners of high-value seashore land.

Engineer Andrew Braum describes key conclusion of his report (as submitted to his client, HiRise Engineering) as stating that “hydrodynamic forces” caused “cracking and shifting throughout the foundation”, without describing number, locations and width of cracks, nature and extent of “shifting” or whether house remained connected to “shifting” foundation.

- Incredibly, 60 Minutes did not discuss qualifications of Mr. Braum, especially that he was essentially mechanical engineer, not structural engineer; see Appendix B for detailed discussion.

- Mr. Braum did not provide any visual evidence at all (at least not that 60 Minutes found possible to show) to illustrate “cracking and shifting” which apparently was entire basis not only for triggering controversy for Mero house, but also for starting entire public firestorm relative to “altered engineering reports”.

Details matter greatly in structural evaluations.

For example, mere existence of a “crack” does not demonstrate defect with foundation wall. In general, cracks are symptoms, not causes.

Intent of dynamic terms such as “shifting” should be clearly described, especially when applied to foundation elements.

- Presentation by 60 Minutes did not demonstrate that original conclusions determined by Mr. Braum were correct. In fact, as demonstrated by this evaluation of original report by Mr. Braum (Appendix B), his original report was grossly inadequate and without merit such that it should not have been considered valid by insurance company.

Failure of 60 Minutes to have qualified engineer evaluate original Braum report prior to airing their presentation demonstrates incredibly defective investigation (by 60 Minutes) or shocking attempt to perpetrate fraud.

Version of Braum report as modified ("altered") by HiRise Engineering was not much better. HiRise undoubtedly realized that codewords used by Mr. Braum, such as "soil liquefaction", were ridiculous, or completely unsupported by "Analysis" which was much too brief to substantiate any conclusion. However, HiRise should have insisted Mr. Braum provide much greater level of detail to substantiate conclusions, or HiRise should have engaged another engineer (hopefully qualified) to provide new report.

Mr. Braum claims that 175 out of 180 of his reports had been "altered". Although no details of any other claim are discussed, and he does not say so clearly, he implies that, for each case, (1) He made determination that at least some structural damage due to floodwater had occurred, and (2) Such determination was changed, in each case, by HiRise Engineering, without his prior knowledge or approval, to conclusion of no structural damage due to floodwater.

It is of extreme interest to know how and why Mr. Braum determined that, for 175 out of 180 houses, structural damage due to floodwater had occurred, yet, according to Mr. Braum, HiRise Engineering determined, in each case, that no structural damage was due to floodwater.

- Based on available information about Mr. Braum, including lack of qualifications and his original report for Mero claim, it is reasonable to conclude that many, or perhaps all, of his other reports were very likely also grossly deficient.

Based on having worked for HiRise Engineering myself in the same capacity during the same time period, it is highly unlikely that all 180 houses were in the same area. Almost certainly, Mr. Braum inspected houses that had experienced wide range of flooding conditions and severity of damage, structural and otherwise.

- Most important is that an open peer review process, with at least one other PE reviewing and commenting on reports by Mr. Braum, would have been much better than the way flood damage claims were handled by HiRise Engineering and by 60 Minutes.

The following issues were not addressed;

1. Whether Mr. Braum submitted, to HiRise engineering, signed and sealed reports.

2. Whether Mr. Braum filed complaint against HiRise Engineering or anyone working for or with HiRise Engineering, for practicing engineering without a license or for any other violation relative to "alterations" of his reports.

National Society of Professional Engineers (NSPE) – April 2015

NSPE included the following in brief statement about 60 Minutes presentation;

> *The 60 Minutes segment brought to the public's attention the important health and safety role that ethical and licensed professional engineers play in investigating structural failures caused by hurricanes and other natural disasters. Importantly, the 60 Minutes story also highlighted the serious ramification and consequences associated with the unlicensed practice of engineering.*

NSPE was apparently trying to accentuate what they considered to be positive aspect of 60 Minutes report. However, as noted in comments provided in this report, the 60 Minutes presentation was woefully misleading and unprofessional.

It is of interest to know if NSPE bothered to check qualifications of Mr. Braum.

- Most importantly, and incredibly, it appears very likely that NSPE did not have any other qualified professional engineer read and evaluate original report by Mr. Braum or "altered" report by HiRise Engineering.

- NSPE did not even raise key issue of having final engineering reports certified by responsible engineer via signing and sealing with engineer license.

New York Times – April 28, 2016

Article of April 28, 2016 in New York Times, by Emmarie Huetteman, describes problems with FEMA process for handling flood damage claims. Statements by US Representative Thomas MacArthur of New Jersey (Republican, Third District) are quoted, including the following;

> *"I have seen doctored engineering reports with my own eyes," he said. "I have seen doctored adjusters reports with my own eyes, where an adjuster wrote something was caused by flood and somebody else inserted the word 'not'" caused by flood.*

It would be refreshing for some intrepid reporter to report contents of so-called "doctored engineering reports" to show how "doctored" really operates in real life. Otherwise, terms like "doctored" merely inflame but do not inform.

Notion that someone might disagree with conclusion of an adjuster is portrayed, by Representative MacArthur and, by implication, Ms. Huetteman, as nearly-criminal, with unstated assumption being that any conclusion of flood damage must always be correct and any attempt to change such conclusion must be nefarious, irrespective of whether flood damage had really occurred.

Yet again, physical evidence and details in such reports tend to be "overlooked".

Issue of whether engineering reports were ever signed and sealed by engineer was not apparently raised by Representative MacArthur.

Public Broadcasting System (PBS) & National Public Radio (NPR) – May 24, 2016

"Front Line" TV program on PBS, with investigative correspondent Laura Sullivan, aired segment entitled "Business Of Disaster" that discussed issues and problems with flood damage claims after Hurricane Sandy. "All Things Considered" radio program on NPR apparently also presented audio-only version of this program, though this writer has not listened to NPR version on radio or online.

This writer has watched Front Line version online (two times) and also reviewed transcript available online, dated May 24, 2016. Transcript, which is condensed version of audio from the one-hour Front Line program, may be the radio version.

Presentation is focused on financial aspects of flood damage claims for insurance companies, government and homeowners filing claims. Numerous interview segments are shown with various parties, including homeowners, officials of government agencies, attorneys and others who formerly worked for insurance companies. One attorney is Steve Mostyn who was highlighted in earlier 60 Minutes program.

About 20 minutes into program, attorney from New Orleans, representing "about 600" homeowners who had filed claims due to Hurricane Sandy, contends that insurance companies had concocted "fake facts" to explain foundation damage being claimed by his clients. However, Front Line does not present any video or photos showing examples of such claimed foundation damage.

About 23 minutes in, Ms. Sullivan interviews David Charles, identified on screen as "flood insurance adjuster", although Mr. Charles states that he had formerly worked as insurance adjuster for 30 years but now works for home owners in some unstated capacity.

Basic research online appears to reveal that Mr. Charles is President of Master Claims Consultants LLC, "public adjuster" firm with offices in Manhattan (New York City) and Hialeah, Florida.

Public adjusters represent insured homeowners to assist with obtaining settlement from insurance companies for damage claims. This writer has worked for such firms on occasion and has met with public adjusters working on damage claims resulting from Hurricane Sandy.

In general, public adjusters have about the same level of qualifications as adjusters for insurance companies, such that they are not qualified to evaluate structural damage claims.

- For PBS to misrepresent occupation of Mr. Charles was misleading. Statements made by Mr. Charles relative to fairness of flood damage claims must be considered biased.

Brief scene shows Mr. Charles and Ms. Sullivan in rough basement of unidentified house, looking at one location where narrow series of short horizontal and vertical ("step") cracks had occurred on inside face of block foundation wall. Total length of cracks was not more than about 4 feet. Mr. Charles contends that greatest category of cost for flood damage claims is "structural".

Although not clearly stated, implication of having Mr. Charles show Ms. Sullivan narrow foundation cracks is that such cracks occurring at one location should reasonably be considered good example of condition that represents major structural defect that would be very costly to remediate.

- Condition of narrow step-cracks shown by PBS is common condition found with high percentage of houses supported on block foundation walls across entire nation. Such condition does not reduce structural capacity of block foundation wall in any practical or significant way, no matter the "cause". Yet, untold hours are being spent by owners, insurance adjusters, engineers, attorneys and reporters dealing with, or even agonizing over, "failure" of insurance companies to pay large sums of money, including sums to replace entire houses, over conditions like this which are not actual damage.

- Primary cause of this problem, as we see over and over in these cases, is grossly inaccurate information (that is, misinformation) resulting from grossly deficient process for evaluating structural damage claims.

The following is reported in transcript;

> *Jeff Coolidge reviewed adjusters' files for multiple insurance companies after Superstorm Sandy. He says he quit his job in part because he was so bothered by what he was doing. The insurance firms he worked for used phrases like "pre-existing", "earth movement" or "ground settlement" to reject homeowners' claims of flood damage. "They use 'settlement' a lot. "Sorry your house looks like it shifted to the left a little bit, but I think it was like that when you bought it,' ", Coolidge said.*
>
> *They told him to pay homeowners less than what they asked to be paid to rebuild, he said. He says that put pressure on him to get the independent adjusters in the field in line to back up these conclusions, or else their flat fee was at stake.*

> *"I've told an adjuster that based on our guidelines that I need you to remove these items," he says. "I send it back for revision. He doesn't agree with that. He'll resubmit it. I'll reject it back."*
>
> *If the adjuster wanted to pay the homeowner more, Coolidge would reject the adjuster's assessment until he got the answer his employer wanted, and in some cases he switched adjusters or threatened to do so. "I'm going to take half your pay and give it to him," he recalls telling several adjusters.*

This reporting unfairly fails to discuss key principles of flood damage policies, which have always excluded damage due to "pre-existing" conditions as well as foundation damage due to "settlement". The problem of course is how to define these conditions, which is yet another reason improved process for handling damage claims is needed.

Reporters should have questioned reason that "adjusters" were being used to evaluate foundation damage claims instead of professional engineers.

Most important, PBS or NPR should have at least reported qualifications of Mr. Coolidge to review foundation damage claims. Based on information provided by PBS and NPR, it is reasonable to conclude that Mr. Coolidge was not an engineer and did not have any special experience that qualified him to assess structural capacity of foundation walls, for any reason.

- ➡ Yet, instead of interviewing qualified structural engineer, PBS and NPR just rely on unqualified person to highlight one of the key problems with process for flood damage assessments.

Near end of program, scene shows "Sandy Review Center" operated by FEMA in Washington DC. Purpose of this Center is explained as reviewing flood damage claims resubmitted in response to court ruling in "altered reports" case that required FEMA to reopen 144,000 claims.

Several staff members of Sandy Review Center are shown looking at photos of (apparently) damage claims on computer monitors. However, narrator does not quite explain work being performed.

- ➡ Work being performed by FEMA employees at Sandy Review Center looks suspiciously similar to what might be described as "peer review" that insurance companies had claimed to be doing before all heck broke loose in "altered reports" court case.

PBS should have asked many more questions to determine qualifications of persons performing reviews for resubmitted claims.

Structural Support LLC
1212 Main Street
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November 20, 2017

Asbury Park Press – October 29, 2017

For five-year anniversary of Hurricane Sandy, Asbury Park Press published (10-29-17; page A8) long article by MaryAnn Spoto entitled *"Victims trapped in 'a storm after the storm'.*

In section "Insurance Nightmares" is the following recounting of events for same house in Belmar NJ discussed in APP article of 1-5-15, with underline made for this discussion;

> *"Krista Sperber and her family had to deal with insurance issues for more than three years before they could move back into their Belmar home.*
>
> *They needed money to replace the foundation. Their house sat in water for a week after Sandy, but her insurance company didn't give them enough to cover the cost. Even after a report from a specialized engineer – hired by the Sperbers at the insistence of the insurance company – concluded the condition of the foundation had made her house "unfit for use", the insurance company wouldn't budge. Company officials contended the foundation damage was not caused by flooding.*
>
> *The family had builders lined up to do the work, but no money to pay for it. And to add insult to injury, she said, she continued paying for flood insurance on a home in which they were still not living.*
>
> *Eventually the insurance company relented, but Sperber says she could have been back much sooner if they didn't have those flood insurance problems."*

The following basic information, easily available, was not provided or explained;

1. Age of house and foundation walls.
2. Condition of foundation walls prior to storm.
3. Actual damage to foundation walls claimed to have occurred.
4. Reason for claim that foundation walls were "unfit for use".
5. House was not moved or displaced by floodwater. Foundation walls were not destroyed or even moved at all by floodwater.
6. So-called "specialized" engineer was professional engineer (PE) whose practice has been focused on home inspections according to web site.
7. No description of similar foundation "damage" to any other homes in the immediate neighborhood or anywhere in Belmar.
8. Intent of flood insurance coverage, as stated in standard policy, is to pay for work to restore house to conditions that existed prior to occurrence of covered damage. Coverage is not intended to pay for major upgrades. Otherwise, cost for policy would have to be much greater.
9. Existing foundation walls were not repaired. Instead house was raised several feet and supported on completely new foundation elements.

Evaluation of Newspaper Articles – Asbury Park Press

Evaluation of newspaper articles published in Asbury Park Press results in the following overall conclusions;

- Reporters did not ask even basic questions about claims of foundation damage. Result is grossly distorted portrayal of actual conditions and events.

- Reporters did not (apparently) try to rely on their own sense to refute preposterous claims of foundation damage claimed to have occurred merely by contact from seawater.

For example, any reporter could have (and should have) easily asked why the hundreds of other houses in Belmar that were immersed in floodwater were not considered, by owners and, most importantly, by municipal code officials, "unfit" for habitation due to mere contact of seawater with foundation walls.

New York Times – November 5, 2017

Article entitled "Thousands Hit by Storms Rely on Wobbly Insurance" (of November 5, 2017) and scribed by veteran reporter Mary Williams Walsh, dives into troubled financial waters of National Flood Insurance Program (NFIP), especially considering major expenses required after hurricanes Harvey and Irma whiplashed Texas and Florida in summer of 2017.

Near end of long article is the following about homeowner in Long Beach, New York;

> *Long Beach, Mr. Clutter's hometown, is on a barrier island off the southern shore of Long Island. When Sandy sent several feet of floodwater washing over it, the piers supporting the Clutter family's foundation collapsed. Upstairs, floors buckled. Walls cracked.*
>
> *Mr. Clutter called Wright National Flood Insurance, the Florida company that administers his policy. Wright sent and independent adjuster, who took photographs with captions like "structural foundation wall has been washed in" and "piers have collapsed – no longer supporting risk."*
>
> *But then, Wright sent a structural engineer from US Forensic of Louisiana who declared that Sandy had not caused the damage.*
>
> *In 2015, Mr. Clutter happened to catch a "60 Minutes" report on the aftermath of Sandy. It included accusations that US Forensic had falsified engineering reports on other people's houses.*
>
> *There were so many disputed claims and questionable inspections, in fact that the government opened an unusual review process for Sandy victims. Mr. Clutter went through it, but said the government's offer fell far short of his repair costs. He sued FEMA and Wright Flood Insurance in August.*

Photo with article shows three pages from "engineer's report", each with two photos and captions that are not legible in newspaper photo. However, one photo from engineer report shows two large block piers in crawlspace, essentially intact. If those were piers that adjuster claimed had "collapsed" then it should be clear that such grossly mistaken description is bigger source of problem then any movement of piers that may have occurred.

Of greater importance however is that, even if two block piers inside crawlspace had been displaced by floodwater, cost to repair such problem is not large enough to justify adding substantial cost for legal fees and taking long period of time to wait for various parties to perform.

This case, yet again, reinforces need for adequate peer review process.

PBS – November 8, 2017

On web site (www.pbs.org), PBS issued article, "Millions More Paid To Superstorm Sandy Victims After Fraud Claims", by Emma Schwartz.

Results of additional reviews are summarized;

> *"More than two years after allegations of fraud prompted the nation's flood insurance program to re-open the claims process for thousands of Superstorm Sandy victims, the government says it has awarded more than $240 million in additional compensation to homeowners."*
>
> *"The lawsuits spurred FEMA, which runs the nation's flood insurance program, to create the Sandy Claims Review. The process gave more than 144,000 homeowners a chance to refile their claims. About 19,000 came forward with the promise of a 90-day review, but the process continues to drag on."*

Reasons for such long delay are not discussed.

Recent actions by FEMA to improve review of damage claims are noted as follows;

> *"FEMA has also made additional changes in how it runs the NFIP and is implementing those practices with flood insurance claims now under review from this year's major hurricanes – Harvey, Irma and Maria. So far, FEMA has received 90,200 flood claims for Harvey and about 30,800 from Irma. The agency says it has developed a more consumer focused training for adjusters; is running a quality check on at least one claim from every adjuster in the response to Harvey and Irma; and has revised the appeals process to provide greater transparency, access and accountability."*

Whether "consumer focused training" might have included instructions about structural damage issues was apparently not determined by reporter.

- ➡ Importance of having final reports signed and sealed by responsible professional engineer is not addressed.

Office of New York State Attorney General

The following 24-page report (not dated) was issued by Office of New York State Attorney General (OAG), apparently about June of 2016;

> *Murky Waters: Increasing Transparency and Accountability in the National Flood Insurance Program*
> *Findings and Recommendations in the Wake of Superstorm Sandy*

This writer has found OAG report to be the best discussion of issues relative to process of structural damage claims that is readily available. Although constructive critique is provided below, New York OAG has performed very useful service for everyone involved in flood insurance claims.

Executive Summary includes the following;

> *As part of our investigation, the Attorney General has identified several fundamental flaws with the National Flood Insurance Program and its administration.*

"Fundamental flaws" are listed below, without additional descriptions included in the OAG report but with numbers that are not used in OAG report;

1. *A lack of clarity in the scope of coverage under the Standard Flood Insurance Policy.*

2. *Inadequate training and lack of certification requirements for structural engineers retained in connection with flood claims.*

3. *Poor administration and supervision of the flood claims process, including the failure to provide important documentation to policyholders.*

The following additional explanation is provided with item 2 in list of "flaws";

> *While adjusters retained to provide services in connection with the flood claim administration process are required to be certified, there is no such requirement for engineers or engineering firms. This lack of certification and corresponding training in structural damage causation analyses can often lead to incorrect or imprecise findings, which may in some instances cause policyholders to be either over- or underpaid on their respective claim.*

- ➡ Claim that "adjusters" are "certified" to evaluate structural damage claims, along with claim that, in general, engineers lack "training in structural damage causation analyses" paints a grossly distorted portrayal of qualifications.

However, considering discussion later in OAG report, it appears that intent of "causation analyses" may be intended to refer only to requirements of Standard Flood Insurance Policy (SFIP) and not technical aspect of engineering analysis. Either way, this explanation should be clarified by addendum.

Acknowledgement, via "over or underpaid" comment, that incorrect evaluations occur both ways provides refreshing honesty compared to one-side diatribes found in almost all media reports on these issues.

The following recommendations for "reforms" (numbered for this report), and intended to "be implemented with little to no incremental cost", are then listed;

1. *Increase the transparency and clarity of the scope of flood insurance coverage and any applicable exclusions through the creation of a plain language disclosure sheet, to provide consumers with a better understanding of what is and is not covered under their flood policy.*

2. *Provide policyholders with all documents created during the course of the flood claim administration process and ultimately relied upon in determining payment or denial of a flood claim, including all final adjuster and engineering reports, as a matter of course.*

3. *Implement a national certification process for all engineers retained to provide structural damage assessments in the wake of a flood event.*

4. *Ensure the transparency of fees paid to engineering experts by implementing a standardized fee schedule for all engineering services and requiring engineering experts to submit supporting paperwork with their invoices seeking payment.*

These well-intended recommendations have some similarities to those proposed by this writer elsewhere in this report. However, OAG recommendations are overbearing in part and should be modified.

Requiring that insurance companies (or FEMA?) provide "all documents" to policyholders would make all parties that typically work for insurance companies hesitant to even participate. Such requirement appears to have been developed for benefit of law firms and OAG offices, not for anyone else who must then be concerned with every marking made on every paper. Such draconian "reform" would not result in sought-after improvement in process.

Claims decisions should certainly be made only on engineering reports that are certified ("signed & sealed") by responsible engineer. However, as seen in NY Times report by Mr. Chen, reasonable safeguards against forgery must also be considered.

Proposed “national certification” process for engineers providing structural evaluations for flood damage claims should be considered. However, certification should be allowed using wide range of methods, including continuing education courses from various providers. Most important is that structural damage assessment should only be performed by qualified engineers, not by adjusters or other unqualified parties.

Imposing “standardized fee schedule for all engineering services” is completely unreasonable and unwarranted. Structural assessments can require large differences in time and effort. Obviously there are also large cost differences between locations.

OAG report discusses requirements for structural evaluations, based on provisions of National Flood Insurance Act (NFIA) as interpreted (apparently) by OAG.

SFIP is abbreviation for Standard Flood Insurance Policy.

The following description of requirements for insurance coverage is included;

> *Accordingly, our investigation has revealed that rather than a "flood" policy as that term is generally used, the SFIP as it relates to assessing recovery for structural damage would be more appropriately described as a "rapidly-moving-surface-water-causing-structural-damage-policy." As a result, the relevant inquiry for assessing structural damage causation analyses pursuant to the SFIP is: did the damage result from: (1) rapidly moving surface water (hydrodynamic pressure), often resulting in horizontal cracking in foundation walls; (2) unequal water pressure on a structure (hydrostatic pressure), often resulting in buoyancy forces exuding upward thrusting pressure on cement flooring; or (3) high-velocity erosion of soil as a result of rapidly moving surface water (scour) that results in the undermining of the structural integrity of a building's pillars. If the resulting damage is caused, at least in part, by one or more of these forces, then the damage may likely be covered in whole or in part. If, instead, the structural damage is otherwise attributable to pre-existing conditions, poor construction, and/ or gradual earth movement (such as erosion)- even if the earth movement is caused by flood-then coverage for any structural damage will be denied.*

Discussion of “earth movement” in last sentence of this paragraph is quite awkward and confusing. Use of bulleted list of exclusions would allow for much clearer explanation.

Contention (or at least strong implication) that “erosion” should be considered prime example of “gradual earth movement”, especially in context of flooding conditions, does not make much sense. Clarification is warranted.

- ➡ Claimed exclusion for earth movement “caused by flood” is particularly puzzling. Much better explanation is essential for understanding intent.

The following is provided in section A2 of "Findings":

As set forth previously, structural coverage is, in general terms, limited to damage caused by wave forces acting directly on a home, and does not include other structural damage caused indirectly by flood waters, such as soil erosion resulting in imbalance or collapse.

- This description is grossly incorrect. Covered damage caused by flowing water is not limited to "wave forces" as most simply understood by visualizing floodwaters flowing along river.

- Contention that structural damage due to soil erosion caused by flood water is not covered is glaring inconsistency with statements made on page 10 of OAG report and copied above in this report.

The following essential discussion about qualifications is then provided, with underlines made for this report;

B. Inadequate Training and Lack of Certification Requirements for Structural Engineers

FEMA requires that adjusters retained to provide services in connection with the NFIP be certified. In order to be certified by FEMA to work on NFIP claims, adjusters are typically required to have no less than four consecutive years of full-time property loss adjusting experience and attend an adjuster workshop, among other requirements. In addition, adjusters are required to take a one day "refresher" workshop each year, and must pass a written examination in order to retain their certification.

Despite this requirement, our investigation has revealed that in the wake of Superstorm Sandy, the demand for available adjusters far exceeded supply, resulting in FEMA's Bureau and Statistical Agent (charged by FEMA as serving as a liaison between the government and the WYO companies) facilitating the "emergency" certification of adjusters through a special, truncated version of the day-long training seminar on NFIP policy coverage.

Unlike the FEMA-mandated certification requirements associated with adjusting companies, there are no such analogous provisions relating to engineer or engineering service firms. To the contrary, engineers providing services relating to NFIP claims are not subject to any type of training or certification requirements. Instead, engineers are merely subject to individual state regulations governing the practice of engineering and their respective licensure requirements. Moreover, there is no FEMA-mandated requirement that an individual assigned to evaluate a subject property be an expert in a particular discipline of engineering (such as structural engineering) or act within their respective area of competency. For example, our

investigation uncovered scores of instances wherein the engineers retained to provide damage causation analyses to structures following flood events were electrical or mechanical engineers. Given the inherent unpredictability of flood events, coupled with its widespread and often devastating effects, WYO carriers are under significant pressure to quickly and efficiently process claims.

Our investigation has revealed that these pressures and lack of available supply of experienced expert engineers tends to result in a wide disparity in the quality of engineering analyses. Our investigation has also revealed that this lack of certification and corresponding training in structural damage causation analyses can often lead to incorrect or imprecise findings, which may in some instances cause policyholders to be either over- or underpaid on their respective claim. Otherwise competent engineers, unfamiliar with the mechanics of flood waters, can and do misinterpret observable data points and ascribe a particular damage causation that is unsupported by the evidence. This lack of available experienced engineers, coupled with a dearth of training and certification requirements, can and does lead to a widely-divergent quality in the underlying work product.

- ☑ Determination that some engineers used by insurance companies are not qualified to perform structural evaluations for flood damage claims is critical to understanding problems with entire process. Office of OAG has provided important service by highlighting this problem.

- ➡ However, OAG report does not then use this essential conclusion to reach what should be the next conclusion, which is that a structured peer review process, using other qualified engineers, must be implemented.

Structural Support LLC
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November 20, 2017

Evaluation of Engineer Report; Belmar NJ

Detailed description of report by engineer (Peter A Schkeeper, PE) for owner of single-family house is provided elsewhere in this report.

Schkeeper report was provided (via email) by reporter for Asbury Park Press in January of 2015, after communications about article by that reporter which discussed events relative to claimed flood damage at house in Belmar NJ.

Within description of Schkeeper report, extensive comments (by this writer) describe evaluation of specific statements made in Schkeeper report.

Other engineering reports referenced by Mr. Schkeeper have not been available for this evaluation.

Summary of Conclusions

Key conclusions of this evaluation are summarized as follows;

1. Overall conclusion is that report by Mr. Schkeeper is grossly deficient such that it is entirely without merit. Schkeeper report should not have been used as basis for any decision and most certainly not for determination of structural damage caused by floodwater during Hurricane Sandy on October 29, 2012.

2. Mr. Schkeeper has demonstrated, by major errors in engineering inspection activities, evaluation and reporting, that he is not qualified to perform evaluations of structural damage for this house and possibly for any building.

3. Basic claim, that contact by seawater caused severe, irreversible damage to masonry foundation walls resulting in “unsafe” conditions, is grossly incorrect and irresponsible.

4. Failure to report any direct observations of deteriorated mortar joints, especially since such claimed condition is primary basis for flood damage claim, demonstrates incredible deficiency with inspection and reporting. This very strange deficiency, by itself, could reasonably be considered as basis for conclusion that report by Mr. Schkeeper is entirely without merit.

5. Use of moisture meter is deficient. Results reported are grossly flawed. Failure to describe even the most basic details of meter, methods and results demonstrates gross incompetence.

6. Claim of structural damage to wood-framed house is entirely without merit, especially considering lack of any description of any damage.

7. Considering grossly deficient evaluation and highly irregular inspection activities, it is reasonable to at least wonder if Mr. Schkeeper actually performed engineering services for this assignment or if he delegated inspection, evaluation and report preparation to some other unqualified person.

Basic Claim

Mr. Schkeeper makes the following basic claim in attempt to substantiate conclusion that completely new foundation walls are necessary for entire house;

- ➡ Salt water from ocean, contacting foundation walls for several days, results in severe deterioration of mortar in masonry walls, such that house must be considered "not safe for continued use" and "no longer structurally sound". Salt water causes immediate damage and continues to cause damage many months after floodwater recedes.

Mr. Schkeeper performed inspection, with owner, on July 23, 2013, almost 9 months after Hurricane Sandy occurred on October 29, 2012.

Mr. Schkeeper does not describe making any observations of any physical damage to brick foundation walls. Based on his review of other engineering reports prepared for flood insurance company, he only discusses statements made in one report that (per Mr. Schkeeper) describe deterioration of mortar on inside face of brick foundation wall. Yet, curiously, Mr. Schkeeper does not describe extent or severity of such deterioration reported by other engineer.

Photo 4 shows outside face of brick foundation wall with mortar joints completely intact although joint surfaces are somewhat rough. Photos 7 & 9 show outer face of brick foundation wall (along front of basement) from under front porch; mortar joints are completely intact and smooth. Photos 10, 11 & 12 show inside faces of brick foundation walls from inside basement; mortar joints are completely intact and smooth except perhaps one small area adjacent to basement window. Conditions shown in these photos are completely inconsistent with dire claims of severe damage to mortar made by Mr. Schkeeper. Most importantly, even if some mortar might have been soft or missing at other locations not photographed, Mr. Schkeeper did not report any such conditions. He also did not report any repointing work performed at any time after storm.

Mr. Schkeeper completely neglects description of any previous experience of his own with evaluation of deteriorated mortar joints, as if he had never observed such condition before Hurricane Sandy. Yet, on his web site, Mr. Schkeeper highlights 40+ years of experience with building inspections, including "historic" buildings.

Mr. Schkeeper makes incredible attempt to substantiate claim by relying on the following "references";

1. Brief anecdotal description of mortar deterioration from web site of home appraisal company in Australia. Issue of time is not directly addressed and no scientific basis is offered. However, implication is that observed deterioration occurred over many years due to repeated exposure to salt-laden moisture in air, not from floodwater.

2. Discussion, from book published in 1921, about deterioration of concrete due to exposure to salt water. Issue of time is not specifically addressed.

Mr. Schkeeper fails to produce any evidence of similar damage to foundation walls, allegedly caused by short term exposure to Sandy-generated flood water, for any other house in the same neighborhood, or anywhere in Belmar, or New Jersey. He fails to produce any evidence of similar damage to foundation walls caused by floodwater anywhere in the entire world, at any time in history, save for "report" of obscure home appraisal company in Australia.

If risk of such grave damage to mortar joints of foundation walls was so great, as to risk almost immediate destruction of entire buildings, and if only Mr. Schkeeper (and one or two oh-so clever Australian home appraisers) was aware of this dire problem, then the following incredible truth would have been revealed by Mr. Schkeeper;

- ➡ For hundreds of years, best & brightest minds produced by Western civilization (at least) had not learned that mere contact with seawater would essentially turn mortar in masonry foundation walls to dust in very short time relative to expected life of foundation wall.

If claimed deterioration and disintegration of mortar joints was caused by several-days exposure to floodwater from storm, the following (at minimum) should have happened;

- Mr. Schkeeper should have notified, in writing, Belmar code officials, New Jersey DCA and surrounding homeowners that dangerous conditions with seawater-damaged brick and block walls existed throughout Belmar and New Jersey such that all buildings with mortar joints damaged by seawater should be evacuated and reconstructed.

- Before all subsequent flooding events, FEMA, Homeland Security and all other responsible agencies should have recommended (or demanded!) that building owners throughout the land must install sandbags or employ other appropriate methods (sheet piling?) to prevent seawater from contacting their building.

- If preventive measures did not work, Code officials throughout New Jersey, and all areas where subsequent flooding has occurred throughout entire United States

(including Houston & Florida) should have issued notices of unsafe structure for hundreds of thousands of houses and buildings, forcing evacuation of millions of persons and shutdown of tens of thousands of businesses.

- During the past 12 years since Hurricane Katrina, tens of thousands of houses in New Orleans, supported on brick and block foundation walls, should have collapsed or been on verge of collapse. Occupants should have been forced to abandon all such houses. YouTube should be filled with dramatic scenes of buildings with brick walls collapsing due to rapid and even sudden disintegration of mortar joints caused by mystical salt molecules, attacking mortar as if from another world.

Clearly such apocalyptic events have not occurred, perhaps thanks to Mr. Schkeeper refraining from revealing his incredible secret.

Consistent with (according to Mr. Schkeeper) very limited knowledge on this phenomenon throughout the modern world, Mr. Schkeeper was not able to produce any references to back up his sensational claim. Nothing from FEMA or Brick Industry Association (BIA) or National Concrete Masonry Association (NCMA) or American Concrete Institute (ACI) or Portland Cement Association (PCMA) or the myriad other technical & research organizations that produce hundreds or thousands of reports about masonry and cementitious materials each year.

- ➡ Amazingly, Mr. Schkeeper fails to address fact that use of masonry foundation elements is recommended even today, by FEMA and other technical organizations (see ASCE 24), as “flood-resistant” material, suitable for use below base flood elevation (BFE) for new construction.

Most egregious is complete failure to address key factor of time, other than to simply claim, without any evidence whatsoever, and contrary to conditions documented by his own photos, that major deterioration of mortar should be expected to occur from several days exposure to seawater.

Without discussing chemical process of mortar deterioration, Mr. Schkeeper theorizes that salt from short-term exposure to sea water should continue to cause deterioration of mortar for many months (and apparently, even years!) after such exposure. He uses such theory to explain disintegrated mortar reported by other engineers (SDII; hired by insurance) in April 2013.

- ➡ If claim by Mr. Schkeeper were correct, then he should have been able to report very clear differences between conditions of brick mortar joints found by other engineers, in April 2013, and conditions that Mr. Schkeeper found four months later. Yet, it is revealing that Mr. Schkeeper not only neglected to report any such differences, but also failed to report any of his own observations of mortar joints.

- Lack of any description, by Mr. Schkeeper, of damage to mortar joints based on his own direct observations indicates irregularities with inspection activities and reinforces overall conclusion of grossly deficient engineering evaluation and reporting.

One guess, to explain reason for defective claim of mortar damage due to floodwater, is that Mr. Schkeeper stretched and twisted logic in misguided attempt to "help" homeowner obtain insurance coverage. For the cynical, such assistance might also be considered abetting insurance fraud.

However, and of course, Mr. Schkeeper is the only one who can explain his intentions.

Subsequent Events

Information about events relative to insurance coverage and construction, subsequent to report by Mr. Schkeeper, has generally not been available.

House in existence at time of Hurricane Sandy appears to have been raised and supported on new foundation elements consisting of piers or columns encased in finish materials. Details of new foundation piers or columns are not known. Person responsible for design of new foundations is not known.

Only very limited observations have been made from street and sidewalk.

- If new foundation piers are concrete block (with, of course, mortar joints), such result would be quite ironic since construction with mortar joints would be completely contrary to key claim made by Mr. Schkeeper, unless piers are waterproofed well enough to ensure seawater could never contact mortar (even below grade) for the next 100-plus years.

Actions and reactions of insurance companies are often not easily deciphered.

However, considering high-profile news stories about "altered" engineering reports during 2014 and 2015, resulting in political pressure on insurance companies relative to Sandy-generated flood damage claims, it may be that Selective Insurance changed their initial decision (not to cover new foundations) for appeasement and appearance reasons, not technical. However, unsubstantiated, fraudulent claims made by Schkeeper report, and repeated in news reports, paved way for such result.

Of interest is whether Mr. Schkeeper ever poured buckets of salt-water on wicked witch insurance companies again.

Engineer Report For Single-Family House; Belmar NJ

Details of report by Peter A Schkeeper, PE are described in this section. Comments for specific statements are also provided.

Schkeeper report, dated August 17, 2013, includes cover page, 17 numbered pages and 3 pages of attachments.

Page 1 includes "Index" with 9 listed items.

At bottom of page 2, scope of work is explained as *"investigate and report on a structural assessment post super-story Sandy."*

Executive Summary (page 2) includes the following key claims relative to flooding and foundations, with underlines made for this discussion;

> *"The entire basement up to the first floor rafters was flooded by super-storm Sandy. Super-storm Sandy was primarily a surge event with some significant wind."*
>
> *"Almost nowhere did the flood waters remain for a week as they did at this location. This is a very important fact as during that period of time the brick foundation was saturated with salt water causing decay of the mortar joints. Structural damage occurred. The porch structure which supports part of the second floor had not yet been renovated but had been structurally damaged by the surge."*

Description of floor joists as "rafters" indicates grossly incompetent reporting and may even indicate lack of appropriate knowledge about structural elements.

As discussed in greater depth later, claim that brick foundation walls were "saturated with salt water" implies, incorrectly, that brick walls have capacity to soak up water like wood or even sponge. Such grossly inappropriate and incorrect description illustrates attempt by Mr. Schkeeper to mislead readers throughout his entire report.

Page 3 lists only basic data, including date of inspection as July 26, 2013. Age of house is not reported. Date that owners purchased property and occupied house is not listed.

"Discussion" on page 4 provides one long paragraph with basic description of services performed by Mr. Schkeeper intermixed with statements describing opinions about flooding conditions during and after storm. Discussion begins with the following;

> *"This engineering assessment was requested to opine on the actual conditions at the house and to evaluate four engineering reports prepared by others. Two engineering reports were requested by the home owner and two engineering reports were requested by the insurance company."*

There is no description of which “engineering reports” were requested by each party.

Lower half of page 4 is filled by “client photo”, with caption, showing floodwater “after the storm had passed”. Photo, which appears to have been taken while standing on front porch of house (not otherwise identified), shows view of street filled with water. Level of water is just below top of porch in foreground of photo.

Pages 5 to 8 include 29 small numbered photos without captions.

Photos 1, 2 and 3 show exterior of house.

Photo 1 shows front and left side of two-story house at this property, with similar two-story house immediately adjacent to right (east) side.

House includes main two-story section with gable roof, and narrow two-story section at back with monoslope roof (Photo 3).

Exterior walls are covered with light-brown vinyl siding. Covered porch extends along entire front wall and wraps around front-left corner, extending back several feet along left-side wall.

Photo 4 shows outside face of brick foundation wall along segment of wall with blue shingle-type siding that does not appear in 3 photos that show exterior of house. Brick wall appears to be in good condition with mortar joints completely intact.

Photo 5 shows small hand-held electrical-meter device with two short metal prongs held against mortar joint of brick wall. Reading of “33.0” is seen in window of device.

Photo 6 shows block foundation wall along left side of front porch. Four courses of block, with textured surface, are above grade. Top course is almost entirely covered by wide strip of wood fascia painted white. Small opening has occurred near front end of wall where two upper blocks are missing. One very narrow vertical crack is seen about 10 feet from front end of wall.

Photo 7 shows conditions under front porch, looking towards small opening near front of block foundation wall along left side of porch, which is seen in Photo 4. Wood floor framing of porch is seen to be in good condition. Wide opening (under stairs) occurs at left end of block wall along front of porch. Block walls are in good condition. Outside face of brick foundation wall at left end of wall along front of main house is also seen. Brick is in very good condition. Mortar joints are completely intact. Sixteen (16) courses of brick are seen to be on top of two courses of block with smooth outer face above grade.

Photo 8 shows closeup of wide vertical crack in block several inches from end of block wall. Location, which is not described anywhere in report, is front-right corner of porch as seen by comparison to photos 1 and 2 (downspout, grass, lack of stairs).

Photo 9 shows conditions under front porch, looking towards right side of space. Block wall along right side of porch includes seven (7) courses of block above grade. Block is in good condition. One block in second course (from top) is missing. Right end of brick foundation wall along front of main house is also seen. Brick is in good condition. Mortar joints are completely intact. Base of brick is supported on three (3) courses of block with smooth outer face.

Photos 10 to 14 show conditions inside basement. Foundation walls above basement floor slab are seen to consist of 16 or 17 courses of brick on top of lower wall, about 2 feet high above floor slab, covered with cementitious ("parge") coating. Where small areas of parge coating have fallen (spalled) away, wall appears to be block (Photos 10, 11). In each photo, brick is seen to be in good condition, without any obvious distress. Very nearly all mortar joints are completely intact.

In photos showing basement conditions, first floor joists appear to be in good condition without any obvious distress. Joists are seen to extend continuously over shallow wood girder supported by adjustable steel columns (posts) on basement floor. Spacing of steel columns is about 6 to 8 feet (Photo 12).

Apparent sump pump is seen in Photo 13 with flexible drain hose extending up to first floor framing.

Photo 14 shows numerous fine cracks in concrete floor slab. Extensive, dense pipes and wiring are seen under first floor framing along with large box against brick foundation wall. Entire height of foundation wall to left of box is covered with coating that appears similar to cementitious coating on lower parts of other foundation walls.

Photo 15 shows closeup of short series of narrow horizontal and vertical ("step") cracks in brick foundation wall, just above lower part of wall. Mortar joints in adjacent brick are intact.

Photo 16 shows same meter as in Photo 5, with prongs against mortar joint and reading of 50.0 in window.

Photos 17 to 20 show closeups of fiberglass batt insulation in between wood framing members. Location cannot be readily determined from photos.

Photos 21 to 29 show interior conditions of house, with several photos showing closeups. Photos 23 and 24 show narrow cracks in blue-painted interior finish, apparently on walls of bedroom seen in Photo 22.

Page 9 ("List Of Documents Reviewed") lists 7 documents, including the following engineering reports;

KSI Professional Engineers	12-4-12
KSI Professional Engineers	3-29-13
SDII Global Corp	4 / 2013
US Forensic Engineering	12-17-12

Apparently, through process of elimination, reports by KSI Professional Engineers must have been prepared for owner. Yet, curiously, Mr. Schkeeper makes no reference at all to those reports.

Other listed "documents" are *"Homeowner Renovation Calendar & initial Sandy events", "Homeowner Hurricane Pictures"* and *"Appraisal Report".*

Pages 10 to 15 ("Findings") include written description of evaluation, organized into nine (9) numbered sections each of which is generally dense text without headings or paragraphs. Seventeen (17) footnotes are listed with references to two of the listed engineering reports and other sources.

- There is no description of observed conditions (during inspection) independent from discussion of evaluation.

Item 1 (pages 10, 11) provides one long dense paragraph with several quoted statements from report by US Forensic ("USF report") intermixed with evaluation of such quoted statements.

- There is otherwise no overall description of US Forensic report, including party that hired US Forensic.

The following statement is made at top of page 10;

> *"It appears that the report was prepared by someone other than the engineer based on the inconsistent language in the report, the title page indicating that the report was prepared by US Forensic in Metairie, Louisiana, and the statement on page 2 where it states "Our work to complete this assignment was performed by Frank Rotonda, PE."*

First example of claimed "inconsistent language" are two statements about sloping of "floor joists" and "floor". However, reason that these quoted statements should be considered "inconsistent" is not explained.

There is no explanation as to whether name and PE license number of Mr. Rotonda appears anywhere in the report. Also not reported is PE license number of Mr. Rotonda and whether Mr. Rotonda is licensed as PE in New Jersey.

The following statement from USF is then quoted;

> "The mortar joints of the clay brick foundation were probed and found to be in a weakened and soft condition.".

However, there is no explanation (by Mr. Schkeeper) as to whether USF report included additional description of brick foundation walls (with photos) or described locations and extent of such "soft" mortar joints.

- ➡ There is no description by Mr. Schkeeper, in his entire report, of any observations that he made of deteriorated mortar at any location. There is also no description of any repairs of mortar joints made by owners in their extensive list of work included by Mr. Schkeeper as attachment.

The following statement from USF report is then quoted;

> "Several areas along the interior of the brick foundation were also observed to have cracks however, the noted conditions were not attributable to the recent flood event and no evidence of recent movement was observed."

There is no explanation (by Mr. Schkeeper) as to whether the USF report provides any additional description of "cracks", including number, size, configuration and locations, or any photos. Note also that the Schkeeper report includes no description of cracks in brick foundation walls and only includes one photo showing very limited crack in block, without any description of location.

Mr. Schkeeper contends, without any discussion about his own observations, that "there is no support for the second part of the statement", referring to reported observation (by Mr. Rotonda) of no recent movement. The only attempt to substantiate this claim is reference (without notation) to "subsequent statement" (in USF report) "about differential movement of the foundation walls." Yet, such "subsequent statement", which is implied to be of great importance, is not quoted by Mr. Schkeeper.

The following statement from USF report is then quoted;

> "The physical evidence observed at the site indicated that the property experienced some depth but no appreciable velocity flow of floodwaters during the reported flood event."

Mr. Schkeeper claims that this statement *"is inconsistent with all known information about Sandy being a surge event where significant wave action occurred as the surge approached. It is also inconsistent with the damage done to the front porch system which was acknowledged in this report."* Yet, Mr. Schkeeper has not provided any evidence at all to substantiate claim that "wave action" occurred at this house at any time. Claimed acknowledgment (in USF report) of "damage" to "front porch system" is not quoted by Mr. Schkeeper.

Item 2 (pages 11, 12) provides one long dense paragraph with several quoted statements from report by SDII Global Corp ("SDII report") intermixed with evaluation of such quoted statements. Explanation is provided that SDII report was prepared for "Selective Insurance Company."

- ➡ There is otherwise no description of the SDII report.

Dense paragraph starts with string of three quotes, noted to be from page 5 SDII report, including the following (from SDII);

> "Extensive deterioration of the mortar between brick masonry units was observed throughout the interior joints inside the basement where the mortar had decayed to sand. Mortar residue was observed on the face of the brick and in small piles at the base of the basement walls. Missing mortar was observed in the joints. Please note that observations of the exposed brick on the east exterior elevation revealed similar deterioration of the mortar up to the base of the vinyl siding."

Mr. Schkeeper then inserts the following statement in front of another quote from page 5 of SDII report;

> *"The following statement is particularly important as the lack of structural distress is due to the recent cause of this condition by the super-storm Sandy."*

"The following statement" referred to (from page 5 of SDII report) is then quoted;

> "Despite the observed deteriorated mortar, the foundation walls appeared plumb and did not show signs of structural distress."

Although SDII should have reported extent and severity of "deteriorated mortar", it is reasonable to conclude that SDII determined there was no structural damage and certainly no structural damage caused by floodwater.

- ➡ Convoluted, perversely-worded claim by Mr. Schkeeper, apparently trying to contend that "lack of structural distress" is somehow "due" to effects of floodwater is simply bizarre and laughable. One must wonder if Mr. Schkeeper wrote report that he issued in his name.

Mr. Schkeeper than lists string of three quotes, noted to be from page 6 of SDII report, including generalized statement about potential damage that could be caused by moving floodwater at any location and the following;

> "SDII observed some evidence of scour and erosion of soils but it does not appear that this condition results in any structural damage."

Mr. Schkeeper then criticizes SDII for including *"an approving reference to the US Forensic report".* Quoted portion of referenced statement from page 8 of SDII report apparently claims that US Forensic did not recommend any repairs since US Forensic attributed "observed deficiencies" to "pre-existing and long-term progressing conditions".

Item 3 states that *"wind and tide data"* are not included (in Schkeeper report) since *"Those referenced by the SDII report are adequate."*

- ➡ Mr. Schkeeper does not provide any description of extent of floodwater in Belmar or of any damage to surrounding houses.

Mr. Schkeeper then contends that *"Some of the conclusions reached by SDII are not supported based on facts.",* without any description of such conclusions or discussion to substantiate such claim.

Mr. Schkeeper then claims that *"The US Forensic Engineering report is totally unreliable"* because Selective Insurance *"retained a second engineering report."* Yet, Mr. Schkeeper presents no evidence for the implied and unsubstantiated supposition that Selective Insurance had determined the USF report to be unreliable.

Item 4 starts with claim of *"structural damage"* to *"front porch that provides structural support for part of the second floor."* The following statements are then made;

> *"As seen in my photos 1& 2 the left part of the second floor is supported by the porch structural system. Photos 6, 7, ** [8]*, & 9 show structural movement of the front porch foundation system which was acknowledged by the SDII report which confirmed scour and surge wave forces."*

For further discussion, segments of exterior walls are identified as follows;

W101	Segment of front wall along first floor, about 10 feet long, with right end at front-right corner of house (Photo 2).
W102	Angled segment along first floor (Photo 2). Right end intersects with left end of W101. Segment is angled about 45 degrees with respect to W101. Left end intersects with front end of W103.
W103	Wall along left side of first floor.
W201A	Segment of front wall along second floor that is directly above W101.
W201B	Segment of front wall along second floor to left of W201A.
W203	Wall along left side of second floor.

As most clearly seen in Photo 2, W201B is over roof of front porch without any corresponding first-floor wall below. Similar condition occurs for front part of W203.

Mr. Schkeeper does not provide any specific description of how load from exterior walls on porch roof are distributed to porch columns and foundation elements.

Photo 6 shows outside face of block foundation wall along left side of porch, without cracks other than one very narrow vertical crack about 11 feet from front end of wall. Photo 7 shows inside face of this block wall, also without cracks. Photo 7 also shows inside surface of block foundation wall immediately adjacent to right side of porch stairs, without any cracks, along with wide opening in this foundation wall under stairs.

- ➡ Contrary to assertion by Mr. Schkeeper, no evidence of any significant movement of foundation walls is shown photos 6 and 7. Complete lack of discussion by Mr. Schkeeper to demonstrate claimed evidence of foundation movement destroys his credibility.

Mr. Schkeeper does not provide any description of measurements to show slope of porch floor. He does not provide any description of support conditions for porch columns or any closeup of foundation conditions in this area.

Photo 8 shows crack at front end of foundation wall at front-right corner of porch, as demonstrated by downspout that is seen at front right corner of porch (Photo 2) but not at front left corner (Photo 1) and by lack of stairs.

Photo 9 shows foundation wall conditions to right of porch stairs. This photo does not show any cracks in block foundation walls or any other condition that would even indicate very small movement.

Mr. Schkeeper than claims;

> *"Reconstruction of the front porch structural system is necessary. This failure is a direct result of super-storm Sandy."*

Mr. Schkeeper has not even described any details of "front porch structural system" let alone any damage to any elements of this "system".

- For Mr. Schkeeper to claim "failure" of "front porch structural system" without any description of framing or foundations, and without description of any condition that remotely resembles "damage" to framing, or to foundation elements other than one very minor crack, demonstrates an incredible attempt to exaggerate and mislead.

- To then claim that such invisible "failure" was definitely caused by "super-storm Sandy", 9 months after storm, elevates such incompetence to level of fraud.

Item 5 starts with statement that "mortar decay was acknowledged by the SDII report.", without (again) describing any observations of mortar deterioration by Mr. Schkeeper.

The following statement is then made;

> *"The fact that the walls remain plumb during the SDII inspection is in fact confirmation that the decay was recent due to salt water saturation by super-storm Sandy for a period of 7 days."*

Awkwardness of "remain plumb during the SDII inspection" demonstrates inept writing skills and also indicates strange notion that movement of foundation walls might have occurred during an inspection, for no logical reason.

- Most importantly, Mr. Schkeeper provides no logical basis for absurd claim that lack of any deformation of brick walls should be considered "confirmation" that deteriorated mortar was caused by short-term contact with seawater. This claim is so nonsensical as to raise major doubts about qualifications of Mr. Schkeeper to be considered expert for this evaluation.

Mr. Schkeeper has not described any measurements to determine vertical position of any foundation walls for entire house. Based on his own photos, it appears that all foundation walls were essentially without curvature or tilting at time of his inspection. If otherwise, it is reasonable to conclude that Mr. Schkeeper would have reported such defects; yet he did not.

The following statement is then made;

> *"Photo 5 shows that during my inspection almost 8 months after super-storm Sandy the exterior of house brick mortar contained 33% moisture and photo 6 shows that the interior brick mortar moisture maxed out this instrument. Both readings indicating that an excessive amount of salt saturated water remained in the mortar exacerbating the rate of deterioration."*

Mr. Schkeeper has not described device ("instrument") used to allegedly measure moisture content of mortar in brick walls. He states that readings reported by device are direct measurement of "moisture content" in percent, though percent of what is not explained. He does not explain to what depth (from outside surface) this device is intended to measure water content or whether it is even intended for such use by manufacturer.

It is quite puzzling that photos (5 & 16, not 5 & 6) show use of device at locations where mortar is not obviously deteriorated and not even described as being deteriorated by Mr. Schkeeper. Yet Mr. Schkeeper has claimed that contact with sea water for only several days should be considered sufficient to cause severe "decay", to the point of complete destruction, as shown by powdery mortar conditions reported, not by himself, but by SDII during inspection three months earlier.

In his statement about claimed "moisture content", Mr. Schkeeper fails to note reading of 50.0 for mortar on inside face of wall, which, according to Mr. Schkeeper, would have to mean 50-percent moisture content, which is ludicrous.

Reporting such "results" as valid, before even considering lack of adequate testing procedures, is so incredibly absurd as to completely destroy whatever small amount of credibility might remain for Mr. Schkeeper.

As seen by comparison of brick coloration in Photo 4 and Photo 5, measurement taken in Photo 5 was within about 6 inches of top of foundation wall. Mr., Schkeeper has reported that maximum floodwater elevation was just at bottom of siding. Considering that floodwaters completely receded within several days, it is reasonable to conclude that water level was lower than upper courses of brick walls within much less time. Mr. Schkeeper is then claiming that, due to exposure to water for 2 or 3 days at most, water content at outside surface of mortar was 33-percent or higher fully 9 months after flooding event.

Most important is failure to perform adequate testing to demonstrate any hypothesis, as shown by the following;

- Lack of any baseline measurements for moisture content (using same device) of mortar for foundation walls that had not been immersed in flood water.
- Only two test measurements reported, for entire house.
- Lack of any measurements for mortar in foundation walls of nearby houses.
- Lack of any measurements of water content of brick.
- Lack of any data from qualified company or industry organization to show expected moisture content for mortar & brick in brick foundation walls, for ordinary above-ground ("dry") conditions, for underground conditions and for conditions after flooding.

Without adequate testing procedures, "measurements" of "moisture content" reported by Mr. Schkeeper would be effectively meaningless even if correct, especially as basis for substantiating deficient condition and structural damage.

- However, reported "moisture content" values are grossly flawed.

First, moisture meters with probes measure "moisture content" only at tips of probes which is not more than about 1/8-inch into mortar (if that). Essentially, "moisture content" is being measured only at surface of wall. However, for purposes of evaluating amount of water within brick wall, such surface "measurement" is practically useless since there must be some volume to have meaningful "moisture content".

Much more important however is that reported "moisture content" value of 33-percent (let alone 50-percent) for mortar is so highly unlikely that reported reading must be considered defective without much further information about wall conditions at test location, such as cracks or joints filled with water. Such reading would mean that weight of water in material would be equal to 33-percent of the weight of solid material, which, for practical purposes, is not feasible for mortar.

There simply is not enough air space in mortar to accommodate so much water.

"Measuring Moisture Content In Historic Building Materials", Research Report 43-2016 published by "Historic England", describes testing to determine moisture content of brick and "lime mortar" immediately under brick. Moisture content was determined the old-fashion way, by weighing materials before and after oven drying.

Of 51 test results, 43 showed moisture content of mortar not more than 6.5-percent. Of the other 8 results, described as "outliers that were wet", 7 values had moisture content of 12-percent or less with one value at 15 percent.

As comparison, even at 95-percent relative humidity, "equilibrium moisture content" of wood, which is much more porous than mortar, is about 24-percent ("The Encyclopedia of Wood", by USDA Forest Products Laboratory, 2007; page 3-7, Table 3-4).

Note that Mr. Schkeeper did not present any background information whatsoever about moisture content of brick walls.

The following statement is then made;

> *"This house was constructed more than 100 years ago so without specific testing it can be assumed that the brick is a weaker more porous brick requiring a softer lime mortar."*

No evidence for age of house is provided. No basis for comparison is discussed for use and understanding of terms "weaker", "more porous" and "softer"; softer than what?

As determined by this writer, per data available online (njparcels.com), house was built in 1912.

The following statements are then made, with underline for this discussion;

> *"I have consulted with Ann Stanley who works for The Brick Industry Association and is <u>experienced</u> in historic preservation. She indicated that salt water will deteriorate brick mortar and referred me to <u>a report</u> that states: "The softer lime mortar used in external brickwork prior to the 1960s can be substantially affected by salt deterioration….The salt deterioration can extend through the brickwork either partially or to the full width of the external course of brickwork……In extreme cases, the mortar will disintegrate and allow downward stacking of the brick and eventually collapse of the external walls…….External surface repointing or cement rendering of the building will be structurally inadequate as in the majority of cases the deterioration of the mortar extends all the way through the bricks."*

Position, length of experience and qualifications of "Ann Stanley" are not described.

No direct quote from Ann Stanley is provided. One would think that, for such an important reference, Mr. Schkeeper would have obtained email message (at least) from Ms. Stanley to buttress his incredible claim.

- Most importantly, Mr. Schkeeper conveniently (for his attempt to mislead) "forgets" to discuss essential issue of time that it takes for salt water to cause deterioration of brick mortar.

Considering that Ms. Stanley allegedly has experience with historic preservation, she was almost certainly talking about effects due to very long-term exposure to salt water.

Footnote reference for "a report" is web link that brings up page from Australian web site by "David Hall Building Appraisers". Lack of any attribution for this "report" is, by itself, failure on part of Mr. Schkeeper to report truth as should be case for professional engineer.

So-called "report" is nothing more than brief discussion along with several photos purportedly buttressing claims by author, who is not even identified. There is no reference to test results of any kind; merely anecdotes about deterioration that has occurred over long period of time.

Note that even this discussion says nothing about short-term effects due to floodwater. Instead, it is about long-term effects only for "external course of brickwork" which is exposed to humid air and rain water.

- For Mr. Schkeeper to reference, as primary basis for his claim of mortar damage, completely unsubstantiated anecdotal comments from obscure Australian web site by completely unqualified person, not even identified by name, reinforces conclusion that Mr. Schkeeper engaged in attempt to mislead (at best).

The following statements are then made;

> *"Another reference for the adverse affects of salt water on lime mortar is included in Frederick Spalding's book "Masonry Structures" which states: "There have been numerous instances of failure of concrete subject to the action of sea water, the causes of which are not fully determined. The results of experiments seem to indicate that salts contained in sea[l] water act upon nearly all cements to which the water has free access, producing compounds which expand, disrupting the mass of mortar, or which soften the mortar and cause disintegration. This action is probably due to sulphates in the sea water, which are decomposed in contact with the free lime of the cement, the sulphuric acid comb[in]ing with the lime…..Those cements which contain the most lime are usually most affected by the action of sea water."*

Mr. Schkeeper fails to explain that this book was published in 1921. However, most important is that discussion in book is about concrete, not "lime mortar" for brick walls.

Essentially, Mr. Schkeeper has either told a big fib about discussion in book by Frederick Spalding, or Mr. Schkeeper was cherry-picking and did not understand the difference between lime mortar and concrete, which, if true, would yet again discredit his qualifications to be considered relevant for this case.

Since 1921, there has been almost uncountable developments that have exponentially increased understanding of the behavior of concrete, based on thousands of test programs, using equipment that those living in and before 1921 could not even dream about.

For Mr. Schkeeper to reach back to book from 1921, and completely ignore volumes of information from modern times, highlights his attempt to mislead. He is literally grasping for something, anything to obscure reality.

Discussion in book by Mr. Spalding is focused on concrete. Basic ingredients of concrete are cement, sand, water and stone. The term "mortar" used by Mr. Spalding is not the same as mortar used for masonry. This can be seen by considering Spalding's use of the complete term "mass of mortar" which is intended to refer to volume of cement paste which holds together stone aggregate.

However, even if this stretch by Mr. Schkeeper were to be considered to have any validity at all, there is the essential issue of time that must be addressed. Once again, Mr. Schkeeper ignores this key problem for his thesis. There is no discussion by Mr. Spalding of any damage caused by short-term exposure to salt water.

The following statement is then made;

> *"The fact that the basement was saturated with water for 7 days and the fact I found excessive moisture levels in the mortar during my inspection almost 8 months after Sandy indicates that the brick mortar is not safe for continued use. Based on the referenced information repointing is not feasible and the brick foundation is no longer structurally sound."*

Description "basement was saturated with water" demonstrates, yet again, poor writing that indicates (at best) report was rushed and not checked. Also, error was made in reporting, since date of inspection was about 9 months after Sandy, not 8 months.

Claim of "excessive moisture levels" in mortar is also nonsensical for reasons previously described.

Mr. Schkeeper is claiming that "repointing is not feasible" based on reference that amounts only to obscure Australian web site with brief comments published by unidentified and certainly unqualified person working for company identified as "appraisers". Such claim demonstrates ignorance and deception.

- Most important is ludicrous, grossly exaggerated claim that "brick mortar is not safe for continued use". Mr. Schkeeper has not provided even minimal evidence to substantiate such grossly exaggerated and irresponsible claim.

Item 6 (page 14) discusses "substantial work" performed by owners "since they acquired this house." Claims are made of cracks in finish materials being "Probably due to wind action rather than flood".

Item 7 (page 14) is brief discussion about "wetted appliances" and "wetted electrical devices" to be replaced.

Item 8 (pages 14, 15) states that *"new flood zone will be AE with a base flood elevation requirement of 10 feet."*

The following statements are then made;

> *"Obviously the house will need to be elevated and below grade space either eliminated or modified to conform to FEMA "dry floodproofing" or "wet floodproofing" requirements."*

Elevation value of first floor was not reported such that Mr. Schkeeper did not have enough information to reach conclusive determination that house had to be raised for flood protection.

- However, failure to note that completely new foundation walls or other foundation supports would be required to support raised house is glaring omission that indicates underlying basis for Mr. Schkeeper's insistence that foundation walls are "not safe".

Item 9 (page 15) starts with benign statement that "Guidelines set by FEMA" should be considered "reasonable standard of care for Professional Engineers". Yet Mr. Schkeeper has not referenced any "guidelines" published by FEMA as basis for his overall claim of "unsafe" structure, or for any claim at all.

Reference to basic tenets governing practice of professional engineering are then brought forth, along with the following statements;

> *"It is inconceivable that a Professional Engineer would fail to recommend retrofitting a damaged flood-prone residential structure consistent with reasonable standards of care. I believe that the professional engineers responsible for US Forensics and SDII reports have exposed themselves to misconduct under NJ regulations."*

Mr. Schkeeper did not discuss or recommend “retrofitting” in previous discussion. In fact, he did not make any recommendations for remedial work at all other than raising house, which he knew, or should have known, was not within scope of basic flood insurance coverage.

Description of house as “flood-prone” undermines his entire thesis, which is based on the essential, though unstated, condition that flooding during Sandy was the only time foundation walls of this house had been contacted by seawater. Otherwise, if such contact had occurred at any prior time during “100 year” life of this house, Mr. Schkeeper should have noted such important fact and also highlighted that, per his key claim, such contact should have already rendered house “unsafe”. But then he would expose such theory to total failure since mortar joints were still filled with mortar and foundation walls were still standing without any structural damage.

Regulations – Professional Misconduct

Regulations governing practice of professional engineering include the following;

> **13:40 – 3.6 Reporting Incidents of Professional Misconduct**
>
> If a licensee has knowledge of reason to believe that another person or firm may be in violation of or has violated any of the statutes or rules administered by the State Board of Professional Engineers and Land Surveyors, he or she shall present such information to the Board in writing and shall cooperate with the Board in furnishing such information or assistance as may be required by the Board.

If, as he stated, Mr. Schkeeper believed that engineers for US Forensics and SDII had engaged in "misconduct under NJ regulations" then Mr. Schkeeper had clear responsibility to report such occurrences to Board of Engineers. Failure to report such misconduct would have itself been violation of regulations.

Evaluation of Conclusions By Engineer

Section entitled "Conclusion" is provided on page 16, as follows;

> "*The brick foundation walls have been damaged and are no longer structurally sound due to exposure to salt water for seven days due to super-storm Sandy. This house requires a new foundation system and needs to be elevated consistent with current FEMA guidelines. The front porch structure which supports part of the second floor of this house has been damaged due to surge water from super-storm Sandy. Porch structural reconstruction if necessary. There has been wind driven water entry to the attic and second floor of this house from super-storm Sandy. All water damaged materials need to be removed, source of water entry determined probably by water testing, and repairs effected. All flood water wetted electrical components and all appliances wetted by the flood waters need to be replaced. The opinions in this report are expressed within a reasonable degree of engineering certainty."*

Lumping all conclusions together into one dense paragraph demonstrates lack of care for anyone reading report. List of conclusions would have been much more professional.

Considering that focus of report should have been on claimed damage due to flooding, inclusion of claimed damage due to other causes is confusing and unprofessional.

Of particular interest is lack of the "not safe" claim made previously. Such inconsistency indicates major lack of care with details of reporting.

- Key claim, that structural capacity of foundation walls was effectively destroyed by short-term exposure to seawater is grossly incorrect and without any reasonable basis. This claim is completely without merit and should not have been considered reasonable by insurance company or any legal authority.

Claim that "front porch structure" was "damaged due to surge water" is completely unsubstantiated and without merit. No specific damage has been reported to any element of "porch structure". For Mr. Schkeeper to contend that "reconstruction" is necessary, without providing any evidence of damage, demonstrates incredibly brazen approach.

Apparently, Mr. Schkeeper had no concerns that details of his grossly incompetent and fraudulent evaluation and reporting might be identified and refuted by any other engineer.

Attachments

"Appendix" (page 17) provides only list of attachments;

1. Homeowner time line of improvements and initial super-storm Sandy events
2. FEMA current Base Flood Elevation data

First two pages of attachments (not numbered) provide detailed listing of work items performed from November 2002 through 2012. Costs are listed with many items.

No repair work for foundation walls or any foundation elements is listed at any time through entire period.

Second page includes brief description of events on October 29, 2012. Apparently, owners remained in house during storm. At 7:37 pm "husband" is noted to have reported ("screaming") that floodwater was approaching house.

Listing at 8:12 pm notes "We have about a foot before we have water in the 1st floor." Based on available information, floodwater did not reach surface of first floor.

- ➡ In stark contrast to repeated use of term "surge" by Mr. Schkeeper, no description of waves is provided by owner. No impact of any kind is reported.

Considering that adjacent house on east side would have completely blocked any waves against right-side wall, and considering lack of any damage due to waves reported for such adjacent house, it becomes essentially impossible to believe claims of wave action due to "surge" made throughout report by Mr. Schkeeper.

There was also no report of any significant soil erosion from under or near foundation walls.

- ➡ Essentially, claims of "surge", intended to mean wave action, made repeatedly by Mr. Schkeeper were completely fabricated. Mr. Schkeeper did not present any evidence whatsoever, not even by owners themselves, to substantiate such preposterous claim.

Single-page attachment is printout of data obtained using "My BFE" provided online by FEMA. Under "Preliminary Work Map Data", Base Flood Elevation of "10 ft (NAVD88)" is listed. Date at bottom right of printout is 8-17-13.

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November 20, 2017

Appendix A

Asbury Park Press - Communications With Reporter

After reading his article of 1-5-15, I sent email message to Mr. Zimmer with comments, including the following;

> Deterioration of mortar in brick foundation walls is a well-known condition which occurs over very long time period. I have observed at least 100 such conditions over the years, including many brick foundation walls along the shore.
>
> I am not aware of any scientific evidence to demonstrate a claim that short-term exposure of seawater has any adverse effect on materials of brick foundation walls. Consideration of basic history also easily demonstrates this conclusion.....as just one example, look at old brick forts at or near coastline subjected to constant exposure to seawater for well over 150 years.

After response from Mr. Zimmer and phone discussion, Mr. Zimmer provided copy (via email) of report by Peter A Schkeeper, PE for house on Sperber property in Belmar.

I reviewed Schkeeper report and submitted comments (via email) to Mr. Zimmer, including the following;

> However.....the two references cited (page 13) for claim of mortar deterioration due to Sandy flooding are not convincing in the least.....in fact they are flimsy and grossly misleading.
>
> He implies that the first reference (footnote 14) is from Brick Industry Association.....when in fact this reference is merely from an Australian web site by "David Hall Building Appraisers" (see link below), hardly an expert on scientific matters, especially without much more information about credentials. This "reference" includes statement (slyly ignored by Mr. Schkeeper) that is intended to focus on long-term problems caused by exposure to salt-laden moisture (not just seawater itself). There is no discussion (in reference) about short-term exposure, especially due to flooding. Yet, even the claim of long-term damage (in reference) is not substantiated by any reference to testing or any scientific evidence whatsoever.....merely opinion-based supposition.
>
> http://www.buildingdefects.com.au/defect-salt-deterioration.html
>
> Of more importance is the lack of any reference (by Mr. Schkeeper) to any publication by the Brick Industry Association itself.....or even to any direct statement by "Ann Stanley" of BIA (without any position listed).....quite telling.

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November 20, 2017

Brian Trimble, PE.....Regional VP of Engineering Services for BIA.....has expressed opinion (today) that exposure to floodwater from ocean has no adverse effect on brick foundation wall.

Quote from second reference (textbook by "Frederick Spalding" without any other citation).....is specifically about "concrete".....not mortar in brick wall. Most important however is the lack of any discussion (by Mr. Schkeeper) about the time period for damage discussed by the author (Mr. Spalding). In fact.....as can be understood by just about anyone.....tens or hundreds of thousands of concrete structures along the coast line (even many subjected to daily tides) have performed for many years before any damage has occurred.....and almost all such damage is due to corrosion of steel reinforcing bars in concrete, not chemical damage to concrete itself.

Incredibly.....book by Frederick Spalding has initial publication date of 1921. Many aspects of concrete deterioration have been discovered and documented (voluminously) since 1921.

Mr. Schkeeper should of course be able to provide a modern reference to substantiate his claims; the fact that he has not speaks volumes.

➡ Mr. Zimmer did not (to my knowledge) ever include any of these comments in any of the numerous subsequent articles he wrote for Asbury Park Press.

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November 20, 2017

Owner-Provided Engineering Report; Brick NJ

For house in Brick, New Jersey, I prepared an "addendum" report (issued by HiRise in February 2014) to describe my evaluation of engineering report submitted by owner after my initial report had been issued by HiRise in February 2013.

Below are conclusions stated (in my addendum report) about report prepared for owner by other engineer, which was truly atrocious;

> *Report by engineer for owner is grossly deficient. By itself, extreme brevity and disorganized nature of report demonstrates lack of adequate inspection and evaluation.*
>
> *No evidence is provided to substantiate implication that foundation walls have been damaged by flood water during storm. No actual report of foundation damage is described other than an ambiguous report of "movement", without any details of physical conditions to demonstrate movement or damage.*
>
> *Key issue of foundation settlement is completely neglected.*
>
> *Claim that house was lifted (floated) by floodwater is completely without merit. No direct evidence of lifting is provided. On the contrary, direct evidence showing conclusively that house was not lifted was ignored.*

I do not know how much the owner was charged by that engineer. However, owner should not have had to pay anything for grossly incompetent work. This type of shoddy work by incompetent engineers occurs all-too-often.

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November 20, 2017

John F Mann, PE

From: "John F Mann, PE" <jmann77@optonline.net>
Date: Monday, March 09, 2015 12:19 PM
To: <kev@cbsnews.com>
Subject: Storm After The Storm

Mr. Tedesco.....after watching (twice) "Storm After The Storm".....and reviewing transcript.....I am astounded at the lack of obvious questions that should have been asked.

I am professional engineer (PE) licensed in New Jersey and other states (though not New York currently). I have been structural engineer for 38 years; refer to web site for details of experience. After hurricane Sandy, I performed inspections and prepared reports for various clients, including HiRise Engineering, for which I prepared about 80 reports relative to flood damage claims in New Jersey.

Experience described by Mr. Braum (in the presentation) is not anything like my experience with HiRise Engineering. However, I am fully aware of potential for problems with the process; back around 2001 I had to stop working for similar firm due to unauthorized changes they made to couple of my reports without my knowledge. This is why I made it very clear to HiRise before I accepted assignments for Sandy-evaluations that my reports would remain as written by myself unless I made changes (myself) based on further information.

In recent months, I have had discussions and communications about this specific issue (engineering reports for Sandy claims) with AP reporter from New Orleans, writer for Business Week and reporter for Asbury Park Press.

Although I could (and perhaps should) write a short book .....for now, I offer the following comments and questions about "Storm After The Storm";

(1) Mr. Braum claimed that 175 of his 180 reports were "altered". However, Ms. Alfonsi never challenged him to explain the extent and importance of such alterations. For example, of the claimed 175 "altered" reports, how many were changed such that conclusions about structural damage were removed or greatly modified? Ms. Alfonsi and 60-Minutes imply that all 175 reports were "doctored" so that a conclusion of structural damage (by Mr. Braum) was eliminated entirely .....which I find quite difficult to believe, especially without any specific evidence being offered other than the very brief description by Mr. Braum.

(2) After contact with numerous homeowners, I have found that many owners developed the idea that they are entitled to the entire $250,000 maximum flood coverage to .....literally.....tear down existing house and build completely new house, irrespective of the extent of damage. They seem not to understand (or want to believe) that insurance coverage has always been intended only to repair damage and restore the building to

condition before damage occurred. I suppose not all that surprising is that many reporters (who know not very much about construction or insurance coverage) simply tend to agree with such attitudes without challenging owners (and politicians) with basic questions. The other .....mostly unstated issue.....is that owners understand that cost of raising the house (which is generally mandated by building code in NJ) is not covered by basic flood insurance.

(3) Many homeowners (especially those with public adjusters) greatly exaggerate claimed structural damage.....either because of the "natural" tendency to want more coverage, or because they simply do not have the knowledge to properly evaluate structural damage (or both). However, reporters should not accept such exaggerated claims (or ignorance) without at least probing for specific evidence.

(4) For specific case of Mero house, the only coherent statement offered in 60-Minutes presentation by Mr. Braum..... *"We assess in the conclusions hydrodynamic forces, hydrostatic forces due to the flood, caused a cracking and shifting throughout the foundation."*.....sounds very much like there was relatively minor damage to foundation walls. Otherwise, 60-Minutes and Mr. Braum should have described wholesale destruction.

(5) I certainly agree with Mr. Braum that peer review should be conducted by qualified engineers. Did 60-Minutes make any attempt to have another qualified PE review the original Braum report and the altered HiRise report? Such "peer review" is clearly warranted (and should have been performed before 60-Minutes aired the presentation).....especially given the highly negative comments made by various commentators during the past several months about peer review, which is an essential function.

(6) In transcript.....photo of the Mero house shows a typical wood-framed house that appears essentially intact. Certainly there is no apparent evidence of any major structural damage to the house framing. The very brief video that (as implied) showed conditions in crawlspace, did not show any obvious major damage to any element. Even if the house had been shifted off foundation walls.....(and that would have to be proved).....the cost to move relatively small rectangular house back onto shallow foundation walls.....or to completely rebuild all foundation walls.....is just not that great; perhaps $30,000 to $40,000. Most important is that the need for any such foundation repair work should not automatically result in any conclusion that the entire house must be demolished.

(7) In my experience, many homeowners try to claim (either to exaggerate or due to lack of knowledge) that mere cracks in block foundation walls means, or should mean, that the entire foundation system is grossly defective. This is just not the case, as should be clear to anyone who walks around any single-family house supported on block foundation walls.....during which inspection, you will almost always see numerous cracks.

(8) After sudden event such as hurricane Sandy.....firms like HiRise must quickly find PE's to perform inspections. The fact is simply that many PEs do not have much experience with forensic engineering in general.....and, most importantly, with evaluation of

residential structures. Quality of inspections and evaluations is bound to vary greatly. Some evaluations are bound to be incorrect.....including some that will be grossly incorrect. Therefore, at least some review process is warranted to attempt to correct any such incorrect assessments.

(9) Claim (by owner and 60-Minutes) that evaluation made by PE licensed in North Carolina (and not New York) was performed by "unlicensed" person.....is grossly misleading at best. Of course, inspection should be performed by PE licensed in the particular state. However, you should have at least noted that the person was licensed as a PE in another state.

Please contact me with any questions.

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Appendix B – Mero Claim

Qualifications; Andrew S Braum, PE

This discussion is based only on information currently available.

Overall conclusion is that, prior to Hurricane Sandy, experience of Mr. Braum as consulting engineer had been almost entirely in area of mechanical engineering. Experience with structural engineering appears very limited, with almost no structural engineering experience with buildings.

- Most important is that Mr. Braum does not describe any experience with evaluation of structural elements and conditions for any buildings, other than for his work after Hurricane Sandy.

- At time that 60 Minutes prepared their presentation that was aired on March 1, 2015, they should have been able to determine that Mr. Braum did not have adequate qualifications to perform structural flood damage claims. However, 60 Minutes did not discuss qualifications at all.

Per information provided online by New York Office of the Professions, Mr. Braum was licensed as professional engineer in New York as of February 16, 2000.

On web site of "ASHRAE Long Island", Mr. Braum is listed as having been President in 2003. ASHRAE (American Society of Heating, Refrigeration, and Air Conditioning Engineers) is well-known organization for engineers typically described as mechanical engineers.

Reasonable conclusion is that expertise of Mr. Braum, prior to Hurricane Sandy, was in field of mechanical engineering such that he could reasonably be described as mechanical engineer. Even more important however was that his advertised expertise was in area of design and evaluation of air quality systems, which is quite far afield from structural engineering.

There is no evidence that, as mechanical engineer with special expertise in air quality system, Mr. Braum had been engaged (prior to Hurricane Sandy) in development of force-stress calculations similar to those performed by structural engineers, for any structures other than (perhaps) "bulkheads". However, no examples of any bulkheads are discussed on web site.

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Web Site; ASB Engineering PC

Basic information about experience and qualifications of Mr. Braum is available on the following web site of ASB Engineering PC, engineering firm operated by Andrew S Braum, PE.

http://www.asbengineering.com/

Address of firm is listed as Bellmore, New York which is on south shore of Long Island, very near where much flooding during Hurricane Sandy occurred.

It is reasonable to conclude that HiRise Engineering hired Mr. Braum to perform inspections and evaluations for structural flood damage claims because he had PE license and was located close to areas where flood damage had occurred. HiRise Engineering almost certainly did not hire Mr. Braum because of any relevant experience.

Web site does not identify any other engineer working for ASB Engineering PC.

Under "Experience You Can Trust", statement is made that "ASB Engineering has been licensed for over 14 years". However, Certificate of Authorization number is not listed on web site; see discussion below for requirements.

- For Mr. Braum to allow his name to be listed on reports with only name of HiRise Engineering identified, and without any identification of himself as independent consulting engineer operating firm with different name, is grossly misleading at best and may have been violation of regulations governing practice of professional engineering in New York.

As highlighted by the following description of engineering services for "Residential" projects, expertise appears to be mechanical design, with expertise in air quality systems, even though "structural design" is noted;

> We work with homeowners on residential plans for bulkhead, pools, sprinklers, heating, cooling, generators, central vacuums. We also do structural design, repairs and alterations, including house lifts. We can help homeowners with leaks, french drains, and/or solve stubborn mold, mildew and ventillation problems.

No examples of structural design for residential projects are provided.

Limited discussion for "house lifting" appears to describe engineering services for lifting operations, performed by other "local businesses"; design of new foundations is not discussed.

The following project types are listed under “Commercial”;

Air Inflated Buildings
Hotels
Indoor Pools / Dehumidification
Marine / Bulkhead
MEPS

For “Air Inflated Buildings”, the one photo provided shows air pumps only.

Detailed description for “Hotels” includes discussion for indoor air quality only.

“Indoor Pools / Dehumidification” highlights design to control “Humidity” for indoor pools.

“MEPS” includes three photos with headings of “Mechanical”, “Electrical” and “Plumbing and Sprinklers; Dry Fire Suppression”.

“Marine / Bulkhead” is certainly within realm of structural engineering, however it is somewhat of specialty item.

The following expertise is discussed for “Industrial” projects;

> Specialists in New Design, T.I.E.R. Audits, Optimization of Existing Equi[p]ment

The following description is provided;

> The TIER Audit is an evaluation of existing HVAC, dust collection, ventilation and process equipment in a facility.

Additional detailed discussion describes engineering related to indoor air quality only. Such air-quality expertise clearly appears to be primary focus of engineering services provided by Mr. Braum.

The following information is provided on web site of New York Office of the Professions;

> Section VIII
> Certificate of Authorization to Provide Engineering/Land Surveying/Geology Services
>
> Section 7210 of New York State Education Law requires that all business entities providing professional engineering, geology, and/or land surveying services in the State of New York obtain a "Certificate of Authorization to provide Engineering and/or Land Surveying Services in New York State" from the State Education Department.

Regulations in Section 7210 do not clearly address situation of otherwise independent PE allowing another engineering firm (or any other firm) to identify such PE as apparent employee in reports.

Mero Claim Against FEMA

Set of documents relative to flood insurance claim for Mero residence, highlighted in 60 Minutes report, is available online. Source of documents is not entirely clear, though it appears to be from case file, from Eastern District of New York, of owners against New York Central Mutual Fire Insurance Company.

Very limited redactions have been made in the several documents.

Some files have apparent case file information printed in red across top of page, including "CLP-GRB-RER", which are initials of the three presiding judges listed on various orders, and "Filed 01/18/15". Case number is partially redacted.

The following documents are within apparent case file available online, consisting of 34 total pages, listed in order as presented within entire set;

1. Single page (not dated) with one-paragraph summarizing events of Mero claim. Author of summary is not provided.

2. One-page letter, dated March 7, 2013, from Gail & John [Mero; redacted] to FEMA "Mitigation Directorate".

3. Report (4 pages text & photos plus 12 pages photos) by HiRise Engineering PC describing evaluation of house after flooding due to Hurricane Sandy. Across top of page is listed dates of "November 17, 2014 (12/20/12 server date)". Names of "Andrew S Braum, PE, Project Engineer" and "Matt Pappalardo MS, Department Manager" are listed at end of text at top of page 5.

4. Report (4 pages), dated January 13, 2013 by HiRise Engineering PC describing evaluation of house after flooding due to Hurricane Sandy. Names of "Andrew S Braum, PE, Project Engineer" and "Matt Pappalardo MS, Department Manager", with hand-written signature of each person, are listed at middle of page 4.

5. Two-page report by Joel W Schachter, PE, dated December 7, 2012, for owners of Mero residence.

6. One-page letter, dated December 12, 2012, by Louis Carnevale, Chief Plan Examiner for Town of Hempstead Department of Buildings.

7. Three-page letter, dated February 12, 2013, by New York Central Mutual Fire Insurance Company Flood Insurance Processing Center, apparently submitted to owners [names mostly redacted].

8. Two-page "Proof Of Loss", addressed to "New York Central Mutual Fire" with hand-written date of March 7, 2013 and signatures of (apparently) owners on lines labeled "Insured".

9. Two-page letter, dated August 20, 2013, by James A Sadler, CPCU, Director of Claims for National Flood Insurance Program to owners [names partially redacted].

Intent of further discussion is to evaluate process of flood damage claims used for Mero claim. However, ways that relevant activities have resulted in damage to perceptions of professional engineers are also discussed.

Any testimony that Mr. Braum may have given at depositions or at trials for this case or any other similar case has not been available for this evaluation.

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Reports for Mero Claim

In 60 Minutes presentation, Mr. Braum is shown reading from report that he claims to be his original and reporting (in scene) the following alleged statement or statements, starting with "hydrodynamic forces";

> *We assess in the conclusions hydrodynamic forces, hydrostatic forces due to the flood, caused a cracking and shifting throughout the foundation.*

Such statement is not in "Conclusions" section at beginning of report dated January 13, 2013.

- ➡ However, as discussed in detail later in this report, Mr. Braum neglected to note that his essential conclusion in original report was not changed or modified ("altered") report.

Similar, though different statement is in "Conclusions" section at beginning of report with "server date" of December 20, 2012, as follows;

> *Soil liquefaction, hydrodynamic forces and hydrostatic forces during the flood caused cracking and shifting throughout the foundation and inside the home.*

Report for Mero residence with "server" date of December 20, 2012, and on letterhead of HiRise Engineering LLC, is considered original report by Mr. Braum for the following reasons;

1. Similarity of statement in December 20 report with statement reported by Mr. Braum, on 60 Minutes, to be from his original report.

2. Lack of any similar statement (from 60 Minutes presentation) in January 13 report.

3. Earliest date, even though later date is also noted.

Original version of report, elevated to prominence by 60 Minutes and celebrated by National Society of Professional Engineers, essentially ignited entire legal proceedings for "altered reports" cases.

- ➡ Yet, original report by Mr. Braum is grossly deficient, demonstrating completely inadequate engineering analysis.

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Report by Andrew S Braum, PE - "Server Date" of December 20, 2012

The following data is listed at start of report;

Insured:	John and Gail [last name redacted]
Property:	[house number redacted] Street West East Rockaway, NY 11571
DOL:	10/29/2012
File:	7060

Within "Conclusions" section on page 1 are the following three conclusions, numbered for this report;

1. *Soil liquefaction, hydrodynamic forces and hydrostatic forces during the flood caused cracking and shifting throughout the foundation and inside the home.*

2. *We are unable to draw conclusions as to the condition of the floor and wall structure as the sheet rock, wall and floor finishes have not been removed. However, given the extent of the cracking and the observed unevenness in the floors, we conclude that elements of the wall and floor structure were damaged during the flood event.*

3. *HiRise Engineering did not observe any structural damage to the house as a result of rapidly moving surface water, scouring, wind, poor drainage, or inadequate construction techniques.*

Use of "we" implies that at least one other person participated in preparation of report and development of conclusions. Yet, Mr. Braum is the only professional engineer identified as having provided engineering services for evaluation of claim.

No evidence was reported that could possibly substantiate claim of "soil liquefaction" which occurs during seismic (earthquake) events only. Anything remotely akin to soil liquefaction would have resulted in large-scale movement and destruction.

No evidence of floodwater conditions during storm were reported at all other than height of water noted via "water line" in house.

No evidence was reported to substantiate claims of "hydrodynamic forces", which is just attempt to make flowing water sound more mysterious and dramatic.

No evidence was reported for any damage condition that could have been caused by "hydrostatic forces" which is discussed in more detail later in this section.

Conclusion 1 is modification of similar conclusion stated in Analysis section of report, however with two key changes;

- Soil saturation, claimed (in Analysis section) as primary underlying condition causing "soil liquefaction" and "hydrostatic forces", is not noted.

- "Hydrodynamic forces" is added, even though such term is not used anywhere else in entire report and flowing water is not described.

Two sentences in Conclusion 2 are obviously contradictory. Reading those two sentences elicits response of What? Second sentence describes conclusion that wall and floor framing ("structure") elements were damaged by floodwater. Yet, no details of any such damage or even suspected damage are described. No attempt is made to explain how any such damage could have occurred.

- Cracks in wall and ceiling finish do not indicate or demonstrate that wood framing elements have been damaged unless there is also obvious significant deformation of wall. However, no such deformation was described in report. Drywall cracks can easily occur due to small movement which can be caused by various events that do not result in framing damage.

As just one example, impact from household items floating in water could easily crack drywall that has been weakened by water.

Contrary to dramatic and unsubstantiated claim of "hydrodynamic forces" in Conclusion 1, Conclusion 3 explains that no evidence of structural damage due to flowing water was found.

- During 60 Minutes program, Mr. Braum and 60 Minutes conveniently "overlooked" glaring inconsistency between Conclusion 1 and Conclusion 3, even though entire storyline about "altered reports" was based on Conclusion 1 being correct.

At least partial explanation for puzzling inconsistency may be that report is written as if group of persons working for HiRise Engineering was responsible for conclusions of report, not just Mr. Braum. Yet, Mr. Braum has contended (in 60 Minutes presentation) that original report was written only by himself. Accepting such contention can only mean that Mr. Braum contradicted himself, perhaps without even realizing, due to inconsistent and contradictory conclusions in report.

Photo on page 2, labeled as "Figure 1", shows aerial view of neighborhood.

Under "Observations" front wall of house is defined as south side and shown in photo at top of page 3 labeled "Figure 2". Photo at bottom of page 3, labeled "Figure 3", shows what appears to be short vertical gap, described as "cracks", near end of foundation wall.

Observations are described in just four paragraphs, including the following which is only description of structural elements in entire report;

> *The home is wood-framed with wooden floor joists and partition walls that rest on a CMU perimeter foundation and wood and steel piers located in the crawlspace below. The exterior of the home is finished with vinyl siding that was observed to be in average condition. A water mark was noted 31 inches above the 1st floor. The entire floor was inundated.*
>
> *Three vertical cracks in the foundation were observed in the outside perimeter foundation. Due to their condition, cracks were concluded to be relatively new. Furthermore, several piers underneath the house were observed to be vertically out of level.*

This tortured description is filled with so many twisted terms, incorrect statements and glaring omissions (even in such short span!) that it is reasonable to conclude Mr. Braum barely understood what he had observed.

No sizes or basic conditions of any structural elements are described. Shorthand of "foundation" for block foundation wall is just annoying and indicates lack of attention to basic detail. There was no valid reason to omit "wall" from such short description.

Description "wood and steel piers" is indicative of observations made by person who does not regularly observe supports for wood floor framing in crawlspaces. Term "pier" is more appropriate for wide support element, such as block or brick pier having plan dimensions of at least several inches in each direction. Much more appropriate term for elements seen in photos provided by Mr. Braum is "post" or "short column". Material, size and condition of such support posts or columns should have been noted, along with conditions at base of each post or column.

Engineer fails to describe number of such "piers" and, most importantly, element or elements that each pier is (or was) supporting. Posts (so-called piers) were very likely supporting wood girder that was supporting first floor joists. Yet, such girder, which is (or would be) primary structural element, was not described.

Two photos show measurements taken (as noted by captions) to demonstrate slope of first floor. However, incredibly, no measurements are reported in text or in photo captions. Direction and location of floor sloping is not reported.

Engineer awkwardly reports three vertical cracks “in the outside perimeter foundation”. Appropriate description would have been cracks in outside face of foundation wall.

For Photo 3, caption “southwest foundation cracks” indicates multiple cracks although only one “crack”, which looks more like open mortar joint, is seen. “Southwest” may have been intended to refer to southwest corner but is, yet again, just confusing.

Length of visible “crack” (Photo 3), in wall above grade, is not more than 8 inches, yet such condition is not described. Locations and widths of cracks are not reported.

Claim is then made that foundation wall cracks were “relatively new” without any explanation as to how such determination was made or intent of “relatively”.

- ➡ No description of any tilting or vertical movement of any foundation wall is reported.

“Several cracks” are then reported on inside faces of (apparently) wall and ceiling finish materials. In text, locations of cracks are noted only in general terms. Crack widths are not reported. Photos show cracks however captions are generalized only.

The following nonsensical statement is then made;

> *Total affected area of cracking was approximately 100 linear feet.*

Presumably, intent was to try and describe surface area of walls and ceiling “affected” by cracking, although even such corrected description would remain awkward at best. Describing crack in wall surface as affecting area of wall surface makes no sense. Of course, “area” is not consistent with “linear feet”.

Statement is then made that wall studs and floor joists could not be observed since wall and floor finish materials were intact. Such claim is inconsistent with claimed observation of “piers” in crawlspace supporting “floor joists”.

The following absurd statement, without any logical evidence, is then made;

> *However, given the extent of cracking and unevenness of the floors, we presume that the parts of the wall and floor structure were damaged during the flood event.*

Amount of “unevenness” is not reported. Also, there was only one habitable floor, not multiple “floors”.

Use of "we" indicates someone other than Mr. Braum is also responsible for conclusions of report, which might be considered consistent with having name of Mr. Pappalardo at end of report. However, since Mr. Pappalardo was not licensed engineer, there was no valid reason for his name to be listed, as Mr. Braum undoubtedly realized but failed to prevent.

- Most ridiculous however is presumption of structural damage without reporting any evidence of actual damage to structural elements.

Mere cracks in wall finish are not evidence of any structural damage to wall framing, especially without any evidence of wall deformation.

Water damage to wood floorboard or even floor sheathing (if applicable) is not evidence of any structural damage to floor framing. There must be physical evidence of cracked, crushed or deformed framing members to substantiate claim of structural damage.

Two paragraphs are provided under heading of "Analysis", with first merely restating obvious condition that flooding had occurred.

Second paragraph, similar to paragraph on page 1, starts with the following, with text eliminated in revised report underlined for emphasis in this discussion;

> *As the property land became saturated, soil expansion, hydrostatic pressure and soil liquefaction put irregular stresses on the foundation, thus disturbing the structure's static equilibrium.*

Such preposterous nonsense would be amusing if not for damage caused to respect of public for engineering profession; "disturbing the structure's static equilibrium" indeed (ha!), as if a house should be presented (to readers) as mystical black box that no ordinary person should be able to decipher.

Clear language is essential in these reports, which must be readily accessible to wide range of readers including insurance representatives, homeowners and, if necessary, attorneys and others charged with understanding conclusions in reports to make important legal decisions.

One reason that 60 Minutes allowed only very brief "look" into reality of report by Mr. Braum now becomes clear; they must have realized that revealing any more of tortured writing, as well as lack of details, could very well torpedo entire premise of their dramatic presentation.

Most important, however, is to understand that overall conclusion, of structural damage caused by floodwater, is based on the following three sub-conclusions claimed in the one sentence;

1. Floodwater caused saturation of soil under and around house.

2. Saturation of soil caused "soil expansion, hydrostatic pressure and soil liquefaction" conditions.

3. Conditions caused by soil saturation resulted in significant foundation movement causing damage to foundation elements and supported wood-framed elements.

For media reports and legal claims, focus has been entirely on sub-conclusion 2.

- ➡ Yet, as discussed later in this report, sub-conclusion 1, which is basis for the other two sub-conclusions, remained the same in "altered" report.

There was no logical basis, and certainly no evidence, for any conclusion of "soil expansion" which, if it had occurred, would have caused upward force on foundation elements. Evidence of actual conditions does not support any such theory of upward force caused by expansion of soil under house. Soil expansion requires specific types of soils ("expansive soils") which would have to be demonstrated by soil samples.

As for claim of "hydrostatic pressure", it is important to first understand that hydrostatic pressure simply means pressure caused by water that is static (not moving). In this context however, it is even more important to realize that hydrostatic pressure is not caused by saturated soil.

- ➢ For Mr. Braum to contend that "hydrostatic pressure" should be considered result of saturated soil condition highlights his lack of competence for flood damage assessments.

For "hydrostatic pressure" to have any potential for causing damage, there would have had to be clear evidence of condition such that height of water on one side of wall could have been substantially greater than height of water on other side of wall, resulting in unequal lateral pressure large enough to cause damage. For typical wood-framed house, especially built about 1925, there is almost no way that such condition could exist since water flows easily and immediately, through numerous openings, into crawlspace and interior of house, equalizing water pressure on opposite sides of foundation walls and wood-framed exterior walls.

As previously discussed in this report, there was no logical basis or evidence for conclusion of "soil liquefaction", which may occur during earthquake events, not flooding events.

Available information about experience of Mr. Braum indicates that, at time of Hurricane Sandy, he had no experience, and certainly no expertise, with design and analysis of building foundations or with geotechnical engineering. Yet, he offers totally unsubstantiated conclusions about behavior of soil supporting house foundation.

- ➡ Based on grossly inadequate inspection and inept reporting, most reasonable conclusion is that Mr. Braum demonstrated gross incompetence in performance of engineering evaluation for Mero flood damage claim. His report is without merit.

The following repairs are then recommended;

> *The structure must be supported while the piers are made level. Helical piles should be added as required.*
>
> *Foundation cracks should be repaired using an epoxy injection to make water tight.*
>
> *Sheetrock should be removed to verify the structural integrity of the wall structure. Wall stud, sheathing, sills, floor joists and subfloor should be replaced where required.*
>
> *All repairs shall be in accordance with the latest FEMA technical bulletin for Flood Damage Resistant Material Requirements.*

Recommendation for additional supports (apparently inside crawlspace) using helical piles is not warranted, especially considering that entire house was soil-supported for 87 years. Installation of helical piles was not practical inside house without very high cost.

Recommendation for epoxy injection to repair cracks in block foundation walls was not warranted. Cracks in block walls are most often narrow and do not need to be repaired. However, if mortar joints are open, high quality patching mortar can be installed. Flexible sealant is adequate for any narrow cracks through solid block.

- ➡ Recommendation for epoxy injection of cracks in block foundation walls reveals that Mr. Braum knew that there had not been any significant movement of foundation walls. Epoxy injection (even though not especially appropriate for concrete block) can only be effective for narrow cracks, which demonstrates lack of movement that could have been large enough to cause structural damage.

Recommendations for framing repairs are reasonable in general. However, there was no logical basis for including “floor joists and subfloor” in recommendation based on removal of “sheetrock” from walls to allow for further inspection of “wall structure” (which should have just simply been described as “wall framing”). Most important however is that report did not include anywhere near enough description of conditions that might indicate need for any framing repairs at all.

Pages 5 to 16 include photos labeled as Figure 4 to Figure 25.

In available copy, many details of photos are not visible. For further discussion, photos are described as “Photo N” with N being same number used in report.

Photo 4 shows crack in outside face of “south” foundation wall without any specific description. Location is not otherwise reported. Details of foundation wall adjacent to crack are not reported.

Photo 5 and Photo 6, each with caption “Tilted lally column”, show short round steel column (post). Evidence of tilting claimed in text of report is not readily seen. Basic details of column are not reported, including framing elements that columns are (or were) supporting.

Photo 7 has caption “Tilting pier”. Detail of photo is not readily visible. However, construction of “pier” is not described.

Photo 8, with caption “Floor out of level” shows steel tape held vertically, apparently to demonstrate measurement of floor slope. Location is not reported. Rate and total amount of slope is not reported.

Photo 18, with caption “Unlevel floor” shows steel tape held vertically, apparently to demonstrate measurement of floor slope. Location is not reported. Rate and total amount of slope is not reported.

Photos 9, 13, 15, 16, 17, 19 & 21 show cracks in wall and ceiling finish materials. Details of cracks are not reported.

Photos 10 & 11 show cracks in tile on wall and floor. Details are not reported.

Photo 12 has caption “Wall shifting”. However, location within house is not reported. Nature, extent and amount of claimed “shifting” is not reported.

Photo 14 has caption “Fireplace cracking”. Details are not reported.

Photo 20 shows “tilting wall” of “closet”. Amount of tilting is not reported.

Photo 22 shows “water line” on inside face of interior wall.

Photos 23, 24, 26 & 27 show exterior of house. No obvious damage is seen or reported.

Photo 25 shows crack in foundation wall on “south side”. Location is not otherwise reported. Details of foundation wall adjacent to crack are not reported.

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November 20, 2017

Effects of High Groundwater

In general, and especially for evaluation of flood damage claims, saturation of soil is considered to be caused by high groundwater.

For any claim of significant foundation settlement due to high groundwater causing saturation of soil, the following must (at least) be described and explained;

1. Amount of claimed settlement, relative to conditions before flooding event.
2. Type (classification) of soil supporting foundation elements.
3. Whether underlying soils had ever been saturated before and, if so, whether and why soil-saturation conditions during recent flooding event should be considered to have caused new settlement.
4. Load (weight) on foundation walls at time of soil saturation.
5. Soil pressure at base of foundation walls or footing (if applicable).

Without addressing these key issues, there is no rational basis to claim that saturation of soil (due to high groundwater) resulted in settlement of soil supporting foundation walls, especially enough to cause foundation settlement that would result in significant structural damage to foundation elements and supported components.

This house was alongside canal or stream, and very close to ocean, such that any engineer performing evaluation should consider that high groundwater has occurred at this location many times during 87-year life of house.

Level of floodwater during Hurricane Sandy was reported to be about 5 feet above grade. Therefore, even for much less severe flood events, it is reasonable to conclude that floodwater could have been at grade level at least once before, and probably several times. Storms of 1992 and 1962 resulted in significant coastal flooding.

As discussed elsewhere in this report, flooding in 2011 was reported (by flood insurance company) to have caused damage to garage and house, indicating that flood water rose above grade. Owners of nearby property (see below) reported flooding 18 inches above grade during Hurricane Irene.

Effects of high groundwater are discussed in detail elsewhere in this report (see “Settlement of Soil Due To Floodwater”).

Based on available technical reports, and use of basic engineering judgment, most reasonable conclusion is that flooding at this location during Hurricane Sandy did not cause significant settlement for Mero house.

Report by HiRise Engineering - January 13, 2013

For this discussion, based on statements made by Mr. Braum in 60 Minutes presentation to the effect that he was not aware that his original report had been "altered", report dated January 13, 2013 is considered to have been prepared by HiRise Engineering.

In this discussion, person responsible for modified report is described as "author". However, "author" only inserted limited amount of new text.

Report includes exactly same text in "Observations" section as provided in original report by Mr. Braum with "server" date of December 20, 2012, except for one key change. However, January report varies from earlier (December) report as follows;

- Page 1; Eliminated three conclusions and inserted one newly-stated conclusion.
- Page 4; Revised part of first sentence of second paragraph under "Analysis".
- Page 4; Eliminated repair recommendations.
- Eliminated photos at end of report

Essentially, page 1 includes only the following "Conclusion";

> *Settlement due to consolidation of soil caused the foundation wall to crack while piers twisted and settled and were un-weighed from the floor joists above. These stresses were transferred to the house structure above causing widespread cracking throughout the interior of the house.*

This convoluted description reveals gross lack of knowledge and experience for author.

Amounts of claimed twisting and settlement of "piers" is not provided to allow for evaluation of scale of damage.

Awkward term "un-weighed" is confusing to readers, especially without background in engineering (and even with such background!). Apparently, claim is that supports ("piers") became detached from "floor joists". Such description implies that "piers" were directly supporting floor joists, which was most likely not correct. "Piers" were likely supporting girder which supported floor joists. However, even if "piers" were supporting floor joists directly, much better description was necessary, including conditions at base of "piers".

"These stresses" does not refer to any previous statement. As best as can be deduced from such ambiguous, non-specific description is that author is claiming force from "piers" was distributed to "house structure" causing "cracking" of some unidentified elements. Yet source of such force is not revealed.

- ➡ Most important however is that stated reason (saturated soil) for new claim of "Settlement due to consolidation of soil" remains the same as claimed by Mr. Braum in his original report.

Second paragraph under "Analysis" was changed to the following, with the new part (replacing original description) underlined for this discussion;

> *As the property land became saturated, <u>settlement due to consolidation of s[a]oil</u> put irregular stresses on the foundation, thus disturbing the structure's static equilibrium.*

New part replaced the following part (underlined) that had been in original paragraph, as previously discussed in this report;

> "*As the property land became saturated, <u>soil expansion, hydrostatic pressure and soil liquefaction</u> put irregular stresses on the foundation, thus disturbing the structure's static equilibrium."*

As previously discussed in this report, essential (primary) part of original conclusion by Mr. Braum, as well as corresponding conclusion as revised ("altered") by HiRise, is description of "saturated" soil as primary cause for foundation damage, irrespective of how effects of such saturated soil condition are described by additional descriptive terms (which were grossly incorrect in original report).

Therefore, it is reasonable to conclude the following;

1. For each report (original & modified), basis for overall conclusion, that floodwater caused structural damage to house foundation walls and supported wood-framed elements, was primary conclusion that "saturated" soil, caused by floodwater during storm, was key condition causing movement of soil under foundation walls and "piers".

2. Primary conclusion of original report remained the same in modified report.

- ➡ Key claim by Mr. Braum, as trumpeted by 60 Minutes, politicians and attorneys for homeowners, that HiRise Engineering "altered" his primary conclusion, was essentially false.

Substitution of "settlement due to consolidation of soil" conclusion for "soil expansion, hydrostatic pressure and soil liquefaction" conclusion makes at least some "sense", but only because conclusion from original report is complete nonsense.

However, "settlement due to consolidation of soil" conclusion is also without logical basis and without merit as discussed earlier in this report (see Effects of Groundwater).

Details of Mero House & Property

Incredibly, only minimal details of Mero property and house were provided in reports by Joel W Schachter PE and Andrew S Braum PE.

For this discussion, property is identified as "Mero property" even though this writer does not know identity of current owner.

In versions of reports available online, full name of street is redacted (blacked out) although partial street address of "12 [redacted] Street West" is visible on FEMA letter.

Fuzzy photo from Google Maps is provided on page 2 of Braum report, with target symbol pointing to house. Grid of local streets is visible, as is narrow waterway. Other identifying information includes distance from bay of approximately 1000 feet.

Based on "connecting the dots", it appears almost certain that house was at 12 West Evans Street.

Mr. Schachter, Mr. Braum and HiRise Engineering did not identify town for Mero property, which is Hempstead, as noted on letter from "Chief Plan Examiner" relative to "substantial damage" determination. Hempstead is very large, in land area and population, as noted in the following description from Wikipedia;

> **Hempstead** is one of the three towns in Nassau County, New York, United States, occupying the southwestern part of the county, in the western half of Long Island. Twenty-two incorporated villages are completely or partially within the town. Hempstead's combined population was 759,757 at the 2010 Census, the majority of the population of the county and by far the most of any town in New York. Also, a village named Hempstead is within the Town.

Property is in the hamlet of Bay Park, within village of East Rockaway.

According to Zillow.com, new house was built on this property in 2015.

Aerial view from Google Maps (as of November 20, 2017) shows dense configuration of houses in this area. However, roof of house currently shown is not house that was on property at time Mr. Braum performed inspection.

Interestingly, aerial view (see below) brings up front view of one-story house which matches photo (Figure 2) provided at top of page 3 of in report by Mr. Braum. However, clicking on "street view" brings up views of new house built in 2015.

Mero property is along east side of narrow unnamed (on map) canal that extends about 2,300 feet north from Hewlett Bay. At Mero property, canal is only about 25 feet wide.

The following points are reasonable based on available information;

1. Narrow canal was tidal only. There was essentially no stream flow in this waterway.

2. There is no way any rapid flow of water could have impacted house without destroying or severely damaging at least one hundred other houses that were between Hewlett Bay and Mero house. Debris from such destruction would have easily also destroyed or severely damaged exterior walls of Mero house, which did not happen.

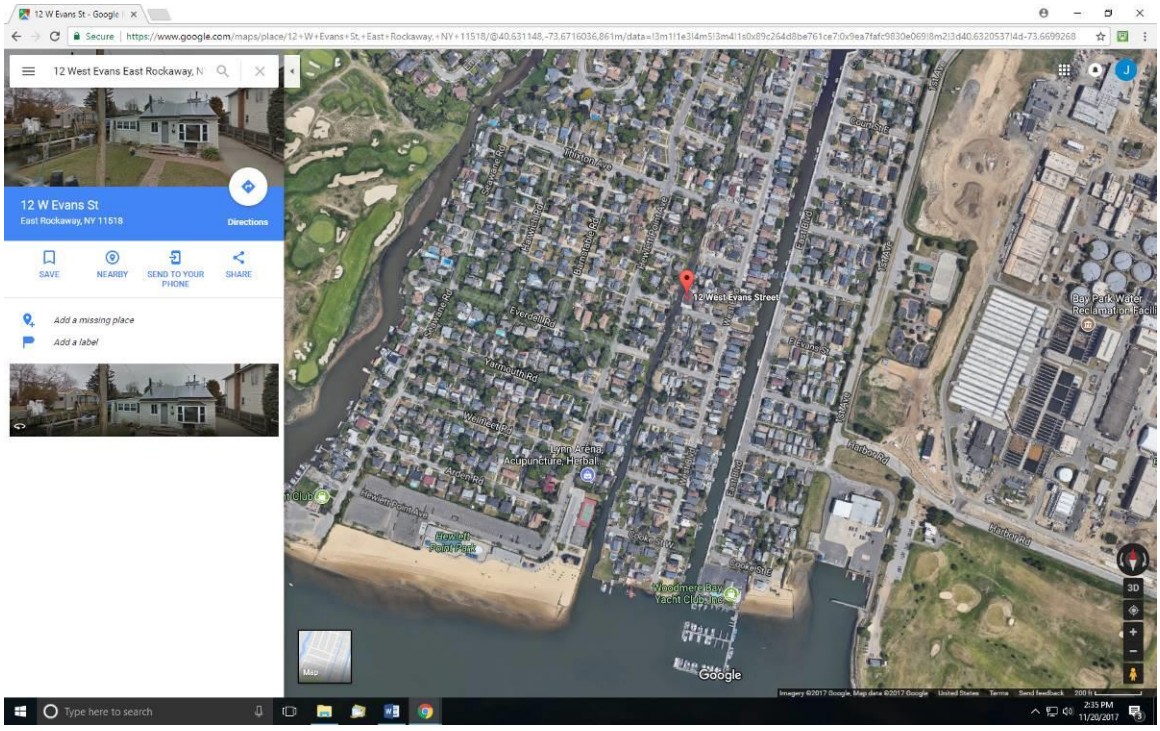

Photo 1 - Aerial view showing location of Mero house (red target).

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Effects of Hurricane Sandy In East Rockaway

The following description of conditions during Hurricane Sandy, by owners of property very near Mero property, is included in article "East Rockaway Residents Still Feeling Impact of Hurricane Sandy" published online by LIHerald.com (October 26, 2016);

> Jackie Ludwig, who lives on West Boulevard, said that Irene filled her home with more than a foot and a half of saltwater, forcing her and her husband, David, to flee to her parents' house in Merrick. Then, 14 months later, Sandy's fury hit the South Shore. "We had redone the entire house inside and out," Ludwig said. "We finally finished the upstairs two months before Sandy."
>
> Sandy flooded the Ludwigs' home with five and a half feet of water. Sewage from the nearby Bay Park Sewage Treatment Plant also flowed into the house. The couple once again faced the daunting task of rebuilding.

Based on this information, it is reasonable to conclude that floodwater from Hurricane Irene had previously flooded Mero property as well. Yet, Mr. Schachter and Mr. Braum completely "overlooked" this key information.

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November 20, 2017

Evaluation of Structural Conditions After Hurricane Sandy – This Writer

On-site observations are often preferred before making final evaluation for building conditions.

However, there are many conditions for which correct evaluation can be made based on information provided by others, especially in recent times with amazing ability to quickly communicate detailed information, including high-resolution photos and videos. Such "remote" evaluation is performed for wide range of buildings and structures every day by engineers.

Although much greater detail should have been provided by Mr. Braum (and others) in reports, there is enough available information for this relatively simple building to determine the following, with reasonable certainty, or at least with high likelihood that conclusions would not have changed even after on-site inspection;

1. Block foundation walls were not damaged at all, or were not damaged in any significant way, by floodwater during Hurricane Sandy. No evidence was provided to substantiate any claim of significant foundation movement.

2. Three "cracks" (reported by Mr. Braum) in block foundation walls, at least one of which may simply have been open mortar joint, did not reduce structural capacity of foundation walls in any way. Such cracks are very common, occurring in just about any block foundation wall in tens of millions of houses throughout the country (and world). Even if cracks could reasonably be attributed to floodwater, such conclusion would not change fact that there was no structural damage resulting from these cracks which could have been easily sealed. Even if elimination of cracks were determined to be eligible for insurance coverage, cost to replace block around each crack would have been minor.

3. No reasonable evidence was provided to substantiate claim that condition of posts (so-called "piers") in crawlspace, reported to be "tilted" (without any measurements of "tilt"), was changed by floodwater.

4. Even if posts were determined to be defective, for whatever reason, cost to install new supports in crawlspace was minor compared to cost for new house.

5. No reasonable evidence was provided to substantiate any claim that slope of first floor was any different after storm than before storm. For this type of house, built in 1925, it is reasonable to conclude that floor could have easily had noticeable slopes before storm. Failure of Mr. Braum (and owners) to report amounts and rates of measurements shown (in photos) to have been taken to demonstrate slope of floors indicates that reported "slope" could not have been especially severe.

6. No reasonable evidence was provided to substantiate any claim that wood framing of house was damaged, in any way. However, even if some damage was later discovered to have occurred, such damage would have been localized and easily repaired at low cost.

7. Cracks on wall and ceiling finish were most likely caused by reduction in strength of finish material due to soaking from floodwater as well as shaking of building due to wind during storm. Lateral stiffness of wood-framed house built in 1925 was very likely much less than required to prevent shaking during high-windspeed events. No reasonable evidence was provided to substantiate any claim that such cracks were caused by failure of, or damage to, any structural element.

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Town of Hempstead; Substantial Damage Assessment

One page letter by Chief Plan Examiner of Hempstead, dated December 12, 2012, starts with claim that, due to flooding, "structure received damages exceeding 50% of the pre-damage structure value".

There is no reference to any photos and no description that anyone working for municipality observed conditions in crawlspace or closely inspected foundation walls.

There is no reference to detailed cost estimate, or any cost estimate at all.

The following generalized statements are made, without any other description of specific observations;

> *The damage to the floor joists and walls of the home has resulted in cracks and deflections of many structural elements. The inundation of water in the home has resulted in the destruction of the structural support of the dwelling.*

Considering lack of any photos showing "destruction", along with lack of any such description in reports by two professional engineers for owners, these dramatic claims by Hempstead should reasonably be considered false, unless proven otherwise by specific evidence.

Claim that "destruction of the structural support" occurred has no basis in fact and is reasonably considered false.

Agenda of Hempstead is made more clear by the following statements then made in same paragraph;

> *The Department of Building[s] has therefore determined that the building has been substantially damaged and must comply with the current floodplain management regulations which will require not only [that] the first floor [raised] be raise[d] to elevation 9' [.] New York State [also] requires a two-foot freeboard be added to the base flood elevation.*

Determination of "substantial damage" should be seen to be political tool used (inartfully) to justify order for house to be raised. Whether municipal officials were thinking that such ruling would result in substantial insurance coverage for owner is not known, though it is reasonable to at least suspect such conclusion is more likely than not.

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Report by Joel W Schachter, PE

Two-page report, dated December 7, 2012, by Joel W Schachter PE, was prepared for Mero claim at request of owners.

Name and address is listed at top of first page. At bottom of each page is listed apparent company name of "Precision Home Inspections LLC".

- Report by Mr. Schachter is grossly inadequate and deficient. At time report was prepared, he demonstrated gross incompetence with inspection, report preparation and relevant engineering knowledge. His report is completely without merit.

Detailed review is described in this report since; (1) Representative of National Flood Insurance Program (NFIP) quoted Mr. Schachter in letter to owners denying coverage, as described later in this report, and (2) This review demonstrates clearly, yet again, grossly deficient evaluation of flood damage by professional engineer, reinforcing conclusion of this report that approach mandated by Federal court for "altered reports" cases was, and remains, unjustified.

After single-paragraph introduction, report consists of two sections entitled "Damage Assessment" and "Recommendations".

- No photos are attached or referenced.

- Lack of any photos immediately demonstrates grossly inept and defective engineering services, raising big red flag about lack of competence.

Mr. Schachter states that he performed inspection on December 5, 2012.

Without providing even the most basic description of house, he immediately claims that "severe damage had occurred from water cascading onto the property from the canal" and "severest damage occurred from the surge of water". Yet, he provides no evidence, other than noting height of water, to substantiate claims of such "surge" which implies rapidly moving water flowing against house.

Engineer claims "damage" to siding and wall ("sub") sheathing without any other description to explain details of alleged damage.

Claim is made of "cracking and displacement" of concrete block "foundation" without any specific description of cracks or movement, or without any description of foundation walls.

Without any description to explain location, number, size or elements supported, "steel columns" are noted to be "shifted and are now at an angle to the original verticals."

Although he does not state directly, the "are now" comment implies that columns were "shifted" by floodwater. Yet, Mr. Schachter did not report any information which could have given him insight into position of steel columns relative to vertical before storm.

Engineer claims that cracks in wall and ceiling finish are "indicative of structural shifting" without any further discussion to explain what, if any, wood framing elements might have shifted.

Noting "extremely limited access to the crawlspace", without providing any measurements or even estimate of vertical clearance, Mr. Schachter contends that "repairs would be expensive, if not impossible." Wet insulation is observed "falling down" in crawlspace. Yet there is no description of floor framing.

Starting off discussion under "Recommendations", Mr. Schachter makes the following statements;

> *Because of the severe damage to this house and garage, I am suggesting condemnation and a complete tear down of the structure and a re-build using the same footprint of the buildings. However, I strongly urge that because of the proximity to the canal, the new structures should be raised at least five feet above the ground to protect them from future storms and flooding.*

"Suggestion" for "condemnation" is ludicrous and grossly irresponsible considering almost complete lack of any description of conditions that might warrant such drastic recommendation. Mr. Schachter did not describe any major damage to foundation walls, first floor framing, wall framing, attic floor framing or roof framing, yet he somehow believes it is logical to then call for mandatory demolition.

He then makes the astounding, completely unsubstantiated claim that *"It would be impossible to restore the present structure."*

Mr. Schachter provided no basis for such dramatic claim even though he had complete freedom to describe conditions that might have justified such recommendation.

The following outlandish statements are then made;

> *Furthermore, it would not be cost effective to attempt to jack up the house and reset this foundation which would require major underpinning. The house, when it was built, was probably constructed on fill soil, which is inherently weak. Additionally, the load carrying capacity of the soil has been compromised by salt water infiltration necessitating pilings driven to firm ground strata.*

Mr. Schachter did not provide any basis for reaching any conclusion about costs to raise house and support on new foundation. Description of "reset this foundation" is awkward at best, indicating inexperience with work required to raise house.

Engineer had no information about history of soil condition and had no basis to even speculate about existence of "fill soil" which he then claims "is inherently weak".

Claim that soil was "compromised by salt water infiltration" is just so preposterous as to be laughable. Apparently, he must believe that rain also degrades soil capacity.

Approach by Mr. Schachter is akin to setting up false problem and then "solving" with some predetermined "solution". However, it may be much worse; Mr. Schachter may have actually believed his incredibly ridiculous assertions.

- ➡ For professional engineer to make unfounded recommendations for demolition of entire house, without reporting any substantial structural defects, indicates an agenda that has nothing to do with fairness or truth.

However, gross incompetence may be main reason for such useless "report".

The only credit earned by Mr. Schachter is that he made very clear stamp of his New York PE license.

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November 20, 2017

Letter of August 20, 2013 from NFIP to Owners – Mero Claim

Two-page letter, by James A Sadler, Director of Claims for National Flood Insurance Program (NFIP), provides detailed explanation of reasons for amount paid to owners for flood damage, and rejection of claim for further payment.

The following statements are made on page 1;

> *Regarding structural damages at your house, you retained an engineer, Joel Schacter [PE], to assess the damages. Mr. Schacter, provided his assessment; however, the report is not detailed and does not provide any photographs that demonstrate scouring, undermining or washout. NYCM hired United Technical Consultants LLC (HiRise Engineering) to assess the damage to the foundation and structural integrity of the building. HiRise Engineering concluded;*

Conclusion from page 1 of January 13, 2013 report submitted by HiRise Engineering, which was "altered" report based on original report by Mr. Braum, is then quoted at bottom of page 1.

The following statements are then made at top of page 2;

> *The damage to your foundation is the result of earth movement, not associated with this event of flooding. Mr. Schachter's report also states, "The house, when it was built, was probably constructed on fill soil, which is inherently weak." The photographs in the file do not show any scouring, undermining or washout of soil. Earth movement and settlement are not covered under the SFIP. NYCM's detailed letter to you dated February 12, 2013, clearly outlines the policy provisions, applicable to your concerns.*

After stating (on page 1) that report by Mr. Schacter was inadequate, quoting one unsubstantiated claim from Schacter report is then unwarranted and entirely unpersuasive. However, Mr. Sadler is clearly using any parts of grossly deficient reports that he can to substantiate decision that "earth movement and settlement" were cause of foundation cracks.

Mr. Sadler should have determined that the report submitted by HiRise Engineering, which Mr. Sadler had valid reason to believe (at the time) was in fact by Mr. Braum, was not adequate due to lack of essential details and grossly inadequate "Analysis" which amounted to one short paragraph essentially explaining nothing.

Key problem revealed by this case, is that process of assessing structural flood damage claims did not provide for any checking by independent, qualified professional engineer.

Qualifications of Mr. Sadler relative to understanding contents of engineering reports is not known. However, we know that he was not professional engineer himself (at least at the time).

- ➡ Authority of Mr. Sadler to make decision about structural flood damage claim, based on grossly deficient engineering report, highlights grossly defective process used by FEMA and NFIP to make assessments for structural flood damage claims.

If HiRise Engineering report ("altered" report) had included adequate details and discussion within Analysis section, it would have been reasonable to conclude that Mr. Sadler made rational decision about flood damage claim and at least attempted to provide some reasonable explanation. However, the HiRise report was completely without merit.

We can only speculate on whether Mr. Sadler, or anyone with NFIP, would have made different decision if original report by Mr. Braum had not been revised ("altered"). However, as discussed at length in this report, "altered" report issued by HiRise was essentially the same as original report by Mr. Braum, except that original report included numerous photos.

Letter by Mr. Sadler demonstrates the following that should be taken into account by FEMA to make major changes to process for evaluation of structural flood damage claims;

1. Inadequate engineering reports, for owner and FEMA, greatly increased time and expense to work though process of evaluating and handling structural damage claim.

2. Deficient engineering report prepared for FEMA, by Mr. Braum and HiRise Engineering, resulted in loss of credibility for FEMA with homeowners that is magnified through owner contacts in the community, without even considering massive subsequent problems revealed as a result of this case, which was unique.

3. FEMA should have mandated peer review process with structural damage reports reviewed by qualified, experienced engineers.

In remaining discussion, Mr. Sadler notes potential coverage for "Increased Cost of Compliance (ICC)" which was separate coverage being provided by FEMA to offset some cost for raising "substantially damaged" houses in flood zones.