

SUPREME COURT
OF THE
STATE OF CONNECTICUT

S.C. 20197

RICHARD N. DINO, ET AL.,

PLAINTIFFS-APPELLANTS

V.

SAFECO INSURANCE COMPANY OF AMERICA, ET AL.,

DEFENDANT-APPELLEES

BRIEF AND APPENDIX OF *AMICUS CURIAE* UNITED POLICYHOLDERS

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STATEMENT OF THE *AMICUS* ISSUE

1. Did the trial court err by employing a manifestation trigger in order to determine the insurance policy or policies triggered by the progressive damage present in the plaintiffs' home?

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STATEMENT OF INTEREST OF THE *AMICUS CURIAE*¹

United Policyholders (“UP”) is a non-profit 501(c)(3) organization, founded in 1991, whose mission is to be an information resource and effective voice for consumers of all types of insurance in all 50 states – including the policyholder at issue in this case. UP was founded after the 1991 Oakland-Berkeley Firestorm to assist homeowners with property insurance issues. Over the past 26 years, the organization’s scope has grown to all lines of insurance, nationwide. UP serves Connecticut residents, has volunteers based in Connecticut, and interfaces with the Connecticut Department of Insurance on various initiatives.

UP’s work is divided into three program areas: *Roadmap to Recovery*[™] (claim assistance to disaster victims), *Roadmap to Preparedness* (promoting insurance and financial literacy), and *Advocacy and Action* (advancing the interests of insurance consumers in courts of law, before regulators and legislators, and in the media). Donations, grants, and volunteer labor support the organization’s work. UP does not sell insurance or accept funding from insurance companies.

Advancing the interests of policyholders through participation as *amicus curiae* in insurance-related cases throughout the country is an important part of UP’s work. UP has filed *amicus curiae* briefs on behalf of policyholders in more than 450 cases throughout the United States and has appeared in eight appeals before this Court and the Connecticut Appellate Court. See Karas v. Liberty Insurance Corporation, S.C. 20149 (2018); Jemiola v. Hartford Casualty Ins. Co., S.C. 19978 (2018); Recall Total Information Management, Inc. v. Federal Insurance Company, 317 Conn. 46 (2015); Fireman's Fund Insurance Co.

¹ Pursuant to Practice Book § 67-7, UP represents that this brief was written entirely by its counsel. No party to the appeal wrote the brief in whole or in part, nor contributed any costs for the preparation of this brief.

v. TD Banknorth Ins. Agency, Inc., 309 Conn. 449 (2013); Security Insurance Co. of Hartford v. Lumbermens Mut. Cas. Co., 264 Conn. 688 (2003); Buell Industries, Inc. v. Greater N.Y. Mut. Ins. Co., 259 Conn. 527 (2002); R.T. Vanderbilt Co., Inc. v. Hartford Accident & Indem. Co., 171 Conn. App. 61 (2017); and Capel v. Plymouth Rock Assur. Corp., 141 Conn. App. 699 (2013). A UP amicus brief was cited in the U.S. Supreme Court's opinion in Humana v. Forsyth, 525 U.S. 299 (1999). In addition, UP's arguments have been cited with approval by numerous state and federal courts. Relevant to this appeal, UP has appeared as an amicus party in two crumbling concrete cases that are pending before this Court. See Karas v. Liberty Insurance Corporation, S.C. 20149 (2018); Jemiola v. Hartford Casualty Ins. Co., S.C. 19978 (2018).

In this appeal, UP seeks to fulfill the "classic role of *amicus curiae* by assisting in a case of general public interest, supplementing the efforts of counsel, and drawing the court's attention to law that escaped consideration." Miller-Wohl Co. v. Comm'r of Labor & Indus., 694 F.2d 203, 204 (9th Cir. 1982). As commentators have stressed, an *amicus curiae* is often in a superior position to "focus the court's attention on the broad implications of various possible rulings." Robert L. Stern et al., Supreme Court Practice 570-71 (6th ed. 1986) (quoting Bruce J. Ennis, "Effective Amicus Briefs," 33 Cath. U. L. Rev. 603, 608 (1984)). UP's 27 years of experience advocating for the interests of insurance policyholders and its extensive knowledge of insurance law makes it well suited to aid this Court in this case.

A 27-year history of advocating for the interests of insurance consumers in disaster areas, legislative and regulatory forums and as *amicus curiae* allows UP to have a "unique perspective or specific information that can assist the court beyond what the parties can provide." See Voices for Choices v. Illinois Bell Telephone Co., 339 F.3d 542 (11th Cir.

2003) (citing National Organization for Women, Inc. v. Scheidler, 223 F.3d 615, 616 (7th Cir. 2000)). UP's broad experience working with individual consumers should prove helpful to the Court in understanding the equities involved in the instant case and others like it.

I. NATURE OF THE PROCEEDINGS AND STATEMENT OF FACTS

Plaintiffs Richard and Melanie Dino are two of the approximately 34,000 homeowners in northeastern Connecticut whose basement walls – constructed with concrete most likely provided by J.J. Mottes Concrete Company – are now crumbling. See L. Foderaro & K. Hussey, “Financial Relief Eludes Connecticut Homeowners with Crumbling Foundations,” N.Y. Times (Nov. 14, 2016). The cause – iron sulfide minerals in the concrete – can go undetected for many years but, unchecked, will inevitably undermine the structural integrity of the entire home. See K. Willie and R. Zhong, “Investigating the Deterioration of Basement Walls Made of Concrete in CT” (Report prepared for Attorney General, Aug. 31, 2016). The only way to fix this problem is to remove and replace the basement walls, but its extraordinary cost – estimated at \$100,000 to \$200,000 – is beyond the reach of many homeowners. See K. Hussey and L. Foderaro, “With Connecticut Foundations Crumbling, ‘Your Home Is Now Worthless,’” N.Y. Times (June 7, 2016).

The Dinos’ home was built in 1985 and they purchased it in 1995. Dino v. Safeco Ins. Co. of Amer., CV166010428S, 2018 WL 3518587 (A123)² (Conn. Super. June 28, 2018) (Farley, J.). During the inspection just prior to their purchase, cracks in the concrete basement wall were observed to be typical of concrete basement walls and not a matter of concern. Id. Soon after their purchase, the Dinos finished their basement making the concrete no longer readily visible. Id. The Dinos observed no cracking until 2015 when, after hearing media reports of the widespread problem in their area, drywall was removed and they discovered severe cracking and the walls were bulging and bowing. Id. The Dinos made claims for insurance coverage for the cost of repairing their home to each of the defendants – the insurers who sold homeowner’s policies to the Dinos covering periods between 2000 and 2016 – but the insurers denied those claims. Id. at *2.

² Citations to “A_” are to Plaintiff-Appellant’s Appendix.

In 2016, the Dinos brought this lawsuit alleging that the defendants, Safeco Insurance Company of America (“Safeco”), Twin City Fire Insurance Company (“Twin City”), Middlesex Mutual Assurance Company (“Middlesex Mutual”), Sentinel Insurance Company, Ltd. (“Sentinel”), and Liberty Insurance Corporation (“Liberty”), breached their homeowner’s insurance policy when they denied coverage. Id.³ Safeco’s policies (2000-2004) offer coverage on an all-risk basis – affording coverage against all risks not explicitly excluded. E.g. A419. Safeco agreed to provide coverage for “accidental direct physical loss to the property...except as limited or excluded.” Id. The policies sold by Twin City (2004-2005) and Sentinel (2007-2013) provide coverage for “direct physical loss to covered property involving collapse of a building or any part of a building caused only by one or more of the following:...b. Hidden decay...f. Use of defective material or methods in construction, remodeling, or renovation....” A266, para. 8, as amended by A282, para. 8; A319-20, para. 8, as amended by A346-47, para. 8. The Twin City policies do not define the term “collapse.” The collapse provision in the Liberty policies (2013-2016) is nearly identical to the Twin City collapse provision. See A125-126. The Sentinel policies add language to its provision referring to the “abrupt falling down or caving in of a building or any part of a building.” A319-20, para. 8, as amended by A346-47, para. 8.

On June 28, 2018, the trial court (*Farley, J.*) entered summary judgment in favor of the defendants Safeco, Twin City and Sentinel. Without addressing whether these insurers’ policies provided coverage for the crumbling concrete problem, the trial court determined, as a preliminary issue, that the plaintiffs’ “loss” did not occur until it was

³ Plaintiffs withdrew their claims against the defendant, Middlesex Mutual Assurance Company, prior to the trial court’s ruling on summary judgment. The trial court denied defendant Liberty Mutual Insurance Corporation’s motion for summary. Therefore, the only defendants that are parties to this appeal are Safeco Insurance Company of America, Twin City Fire Insurance Company and Sentinel Insurance Company, LTD.

discovered and therefore only the single policy on the risk when the loss “manifests” – in this case the 2015 Liberty policy – should be permitted to respond. A141-146. This application of the “manifestation trigger” is not supported by either the language of the policies or the case law in Connecticut and should be reversed.

II. ARGUMENT

A. The Policies’ Language Requires Adoption Of “Continuous Trigger.”

In deciding which of the Dinos’ many insurance policies may afford coverage for the cost of repairing their home, the trial court erred in applying a “manifestation trigger” to this crumbling concrete case. “Trigger of coverage is a concept used by courts to determine whether and when an event implicates a particular insurance policy.” R.T. Vanderbilt Company, Inc. v. Hartford Accident and Indemnity Company, 171 Conn. App. 61, 97-98, cert. granted, 327 Conn. 923 (2017). Although the policy language of the homeowners policies here “do not explicitly address the trigger issue” (A130-131), both the plain language of the coverage provisions and public policy concerns support the conclusions that multiple policies can be triggered by the damage and therefore this Court should reverse the decision of the trial court and adopt the “continuous” trigger of coverage.

As an initial matter, this Court must determine “what must occur during the policy period for potential coverage to commence under the specific terms of an insurance policy” A. W. Chesterton Co. v. Massachusetts Ins. Insolvency Fund, 838 N.E.2d 1237 (Mass. 2005) cited in Vanderbilt, 171 Conn. App. at 98. The homeowners policies here provide coverage for “loss which occurs during the policy period.” (A125 at n.3). In addition, the Liberty, Twin City and Sentinel policies use identical or nearly identical policy language in which coverage is provided for collapse:

8. *Collapse*. We insure for direct physical loss to covered property involving collapse of a building or any part of a building caused only by one or more of the following: ...

- b. Hidden decay; ...or
- f. Use of defective material or methods in construction, remodeling or renovation;

(A125-126). Neither “collapse” nor “direct physical loss” is defined by the policies. This language was first construed in Beach v. Middlesex Mutual Assurance Co., where, in the context of a claim involving the failure of a “foundation wall,” this Court held the undefined term “collapse” was ambiguous and ruled the policy covered “any substantial impairment of the structural integrity of a building ... even though no actual caving-in occurred and the structure was not rendered completely uninhabitable.” 205 Conn. 246, 250-53 (1987).

In Karas v. Liberty Insurance Corporation (S.C. 20149), which involves construction of undefined collapse provisions identical to the Liberty and Twin City policies here and nearly identical to the policy in Beach, this Court is presently considering the issues of (1) whether the Beach standard of substantial impairment of structural integrity applies to a claim (like the Dinos’ claim) for crumbling concrete and, if so, (2) how that standard is to be applied. Similar issues are being addressed by this Court in Jemiola v. Hartford Casualty Insurance Company (S.C. 19978), which involves the same policy language contained in the Dinos’ Sentinel policy. Presumably, the rulings in Karas and Jemiola will determine what constitutes a collapse applicable to the Liberty, Twin City and Sentinel policies here.

Whatever definition is ultimately adopted, be it “substantial impairment of the structural integrity of a building” or something else, collapse caused by a covered condition such as hidden decay can reasonably be construed to be reached in part of a building during one policy period and continue to grow, affecting a larger portion of the building over the course of additional policy periods thereafter until the problem is discovered. Under the Liberty, Twin City and Sentinel policies, more than one policy will be triggered from the time the collapse standard is met to the time the problem is discovered. Under the Safeco policy, which broadly provides coverage for “accidental direct physical loss to the property”

without any need to show a collapse, multiple policies will likewise be triggered by the continuous damage occurring to the homeowner's basement walls.

This Court has not previously addressed the issue of trigger related to first-party property claims under homeowners insurance policies. But, in the context of a Commercial General Liability policy, this Court has upheld a trial court's determination that progressive injuries that span multiple policy periods trigger all policies in effect during the progression of the injury. Travelers v. Netherlands Ins. Co., 312 Conn. 714, 755 (2014). In Netherlands, the underlying complaint alleged that defective construction of UConn Law School's library resulted in continuing and progressive water infiltration commencing after January 1996, and not repaired until February 2008. Because the insurer had issued policies that covered periods within a span of time *after* the alleged defective construction but *before* the repair had been made (from 2000 to 2006), the property damage alleged in the complaint extended to the insurer's policies, invoking their duty to defend. 312 Conn. at 745. This Court held that the property damage, which occurred over 12 years (144 months), triggered ***all policies within that time span***. Id. at 755.

In the context of first-party property claims, other courts have held that multiple policies may provide coverage for a loss that occurs over an extended period of time. In Kief Farmers Co-op. Elevator Co. v. Farmland Mut. Ins. Co., 534 N.W.2d 28 (N.D. 1995), the Supreme Court of North Dakota held that where evidence suggested that some form of loss or damage to a grain bin commenced while the insurance policies at issue were in force, the trial court had improperly granted summary judgment to insurer. The Kief court rejected the insurer's argument that only the policy in place when the loss was discovered should provide coverage (the "manifestation" trigger), holding that the policy defined an occurrence as requiring injury or damage during the policy period, but not holding that the policy required injury or damage have become manifest during the policy period. Id. at 36.

See also Strauss v. Chubb Indem. Ins. Co., 771 F.3d 1026, 1032-33 (7th Cir. 2014) (discussed at Plaintiff's Brief at 20-22) (multiple homeowners policies were triggered because water damage was continual and recurring with each successive rainfall.)

The trial court erroneously concluded that the manifestation trigger applies relying in part on the notion that a collapse is a single event that occurs at a finite point in time. (A133-134) (citing Kowalyshyn v. Excelsior Ins. Co., United State District Court, Docket No. 3:16-cv-00148 (JAM) (D.Conn. Feb. 13, 2018). This notion is unfounded. The policy specifically provides coverage for collapse of the building or "part of the building." A266. "Part of the building" is undefined. Therefore a plain reading of the policy supports a construction providing for coverage of collapse as the condition worsens over time as a continuing collapse or as a series of collapses to various parts of the basement walls.

The trial court also wrongly concluded that property coverage was triggered by "loss," not "property damage" distinguishing loss as occurring only when the damage is discovered by the policyholder or manifests. A140.⁴ However, "loss" is not defined by the policy and there is nothing within the meaning of "direct physical loss"⁵ that requires

⁴ In so holding, the trial court relied upon Prudential-LMI Commercial Ins. v. Superior Court, 798 P.2d 1230 (Cal. 1990). In Prudential-LMI, the policies' contractual limitations provision ran from "inception of loss" and the California court was concerned that this provision, which was statutorily mandated for fire policies, should not make coverage for latent injuries illusory. Id. at 1236-38. Prudential-LMI is distinguishable. Other courts have held that "inception of loss" refers to the date when damage began to occur while "date of loss" – the language at issue here – refers to the accrual of a claim (see *supra* at 9-10). Also, in applying the manifestation trigger, Prudential-LMI oddly relies on two cases where the policyholders sought coverage under policies beginning with the policy that was in place when the damage was discovered and policies **thereafter** and properly rejected coverage under later policies because of the loss-in-progress doctrine. Id. at 1243-1247 (discussing Home Ins. Co. v. Landmark Ins. Co., 205 Cal.App.3d 1388, 253 Cal.Rptr. 277 (1988) and Snapp v. State Farm Fire & Cas. Co., 206 Cal.App.2d 827, 831-832, 24 Cal.Rptr. 44 (1962)).

⁵ In Black's Dictionary, a "direct loss" is defined as "a loss that results immediately and proximately from an event." There is nothing in the policy language that says the injury must be compensable during the policy period. See Ins. Co. of North America v. Forty-

manifestation. A dictionary definition of “loss” is “1: destruction, ruin” and “3: a person or thing or an amount that is lost.” Merriam Webster’s Collegiate Dictionary (10th Ed. 1993).⁶ “Physical” is defined as “having material existence” or “of or relating to material things.” *Id.* Thus, a physical loss is a loss to a physical, or perhaps tangible, thing – such as a home. The trial court’s conclusion that there is no loss until the damage is discovered is akin to turning these occurrence based policies into claims-made policies. The policies simply do not premise coverage on discovery of the crumbling concrete problem.

In Vanderbilt, the Appellate Court adopted continuous trigger in determining coverage under commercial general liability policies for asbestos bodily injury claims.⁷ 171 Conn. App. at 118-123. The Appellate Court concluded that it could determine trigger as a matter of law and that continuous trigger was most compatible with the prevailing understanding of the progression of asbestos disease, and the fairest and most efficient way to distribute costs among policies in effect over the long latency period of the disease. *Id.* at 109-123. Here, too, continuous trigger best reflects both the policy language – which plainly provides coverage for “direct physical loss” that occurs during the policy period – and the prevailing understanding that the sulfate attack will degrade concrete over time. As a practical matter, the proof that a policy is triggered in these crumbling concrete cases will necessarily be different from asbestos disease claims. In asbestos claims, policies are triggered with the first exposure to asbestos because bodily injury is understood to begin immediately. *Id.* at 114-115. Here, the Dinos will have to prove as a factual matter the

Eight Insulations, Inc., 633 F.2d 1212 (6th Cir. 1980), clarified, 657 F.2d 814 (6th Cir.), cert. denied, 454 U.S. 1109 (1981) (rejecting manifestation trigger for asbestos liability).⁶ “It is a basic principle of insurance law that policy language will be construed as laymen would understand it” and courts routinely look toward dictionary definitions and case law to determine the meaning of policy terms. R.T. Vanderbilt Co. v. Cont’l Cas. Co., 273 Conn. 448, 462–63 (2005).

⁷ Appeal of this ruling is currently pending. Vanderbilt (S.C. 20000, S.C. 20001).

time at which collapse first occurred under the Liberty, Twin City and Sentinel policies and when damage first occurred under the Safeco policy. Under continuous trigger, all policies from that point until the problem is discovered would be triggered.⁸

B. Public Policy Supports Adoption Of “Continuous Trigger.”

It is not at all surprising that the insurance industry advocates for a manifestation trigger. Although the policy in place when the discovered the crumbling concrete problem (Liberty) has an undefined collapse provision that, under Beach, is likely to provide coverage, many if not most homeowners in Connecticut would not be so lucky. Since at least the late 1990s, the Insurance Services Office – an insurance industry trade association that publishes standard provisions for homeowners policies, among others – began modifying the standard collapse provision to add temporal and other limitations and these provisions have become widely adopted. See, e.g., Halloran v. Harleysville Preferred Ins. Co., No. 3:16-CV-00133 (VAB), 2018 WL 5840031, at *3 & 15 (D. Conn. Nov. 8, 2018); Liston-Smith v. CSAA Fire & Cas. Ins. Co., No. 3:16-CV-00510 (JCH), 2016 WL 6246300, at *2 (D. Conn. Oct. 25, 2016); Eric Bender, “Crumbled Insurance: Comm’r defends change excluding failing foundations,” Journal Inquirer (Aug. 30, 2017). If this Court affirms the ruling in Jemiola, which construed such provisions as excluding coverage of these crumbling concrete claims, then adoption of the manifestation trigger is likely to deprive most homeowners who have already discovered the problem and an ever increasing number of homeowners who discover the problem in the future of any insurance whatsoever. Thus, advantages of the manifestation trigger cited by the trial court – ease of administration and the likelihood that the damage can be fully covered under one single policy (A145) – is lost if the only triggered policy does not provide any coverage at all.

⁸ Under this methodology, continuous trigger would be the same as the injury-in-fact trigger advocated by Liberty.

Such a result is contrary to the public policy concerns that are appropriate to consider in selecting a trigger methodology. In the context of asbestos property damage and bodily injury claims, courts have focused on maximizing insurance resources for a host of good public policy reasons, not the least of which were to not overburden a single insurer and to assure coverage for those who were injured. Vanderbilt, 171 Conn. App. at 122. As the broadest trigger theory, continuous trigger promotes the goal of maximizing insurance assets, while affording policyholders the protection that they purchased. Security Ins. Co. of Hartford v. Lumbermen's Mut. Cas. Co., 264 Conn. 688, 709 (2003), quoting Owens-Illinois, Inc., v. United Ins. Co., 650 A.2d 974, 992 (N.J. 1994) ("insurance companies can spread costs throughout an industry and thus achieve cost efficiency.").

The goal of maximizing insurance is no less important here. The crumbling concrete problem in northeastern Connecticut has been estimated to potentially affect some 34,000 homeowners, devastating not only what is for most homeowners their most significant asset, but also doing significant harm to the banks that mortgage the homes that suddenly lose nearly all of their value and the towns whose have seen their tax base so spectacularly undermined. This is a calamity best addressed by maximizing coverage.

The "public policy" concerns that the trial court used to justify the manifestation trigger do not represent a balancing of interests between the homeowners and the insurers. Concerns for "underwriting predictability" and a "concern about underwriting a loss in progress" (A145) look at construing the policy only from the insurers' point of view and cannot be reconciled with the language of the occurrence based policies which accepted the risk that they now seek to avoid. It is not only contrary to the policy language but also deprives homeowners of the benefit of many policies for which they paid.

C. Contractual Limitations Provisions Are Not Relevant To Trigger.

In adopting the manifestation trigger, the trial court incorrectly relies on the policies'

contractual limitations provisions which requires that suit be commenced two years after the “date of the loss.” A143-144. It is improper to interpret conditions and exclusions so as to make the policy’s coverage terms, which are to be construed broadly, illusory. See, e.g., Nationwide Mut. Ins. Co. v. Pasiak, 327 Conn. 225, 258 (2017) (refusing to apply the abuse exclusion so as to effectively eliminate coverage for false imprisonment). Here, application of the suit limitations provision would improperly make coverage for collapse by hidden decay and latent defects illusory.

The trial court also incorrectly concludes that because “date of loss” means accrual of an action, “loss” cannot occur prior to discovery. Other jurisdictions have refused to define “loss” based upon the limitations provision. For instance, the Second Circuit held that a limitations period requiring suit to be brought within “two years after the date of loss,” signified the date on which the claim accrues, not the date on which damage was incurred. Fabozzi v. Lexington Ins. Co., 601 F.3d 88, 93 (2d Cir. 2010) (distinguishing provisions running from “inception of the loss” which is construed as when the damage occurred). See also 71 N.Y. Jur.2d Insurance § 2528 (2010) (noting “[w]hether a contractual time limitation contained in a property insurance policy begins to run from the occurrence of the specific event insured against or from a later date depends upon the precision of the language used therein”). Additionally, in Massachusetts, a contractual limitation provision cannot preclude the application of the common law discovery rule, tolling limitations where the prospective plaintiff could not have reasonably known about the damage. See Shahin v. I.E.S. Inc., 988 N.E.2d 873 (Mass App. Ct. May 31, 2013).

III. CONCLUSION

For the above stated reasons, the United Policyholders urge this Court to reverse the judgment of the trial court and hold that continuous trigger is applicable to this case.

Respectfully Submitted,

AMICUS CURIAE, UNITED POLICYHOLDERS

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2018 WL 5840031

Only the Westlaw citation is currently available.
United States District Court, D. Connecticut.

Michael HALLORAN, et al., Plaintiffs,

v.

HARLEYSVILLE PREFERRED
INSURANCE COMPANY, et al., Defendants.

No. 3:16-cv-00133 (VAB)

Signed 10/19/2018

Filed 11/08/2018

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**AMENDED RULING ON PENDING
MOTIONS TO DISMISS AND STRIKE¹**

¹ This Amended Ruling on Pending Motions to Dismiss and Strike supersedes the Court's Ruling on Pending Motions to Dismiss and Strike of October 19, 2018, ECF No. 585. Consistent with the Court's order, ECF No. 594, granting Defendant Travelers Home and Marine Insurance Company's motion to correct, ECF No. 587, Counts 181 and 184 have now been dismissed from this lawsuit against Defendant Travelers Home and Marine Insurance Company. Consistent with this Court's order, ECF No. 595, granting Certain Defendants' motion for order, ECF No. 588, Defendants Metropolitan Property & Casualty Insurance Company, Nationwide Property & Casualty Insurance Company, and Trumbull

Insurance Company have now been dismissed from this lawsuit entirely.

Victor A. Bolden, United States District Judge

*1 On January 29, 2016, Plaintiffs, homeowners in Hartford, Tolland, and Windham Counties in Connecticut brought a Class Action Complaint against their homeowners insurance companies (collectively "Defendants"). ECF No. 1. Following the filing of the Fourth Amended Complaint, Defendants filed multiple motions to dismiss, as well as a motion to strike class allegations.

For the reasons that follow, the Court **GRANTS IN PART AND DENIES IN PART** Defendants' motions to dismiss, ECF Nos. 497, 499, 502, 505, 508-510, 512, 514, 516, 518, 520, 522, 524, 526, 528, 530, 533, **WITHOUT PREJUDICE TO RENEWAL** following resolution by the Connecticut Supreme Court of the pending certified questions.

As explained below, a subset of the counts in the Fourth Amended Complaint contain policy language that, as a matter of law, is unambiguous and does not support a claim for relief. The Court dismisses each Plaintiff whose entire claim for relief rested on a policy that unambiguously excluded coverage for abrupt or sudden collapse: Kathy Noblet, Dawn L. Norris, and Steven and Colleen Swart. Relatedly, the Court dismisses each Defendant whose entire liability rested on a policy that unambiguously excluded coverage for abrupt or sudden collapse: American Commerce Insurance Company, Allstate Insurance Company, Metropolitan Property & Casualty Insurance Company, Nationwide Property & Casualty Insurance Company, and Trumbull Insurance Company. The other Plaintiffs and Defendants remain parties to this action for the reasons stated below. The Court **DENIES** Defendants' motion to strike class allegations. ECF No. 498.

A revised scheduling order with deadlines for the completion of discovery relating to the class allegations only and for the submission of a motion for class certification shall be submitted by **Friday, November 16, 2018**, jointly, if possible, but if the various parties cannot agree, separately. The Court then will hold an in-person status conference on **Thursday, November 29, 2018 at 2:00pm**.

Consistent with this schedule and the Court's inherent authority to manage cases on its docket,² the Court will DENY any further amendments to the Fourth Amended Complaint, absent unforeseen circumstances not now readily apparent.

² *Deitz v. Bouldin*, 136 S. Ct. 1885, 1892 (2016) (noting a court's inherent authority to manage its docket with a "view toward the efficient and expedient resolution of cases.").

I. FACTUAL AND PROCEDURAL BACKGROUND

Plaintiffs own homes in Hartford, Tolland, and Windham Counties in Connecticut. Fourth Am. Compl. ("FAC") ¶ 1, ECF No. 488. Defendants are multiple insurance companies who each provided homeowners insurance to some of the Plaintiffs. *Id.*

A. Factual Allegations

Plaintiffs allegedly bought their homes between 1984 and 2015. *See e.g.* FAC ¶¶ 8–28. They allege that each of these properties has basement walls that are "crumbling and/or exhibiting a pattern of cracking" due to the oxidation of certain minerals contained in the concrete. *Id.* ¶¶ 2, 53. As a result of the deteriorating concrete, Plaintiffs claim that their "basement walls are in a state of collapse...." FAC ¶ 2.

*2 The Hallorans' home in Ellington, Connecticut, is representative of the type of damage the Plaintiffs allegedly face. Constructed around 1985, their home is a two-story colonial. FAC, Ex. 1: Fuss & O'Neill Report at 1, 3. In 2015, engineers examining the house noted "light to moderate cracking" in the concrete, "with many cracks located at the corners of the building." *Id.* at 3. Several cracks exceeded one eighth of an inch in width; most were between one-sixteenth and one-eighth. Inside the home, "map cracking was observed in the southwest corner." *Id.* at 4. The engineers also took core samples from the concrete, which revealed "significant fracturing" as well as "massive sulfide minerals" later identified as pyrrhotite. *Id.* at 5.

The engineers concluded that "[t]he oxidation (rusting) of pyrrhotite causes swelling and cracking" ultimately resulting "in decreased durability of concrete by changing the chemical nature of the paste and mechanical properties of the concrete." *Id.* at 5. Ultimately, the engineers'

"professional engineering judgment" was that the reaction would continue, "resulting in increased deterioration and eventual failure of the foundation to function as originally intended. The structural failure may lead to loss of support of the building structure, loss of support of the soil on the outside of the wall and/or allowance of water intrusion into the basement." *Id.* at 6.

Plaintiffs allege that "after discovering their deteriorating basement walls, Plaintiffs have homes that are practically impossible to sell, practically impossible to refinance and, eventually, will be impossible to safely live in." FAC ¶ 4. As a result, each Plaintiff has "made a claim for coverage with one of the Defendant Insurance Companies" and either been denied coverage or expected to be denied coverage at the time of filing of the Complaint. *See id.* ¶ 56. The cost of replacing the basement walls for these homes "is generally between \$100,000.00 and \$250,000.00 and the homeowners allege that "[a]fter paying insurance premiums for years, or even decades, Plaintiffs are left to face this massive expense all alone." *Id.* ¶ 83.

1. The Insurance Services Office

Plaintiffs allege that "[e]ach of the Defendant Insurance Companies adopted some or all of the language drafted" by a common organization — the Insurance Services Office, Inc. ("ISO"). *See* FAC ¶ 58. Plaintiffs purport that ISO, an insurance industry association, has "peddled" language in standardized policies. *Id.* ¶ 3. Plaintiffs contend that the insurance companies, along with ISO, were aware of the concrete issues in Connecticut "[a]t least as early as 1996" when claims began to be filed. *Id.* ¶ 63. They also allege that ISO and their insurance companies were aware that the Connecticut Supreme Court had defined collapse as a "substantial impairment of the structural integrity of a building." *Id.* ¶ 62 (citing *Beach v. Middlesex Mutual Assurance Co.*, 205 Conn. 246, 252 (1987)).

According to Plaintiffs, Defendants and ISO deliberately changed their policies' definitions of 'collapse' to try to avoid or minimize liability for potential claims brought by Plaintiffs. *Id.* ¶ 64. The new language excluded losses to a "foundation" or "retaining wall" and "excluded 'settling, cracking, shrinkage, bulging or expansion" from coverage of collapse. *Id.* ¶ 65. Plaintiffs allege that ISO was not the only organization that did so; the American

Association of Insurance Services (“AAIS”) adopted similar exclusions. *Id.* ¶ 66.

Ultimately, “[b]esieged by insureds raising this issue the Defendant Insurance Companies kept denying claims,” according to Plaintiffs, and they “provid[ed] bogus responses when they knew the claims were good, while at the same time, casting about for a way to try to shore up the language in their policies.” *Id.* ¶ 72.

*3 Plaintiffs allege this occurred primarily through “collapse” provisions, which were amended in 1999 and again in 2011. *Id.* ¶¶ 73–74. These changes ultimately narrowed the coverage for Plaintiffs. *Id.* ¶ 77.

2. The “Collapse” Provision

The standard insurance policy language produced by ISO, and allegedly adopted by the insurance companies, went through several iterations between 1990 and the present. FAC, Ex. 2.

Originally, the coverage provided for the “direct physical loss to covered property involving collapse of a building or any part of a building” caused by several discrete causes. FAC ¶ 101. These included “hidden decay”, “hidden insect or vermin damage”, the “use of defective materials or methods in construction, remodeling or renovation if the collapse occurs during the course of the construction, remodeling or renovation[.]” *Id.* The term “collapse” was undefined.³

³ This language will be described in this ruling as the “1997 ISO Language.” The modified language will be labeled the “1999 ISO Language.”

In 1999, ISO language allegedly changed and defined collapse as “an abrupt falling down or caving in of a building or any part of a building with the result that the building or part of the building cannot be occupied for its current intended purpose.” *Id.* The language clarified that a building “in danger of following down or caving in” or that “is standing” is “not considered to be in a state of collapse,” even if it “shows evidence of cracking, bulging, sagging bending, leaning, settling, shrinkage or expansion.” The policy language changed several more times after 2000, but included an identical collapse provision.

3. Notice Allegations

Plaintiffs allege that each Defendant changed the language of their policies over time, and that these unilateral changes “attempted to delete coverage.” FAC ¶ 79. They argue that they are “homeowners without the requisite knowledge and resources to make the many intricate observations needed to determine” if their policies would cover certain events. FAC ¶ 81. Plaintiffs claim they “did not and could not negotiate with the Defendant Insurance Companies at arms’ length” but instead trusted the insurance companies. *Id.* They allege that they “relied to their detriment on the Defendant Insurance Companies’ superior knowledge and skill in purchasing their homeowners insurance policies[.]” *Id.* ¶ 81.

The homeowners also allege that any changes were “unilateral” and made “without providing adequate notice or adequate disclosure” under Connecticut law. *Id.* ¶ 78.

B. Procedural History

Plaintiffs filed the first complaint in this case on January 29, 2016. *See* Compl., ECF No. 1. The initial complaint included seven named plaintiffs and more than one hundred defendants, all insurance companies. *Id.* ¶¶ 2. Before Defendants had responded, Plaintiffs filed an amended complaint that included additional defendants and claims on March 17, 2016. *See* First Am. Compl., ECF No. 122. Plaintiffs then moved to certify a class, which they defined as:

All individuals who own a home in the Connecticut towns of Manchester, Andover, Ellington, Stafford Springs or any other Connecticut town located east of the Connecticut River whose homes are insured by any of the Insurance Defendants, and whose homes have sustained ‘pattern cracking’ including but not limited to horizontal and vertical cracks on their basement walls, and whose bad foundation claims have been denied

or will be denied by the Insurance Defendants, which denials are or will be based on the same standardized language regarding the term 'collapse', the term 'basement', the term 'foundation', the term 'decay', the term 'hidden', and the term 'retaining wall.'

***4** Pls. Mot. for Class Certification, ECF No. 158.

The parties then sought different case management orders. *See* Pls. Proposed Case Management Order, ECF No. 239; Certain Defs. Non-Consented Mot. For Entry of Proposed Case Management Plan, ECF No. 240. The Court, in addressing these motions, provided that any motion for leave to file an amended complaint would be due by May 6, 2016. Order, ECF No. 254. It also denied Plaintiffs' motion for class certification without "prejudice to renewal following the Court's resolution of any motion to amend, and motions to dismiss directed at the amended complaint." *Id.*

Plaintiffs then moved for leave to file a Second Amended Complaint on May 7, 2016. *See* Pl Mot. for Leave to Amend, ECF No. 290. Plaintiffs sought to add nine additional plaintiffs and four additional defendants, and to remove three defendants. *Id.* at 4-5. Plaintiffs also sought to add additional causes of action for breach of contract and breach of the implied covenant of good faith and fair dealing. *Id.* Defendants did not oppose amendment. *See* Defs. Resp., ECF No. 309. The Court granted the motion, noting the lack of objection. Order, ECF No. 323.

The parties then moved to amend the scheduling order, and Plaintiffs stated that they intended to file a third amended complaint. ECF No. 325. The Court granted the request and stayed responsive pleadings regarding the Second Amended Complaint. *See* Order, ECF No. 326.

On October 31, 2016, Plaintiffs moved to amend the Complaint yet again and join additional parties; they sought to add nineteen new plaintiffs and reduce the overall number of defendants to thirty. *See* Pls. Mot. for Leave to Amend., ECF No. 332. Defendant State Farm Fire and Casualty Company opposed amendment, but other parties stated they had no opposition. *Cf.* State

Farm Fire and Casualty Co. Mem. of L. in Opp., ECF No. 337 (opposing Plaintiffs' motion for leave) *with* Defs. Resp., ECF No. 338 at 1 ("In the interest of judicial efficiency and economy for all parties and this Court, the Defendants listed in Exhibit 1 do not oppose Plaintiff's Motion insofar as it seeks leave to file a Third Amended Complaint.").

Before the Court addressed the motion, however, Plaintiffs moved for leave to file a substituted third complaint on December 12, 2016. *See* Pl. Mot., ECF No. 339. Plaintiffs stated that the proposed "Substituted Third Amended Complaint" rectified a number of errors, deleted references to individuals and companies not in the case, corrected a number of errors in dates, damage estimates, and party names, and dropped a number of claims. *Id.* Defendants, in large part, again did not oppose amendment, although they noted that "the proposed Substituted Third Amended Complaint is Plaintiffs' fifth complaint in this case" and "[e]ach such amendment has not only delayed joinder of issues, but has caused Defendants to incur significant and unnecessary expenses in defending themselves." Defs. Resp. to Mot. to Amend/Correct, ECF No. 340, at ¶ 1. Defendants requested, however, that further amendment be barred unless Plaintiffs demonstrated good cause under Federal Rule of Civil Procedure 16. *Id.* ¶ 2.

***5** The Court granted Plaintiffs' motion and allowed the Substituted Third Amended Complaint to be filed. *See* Order on Mot. Amend Compl., ECF No. 350. The Court noted Defendants' consent. *Id.* at 1. The Court denied the Defendants' request to preclude future amendments unless Plaintiffs could show good cause because: "Defendants cite no authority supporting their request that the Court preemptively impose a good cause standard on Plaintiffs' potential future requests to further amend the complaint in this case. The Court will not, therefore, order that Plaintiffs be precluded from any further amendments to the complaint in the absence of good cause." *Id.* at 2. Plaintiffs subsequently filed the Substituted Third Amended Complaint, ECF No. 352.

Defendants then filed numerous motions to dismiss. This included joint motions to dismiss several shared counts, ECF No. 373, and to strike the class allegations, ECF No. 375. Individual defendants also filed separate motions to dismiss. *See* Travelers Defs. Mot. Dismiss, ECF No. 377; Citizens Ins. Co. Mot. Dismiss., ECF No. 379; Bunker

Hill Ins. Co., ECF No. 381; New London Cty. Mutual Ins. Co. Mot. Dismiss, ECF No. 384; Trumbull Ins. Co. Mot. Dismiss, ECF No. 387; Allstate Ins. Co. Mot. Dismiss, ECF No. 391; Metropolitan Group Mot. Dismiss, ECF No. 394; Kemper Independence Ins. Co. Mot. Dismiss, ECF No. 397; Liberty Entities' Mot. Dismiss, ECF No. 399; Homesite Ins. Co. Mot. Dismiss, ECF No. 401; Amica Ins. Co. Mot. Dismiss, ECF No. 403; State Farm Mot. Dismiss, ECF No. 405;⁴ Merrimack Mutual Fire Ins. Co. Mot. Dismiss, ECF No. 409; American Commerce Ins. Co. Mot. Dismiss, ECF No. 411; NGM Ins. Co. Mot. Dismiss, ECF No. 413; CSAA Fire and Cas. Ins. Co. Mot. Dismiss, ECF No. 415; Nationwide Property and Cas. Ins. Co. and Harleysville Preferred Ins. Co. Mot. Dismiss, ECF No. 416; Middlesex Mutual Assurance Co. Mot. Dismiss, ECF No. 420. Plaintiffs responded to these motions on September 15, 2017. *See* Sept. 2017 Pls. Mem. in Opp. re Mot. to Strike, ECF No. 457; Sept. 2017 Pls. Resp. to Mot. to Dismiss and Mot. to Sever, ECF No. 456; Sept. 2017 Pls. Mem. in Opp. Combined, ECF No. 458.

⁴ State Farm also moved to sever. Mot. to Sever by State Farm Fire & Casualty Co., ECF No. 407.

Plaintiffs then filed another motion to amend on September 25, 2017, seeking leave to file a Fourth Amended Complaint, ECF No. 462. They sought leave to delete parties and claims that are no longer being pursued in light of the issues raised in various motions to dismiss, and to delete references to individuals and companies not in the case, and to add counts between existing parties, and to correct errors, missing, or confusing information. *Id.* at 1–2.

Defendants then moved to stay briefing on the pending motions to dismiss until the Court issued its ruling on the motion to amend. *See* Defs. Mot. to Stay, ECF No. 463. Plaintiffs opposed the Defendants' motion to stay briefing. Mem. in Opp. re Mot. to Stay Certain Defs. Emerg. Mot. to Stay Briefing on Subst. Third Am. Compl., ECF No. 467.

On September 29, 2017, the Court amended the scheduling order. Order on Amen. Sched. Order, ECF No. 470. The Court ordered Defendants to respond to the motion for leave to file a Fourth Amended Complaint within forty-five days. *Id.* at 2. Furthermore, the Court ordered that, should the Court deny leave to amend, Defendants would

have thirty (30) days to file replies to the pending motions or, if the Court granted the motion, Defendants would have forty-five (45) days to answer, move to dismiss, or otherwise respond to the Fourth Amended Complaint. *Id.*

Defendants filed two objections to the leave to amend. First, a group of defendants jointly argued that, while the Court has the discretion to grant leave, it should not do so because granting Plaintiffs' motion would lead to significant delay and increased litigation costs. Certain Defs. Opp. to Pls. Mot. (“Certain Defs. Opp.”), ECF No. 480.⁵ Second, Middlesex Mutual Assurance Company (“MMAC”) filed an additional response to the motion for leave. Middlesex Mutual Assurance Co. Response (“MMAC Resp.”), ECF No. 481. MMAC raised individual arguments as to the individual Plaintiffs asserting claims against the company. *Id.*

⁵ Counsel for Liberty Mutual Fire Insurance Company, Peerless Insurance Company, and Safeco Insurance Company of America signed the opposition. Allstate Insurance Co., American Commerce Insurance Company, Bunker Hill Insurance Company, Citizens Insurance Company of America, CSAA Fire & Casualty Insurance Company, Fidelity and Guaranty Insurance Company, Harleysville Preferred Insurance Company, Homesite Insurance Company, Kemper Independence Insurance Co., Merrimack Mutual Fire Insurance Company, Metropolitan Group Property and Casualty Insurance Co., Nationwide Property & Casualty Insurance Company, NGM Insurance Company, New London County Mutual Insurance Company, The Automobile Insurance Company of Hartford, Connecticut, The Standard Fire Insurance Company, The Travelers Home & Marine Insurance Company, The Travelers Indemnity Company of America, and Trumbull Insurance Company joined the opposition. The Court will refer to these parties collectively as “Certain Defendants.”

⁶ The Court granted leave to amend and mooted the pending motions to dismiss on February 8, 2018. *See* Order on Pl. Mot. for Leave to Amend (“Leave to Amend Order”), ECF No. 487. The Court determined that it would exercise its discretion because the delay had not yet prejudiced the parties, *id.* at 12, and no claims were futile, *id.* at 12-13. Ultimately, the Court determined “This case is a complex action involving Plaintiffs who seek to represent a class in a suit against multiple defendants,

including some claims that relate to the class as a whole and some that relate to the interaction between subsets of plaintiffs and defendants. Some delay is inevitable given the posture of the case.” *Id.* at 11. The Court also declined to ban Plaintiffs from further amendments at that time. *Id.* at 15. The Court directed Plaintiffs to file the Fourth Amended Complaint and set a briefing schedule for a new round of motions to dismiss. *Id.* at 16–17.

Plaintiffs filed the Fourth Amended Complaint on February 14, 2018. FAC. Three-thousand and three paragraphs long, the Fourth Amended Complaint asserts four categories of claims: breach of contract, declaratory judgment, breach of the implied covenant of good faith and fair dealing, and violations of the Connecticut Unfair Trade Practices Act (“CUTPA”), CONN. GEN. STAT. § 42-110(g), and Connecticut Unfair Insurance Practices Act (“CUIPA”), CONN. GEN. STAT. § 38a-815-35. Each Plaintiff asserts multiple counts against the insurer who provided insurance on his or her home, and in some cases an individual Plaintiff alleges unlawful conduct by multiple Defendants.

Plaintiffs also renewed their class allegations. *See id.* ¶ 2994. According to the Fourth Amended Complaint, Plaintiffs seek to bring this case on behalf of:

All persons who purchased any of the Defendants’ homeowners insurance policies that insure property located in Connecticut and which contain coverage for “collapse,” and who sought coverage for “collapse” of their basement walls and did not get it; and all persons who will purchase such homeowners insurance policies from any of the Defendants and who will seek such coverage, and who are unaware of the loss at the time of purchase.

Id. ¶ 2995. They allege that the proposed class would meet the requirements of Rule 23(b)(1), (b)(2) and (b)(3) of the Federal Rules of Civil Procedure. *Id.* ¶ 2995.

Defendants then moved, individually and as a group, to dismiss the Fourth Amended Complaint. *See, e.g.*, Certain Defs. Mot. to Dismiss, ECF No. 497. Additionally, Defendants moved to strike the class allegations. *See* Certain Defs Class Mem., ECF No. 498. Their motion to strike essentially employs each of the sections of Rule 23 of the Federal Rules of Civil Procedure. They argue that Plaintiffs will not be able to show commonality, and that each claim raises numerous individualized inquires that would defeat the class certification motion. *Id.* at 11. They also argue that the Plaintiffs cannot meet any of the requirements under the subsections of Rule 23(b), and therefore class certification would be inappropriate. *Id.* at 25-35. Plaintiffs responded to these motions on May 11, 2018. *See* May 2018 Pl. Mem. in Opp. re Mot. to Strike, ECF No. 543; May 2018 Pl. Mem. in Opp. Combined, ECF No. 544. The parties filed various reply briefs in May and June of 2018.

Before oral argument on the pending motions, the Court *sua sponte* noted that two other courts in the District had certified the following question to the Connecticut Supreme Court: “What constitutes a ‘substantial impairment of structural integrity’ for purposes of applying the ‘collapse’ provision of this homeowners’ insurance policy?” Order at 1, ECF No. 572 (citing *r Karas v. Liberty Ins. Corp.*, 3:13-cv-01836 (SRU), 2018 WL 2002480 (D. Conn. 2018); *Vera v. Liberty Ins. Corp.*, No. 3:16-cv-72 (RNC), 2018 WL 3014112 (D. Conn. 2018)). The Court, noting that other courts in this District had subsequently stayed similar cases, requested that the parties “address the impact, if any, on the question certified to the Connecticut Supreme Court on this case and what steps, if any, the Court should take as a result.” *Id.*

II. STANDARD OF REVIEW

A. Rule 12(b)(6)

*7 A complaint must contain a “short and plain statement of the claim showing that the pleader is entitled to relief.” FED. R. CIV. P. 8(a). A court will dismiss any claim that fails “to state a claim upon which relief can be granted.” FED. R. CIV. P. 12(b)(6). In reviewing a complaint under Rule 12(b)(6), the court applies a “plausibility standard” guided by “[t]wo working principles.” *Ashcroft v. Iqbal*, 556 U.S. 662, 678, 129 S. Ct. 1937, 1949, 173 L.Ed. 2d 868 (2009).

First, “[t]hreadbare recitals of the elements of a cause of action, supported by mere conclusory statements, do not suffice.” *Id.*; see also *Bell Atl. Corp. v. Twombly*, 550 U.S. 544, 555, 127 S. Ct. 1955, 1964, 167 L.Ed. 2d 929 (2007) (“While a complaint attacked by a Rule 12(b)(6) motion to dismiss does not need detailed factual allegations ... a plaintiff’s obligation to provide the ‘grounds’ of his ‘entitle[ment] to relief’ requires more than labels and conclusions, and a formulaic recitation of the elements of a cause of action will not do.” (internal citations omitted)). Second, “only a complaint that states a plausible claim for relief survives a motion to dismiss.” *Iqbal*, 556 U.S. at 679. Thus, the complaint must contain “factual amplification ... to render a claim plausible.” *Arista Records LLC v. Doe 3*, 604 F.3d 110, 120 (2d Cir. 2010) (quoting *Turkmen v. Ashcroft*, 589 F.3d 542, 546 (2d Cir. 2009)).

At the motion to dismiss stage, all of the factual allegations in the complaint will be taken as true. *Iqbal*, 556 U.S. at 678. The factual allegations will also be viewed in the light most favorable to the plaintiffs, and all inferences will be drawn in favor of the plaintiffs. *Cohen v. S.A.C. Trading Corp.*, 711 F.3d 353, 359 (2d Cir. 2013); see also *York v. Ass’n of the Bar of the City of New York*, 286 F.3d 122, 125 (2d Cir. 2002) (“On a motion to dismiss for failure to state a claim, we construe the complaint in the light most favorable to the plaintiff, accepting the complaint’s allegations as true.”), *cert. denied*, 537 U.S. 1089 (2002)).

A court considering motions to dismiss under Rule 12(b)(6) generally limits its review “to the facts as asserted within the four corners of the complaint, the documents attached to the complaint as exhibits, and any documents incorporated in the complaint by reference.” *McCarthy v. Dun & Bradstreet Corp.*, 482 F.3d 184, 191 (2d Cir. 2007). The court may also consider “matters of which judicial notice may be taken” and “documents either in plaintiffs’ possession or of which plaintiffs had knowledge and relied on in bringing suit.” *Brass v. Am. Film Techs., Inc.*, 987 F.2d 142, 150 (2d Cir. 1993); *Patrowicz v. Transamerica HomeFirst, Inc.*, 359 F. Supp. 2d 140, 144 (D. Conn. 2005). Accordingly, the court may review the homeowners insurance policies in this record, as well as the engineers’ report and related documents.

B. Motion to Strike under Rule 12(f)

A court may “strike from a pleading any insufficient defense or any redundant, immaterial, impertinent, or scandalous matter.” FED. R. CIV. P. 12(f). Resolution of a motion to strike under this rule is within the discretion of the district court, but such motions are generally disfavored and should be infrequently granted. *Tucker v. Am. Int’l Grp.*, 936 F. Supp. 2d 1, 15–16 (D. Conn. 2013).

The Second Circuit has long held that courts “should not tamper with the pleadings unless there is a strong reason for so doing,” and that a motion to strike under Rule 12(f) should be denied “unless it can be shown that no evidence in support of the allegation would be admissible.” *Lipsky v. Commonwealth United Corp.*, 551 F.2d 887, 893 (2d Cir. 1976). A motion to strike is particularly disfavored with class allegations “because it requires a reviewing court to preemptively terminate the class aspects of litigation, solely on the basis of what is alleged in the complaint and before plaintiffs are permitted to complete the discovery to which they would otherwise be entitled on questions relevant to class certification.” *Chen-Oster v. Goldman, Sachs & Co.*, 877 F. Supp. 2d 113, 117 (S.D.N.Y. 2012) (internal alterations and quotation marks omitted).

*8 The party moving to strike thus “bears a heavy burden” and ordinarily must show that “(1) no evidence in support of the allegations would be admissible; (2) the allegations have no bearing on the issues in the case; and (3) permitting the allegations to stand would result in prejudice to the movant.” *Tucker*, 936 F. Supp. at 16.

III. DISCUSSION

This case, one of many pending in the District, addresses crumbling concrete and collapse coverage. This case differs, however, in one material respect: it is brought as a putative class action. Plaintiffs argue that their express goal is to “bring to an end, once and for all, to insurers’ arguments that the policy language does not mean what the Courts have continued to say it means.” May 2018 Pl. Mem. in Opp. Combined at 192. The scope, and length, of the Fourth Amended Complaint sweeps far beyond the typical case, with multiple Plaintiffs alleging violations of Connecticut law by Defendants and seeking to represent a class of even greater numbers.

The process for deciding the issues, however, proceeds along a familiar path. Ultimately, the Court must decide if Plaintiffs have sufficiently alleged that one of their homeowners insurance policies would cover the

deteriorating condition. The precise language of these policies has been repeatedly addressed by courts in this District. *See, e.g., Zamichie v. CSAA Fire & Cas. Ins. Co.*, No. 3:16-CV-739 (VAB), 2018 WL 950116 (D. Conn. Feb. 20, 2018); *Makufka v. CSAA Fire & Cas. Ins. Co.*, No. 3:16-cv-00567 (VLB), 2018 WL 465775 (D. Conn. Jan. 18, 2018); *Gabriel v. Liberty Mut. Fire Ins. Co.*, No. 3:14-cv-01435 (VAB), 2017 WL 6731713 (D. Conn. Dec. 29, 2017); *Allstate Ins. Co. v. Swaminathan*, No. 3:16-cv-1708 (VAB), 2017 WL 6614092 (D. Conn. Dec. 27, 2017); *Liston-Smith v. CSAA Fire & Cas. Ins. Co.*, No. 3:16-cv-510 (JCH), 2017 WL 6459552, (D. Conn. Dec. 15, 2017); *Lees v. Allstate Ins. Co.*, No. 3:15-cv-1050 (VAB), 2017 WL 5906613 (D. Conn. Nov. 30, 2017); *Manseau v. Allstate Ins. Co.*, No. 3:16-cv-1231 (MPS), 2017 WL 3821791 (D. Conn. Aug. 31, 2017); *Adams v. Allstate Ins. Co.*, 276 F. Supp. 3d 1 (D. Conn. 2017); *Clough v. Allstate Ins. Co. et al.*, No. 3:17-cv-140 (JBA) (D. Conn. Aug. 29, 2017); *Agosti v. Merrimack Mut. Fire Ins. Co.*, No. 3:16-cv-1686 (SRU), 2017 WL 3710786 (D. Conn. Aug. 28, 2017); *Valls v. Allstate Ins. Co.*, No. 3:16-cv-1310 (VAB), 2017 WL 4286301 (D. Conn. Sept. 27, 2017); *Metsack v. Liberty Mut. Fire Ins. Co.*, 3:14-cv-1150 (VLB), 2017 WL 706599 (D. Conn. Feb. 21, 2017).

As in similar cases, and because the breach of contract claims will be determinative of many other claims, the Court will begin by addressing the policy language and Plaintiffs' breach of contract claims.

A. Breach of Contract Claims

Counts One through Forty-Six of the Fourth Amended Complaint allege breach of contract claims. FAC ¶¶ 84–852. Each Defendant argues that the breach of contract claims—factual allegations alleging substantial impairments to the homes falling short of total cave-ins—fail to state a claim covered by the insurance policies. *See e.g., Certain Defs. Mot. to Dismiss.*

Under Connecticut law, the terms of an insurance policy are “construed according to the general rules of contract construction.” *Liberty Mutual Ins. Co. v. Lone Star Indus.*, 290 Conn. 767, 795 (2009) (internal quotations and citations omitted). While contracts are strictly construed in favor of the insured, “the mere fact that the parties advance different interpretations of the language in question does not necessitate a conclusion that the language is ambiguous.” *Id.* at 796. Insurance contract “language should be construed in favor of the

insured unless it has ‘a high degree of certainty’ that the policy language clearly and unambiguously excludes the claim.” *Id.* (quoting *Kelly v. Figueiredo*, 223 Conn. 31, 37 (1992)). Courts should construe insurance contracts as laypeople would. *Kim v. State Farm Fire & Cas. Ins. Co.*, No. 17-2304-CV, 2018 WL 4847195, at *1 (2d Cir. Oct. 5, 2018)(summary order), citing *Vt. Mut. Ins. Co. v. Walukiewicz*, 966 A.2d 672, 678 (Conn. 2009) (internal quotation marks and citations omitted).

*9 The Second Circuit recently addressed insurance contract interpretation in a concrete case involving plaintiff-appellants Gueng-Ho Kin and Jae Kim (“the Kims”). *Kim*, 2018 WL 4847195. The Kims' State Farm insurance policy expressly excluded “any loss ... [due to]... settling, cracking, shrinking, bulging, or expansion of pavements, patios, foundation, walls, floors, roofs or ceilings... [and any loss due to] defect, weakness, inadequacy, fault or unsoundness in ... materials used in construction or repair.” *Id.* at *4. Because the policy language “explicitly excludes coverage for the collapse of an insured dwelling that was caused by foundation concrete cracking because of the use of defective materials in the construction.... the language is not ambiguous.” *Id.* Since the contract language would be clear to a layperson, the district court affirmed summary judgment.

This recent decision is consistent with decisions throughout the District of Connecticut. Plaintiffs whose policies do not include collapse provisions⁶ cannot recover when clear policy language has disclaimed liability for “any loss” related to concrete movement or disintegration, including eventual collapse. By contrast, when plaintiffs' policies include collapse provisions, courts must determine if these provisions cover crumbling concrete. Such policies almost universally exempt cracking or deterioration of materials from coverage, but also include a separate “collapse” provision. The issue therefore is whether the damage alleged amounts to a “collapse” within the terms of a given policy. That inquiry requires examination of the definition of collapse.

⁶ As the district court noted, State Farm had deleted the collapse provision of the Kim's policy. *Kim v. State Farm Fire & Cas. Co.*, 262 F. Supp. 3d 1, 2–3 (D. Conn. 2017), *aff'd sub nom. Kim v. State Farm Fire & Cas. Ins. Co.*, No. 17-2304-CV, 2018 WL 4847195 (2d Cir. Oct. 5, 2018).

1. The Collapse Provision in Connecticut Law

Courts in this District now draw a distinction between and among “collapse” provisions in insurance policies involving concrete claims. The distinction turns on whether the term “collapse,” as defined in the policy, stands alone or is modified by other terms indicating some temporal quality. Compare *Hurlburt v. Mass. Homeland Ins. Co.*, No. 3:17-CV-503 (VAB), 2018 WL 1035810, at *5 (D. Conn. Feb. 23, 2018) (interpreting policy that defined “collapse” as “an abrupt falling down,” and stated that the policy covered “sudden and accidental direct physical loss” to be unambiguous and “require[] a temporal quality”), with *Roberts v. Liberty Mut. Fire Ins. Co.*, 264 F. Supp. 3d 394, 404 (D. Conn. 2017) (holding, at summary judgment, that a policy that includes a collapse provision but “does not define the term ‘collapse’ ” would be evaluated under the Connecticut Supreme Court’s definition in *Beach v. Middlesex Mutual Assurance Co.*, 205 Conn. 246 (1987)).

When the collapse term is undefined or unqualified, courts in this District generally apply the Connecticut Supreme Court’s decision in *Beach*. See, e.g., *Roberts v. Liberty Mut. Fire Ins. Co.*, 264 F. Supp. 3d 394, 404; *Karas v. Liberty Ins. Corp.*, 33 F. Supp. 3d 110, 114 (D. Conn. 2014) (applying *Beach* and noting “[w]ith respect to the breach of the agreement, the Karases allege that the basement walls suffered a substantial impairment to their structural integrity, which constitutes a collapse.”);⁷ *Belz v. Peerless Ins. Co.*, 46 F. Supp. 3d 157, 163 (D. Conn. 2014), reconsideration denied, No. 3:13-CV-01315 (VAB), 2016 WL 6542828 (D. Conn. Nov. 3, 2016) (applying *Beach* standard and denying motion to dismiss).

⁷ In *Karas*, the court subsequently certified the question to the Connecticut Supreme Court: “What constitutes a ‘substantial impairment of structural integrity’ for purposes of applying the ‘collapse’ provision of this homeowners’ insurance policy?” *Karas v. Liberty Ins. Corp.*, No. 3:13-cv-01836 (SRU), 2018 WL 2002480, at *5 (D. Conn. Apr. 30, 2018). The Court noted that it found the *Beach* standard was “relatively clear” but certified because the definition raised “important issues of public policy” and was “likely—indeed, almost certain—to recur....” *Id.* at *2 (internal quotations and citations omitted).

*10 In *Beach*, the plaintiffs noticed a crack in the foundation wall of a building they owned, and sought coverage under an insurance policy that included coverage for “collapse” but excluded coverage for damages arising from “settling, cracking, shrinkage, bulging or expansion.” *Beach*, 205 Conn. at 248. There, the insurance company argued that “collapse” should be interpreted one of two ways: first, a “sudden and complete catastrophe” or, second, that reading the policy as a whole, a “casualty of a sudden and cataclysmic nature.” *Id.* at 250–51. The Connecticut Supreme Court rejected those definitions, instead holding that when collapse was not defined in an insurance policy, the term “include[s] coverage for any substantial impairment of the structural integrity of a building.” *Id.* The insurance company then could be held “liable even though no actual caving-in occurred and the structure was not rendered completely uninhabitable.” *Id.* at 253. The Court explained that “[r]equiring the insured to await an actual collapse would not only be economically wasteful, but would also conflict with the insured’s contractual and common law duty to mitigate damages.” *Id.* at 253 n.2.

Applying the *Beach* definition, courts in this District have regularly found the “collapse” provision of insurance policies ambiguous and denied motions to dismiss as a result. See, e.g., *Agosti v. Merrimack Mut. Fire Ins. Co.*, No. 3:16-cv-01686 (SRU), 2017 WL 3710786, at *4 (D. Conn. Aug. 28, 2017) (“For the reasons stated by the Connecticut Supreme Court in *Beach v. Middlesex Mutual Assurance Co.*, and subsequently followed by many judges of this court, I conclude that the term ‘collapse,’ standing alone, ‘is sufficiently ambiguous to include coverage for any substantial impairment of the structural integrity of a building.’”).

In contrast, when collapse is modified by terms such as “sudden and accidental” or “abrupt,” courts in this District have held that the terms of the policy are unambiguous and that the plaintiffs in concrete cases have not alleged such a collapse. See, e.g., *Valls v. Allstate Ins. Co.*, No. 3:16-cv-01310 (VAB), 2017 WL 4286301, at *5 (D. Conn. Sept. 27, 2017) (“The Vallses’ policy, however, explicitly requires that any collapse be ‘a sudden and accidental direct physical loss’ and a ‘complete collapse.’ As addressed above, they have not alleged a sudden collapse.”); *Manseau v. Allstate Insurance Co.*, No. 3:16-cv-1231 (MPS), 2017 WL 3821791, at *5 (D. Conn. Aug. 31, 2017) (“Regardless of whether the loss is characterized

as a collapse or a chemical reaction, Plaintiffs fail to allege that any loss occurred suddenly, that is, temporally abruptly, as required for coverage to apply.”); Hurlburt, 2018 WL 1035810, at *5 (“Here, the contract language is unambiguous; the limiting term ‘sudden’ requires a temporal quality.”).

The Court must therefore look to the specific language of the policy to determine whether the *Beach* definition applies and the term “collapse” is ambiguous, or whether the term is modified and therefore unambiguous.

2. 1997 ISO Language

The first set of claims here arise under language adopted by ISO in 1997. The policies provide for coverage of “direct physical loss to covered property involving collapse of a building or any part of a building” when the result of several different causes, including “hidden decay” and the “use of defective material or methods in construction, remodeling or renovation.” *See, e.g.*, May 2018 Pl. Mem. in Opp. Combined at 19.

This language is identical to the language addressed in several other cases in this District, and these cases have found the “collapse” term to be ambiguous. *See, e.g.*, *Roberts*, 264 F. Supp. 3d at 404; *Karas*, 33 F. Supp. 3d at 114; *Belz*, 46 F. Supp. 3d at 163. Under Connecticut law, the ambiguity must be resolved in favor of coverage; Plaintiffs with claims arising under the older policy language have therefore properly alleged a “collapse” that could be covered under the policies.

For these sets of claims, the Court must turn to several of the alterative arguments raised by Defendants. All of these arguments have either been addressed by courts in the context of concrete cases, or implicate factual determinations that are more appropriate for summary judgment.

a. Imminence Requirement

*11 Several Defendants argue that *Beach* actually had an implicit “imminence” requirement. Homesite Mem. in Supp. Mot. to Dismiss, ECF 519; Citizens Ins. Mot. to Dismiss, ECF No. 509, at 12–15; Standard Fire Ins. Co. et al. Mot. to Dismiss, ECF No. 508, at 24. This

Court previously rejected this argument in *Gabriel*. *See Gabriel v. Liberty Mut. Fire Ins. Co.*, No. 3:14-CV-01435-VAB, 2017 WL 6731713, at *5–6 (D. Conn. Dec. 29, 2017). Alternatively, one party urges the Court to adopt the definition of “collapse” that the Supreme Court of Washington adopted in *Queen Anne Park Homeowners Assoc. v. State Farm Fire and Cas. Co.*, 352 P.3d 790 (Wash. 2015). *See Bunker Hill Ins. Co. Mem. in Supp. Mot. to Dismiss*, ECF No. 506, at 18. The Court finds *Queen Anne* unpersuasive.

As the Court previously noted, the Connecticut Supreme Court rejected the view that “ ‘collapse’ unmistakably connotes a sudden falling in, loss of shape, or flattening into a mass of rubble,” characterizing this view as one in “the distinct minority.” *Gabriel*, 2017 WL 6731713 at *6 (*citing Beach*, 205 Conn. at 252). The Court reminded those plaintiffs of the Connecticut Supreme Court’s underlying rationale that “[r]equiring the insured to await an actual collapse would not only be economically wasteful, but would also conflict with the insured’s contractual and common law duty to mitigate damages.” *Id.* at 253 n.2. The Court noted that the Connecticut Supreme Court joined with the “more persuasive authorities” in its *Beach* holding “that the term “collapse” is sufficiently ambiguous to include coverage for any substantial impairment of the structural integrity of a building.” *Id.* at 252 (citations omitted). While *Beach* provides a narrow path to recovery consistent with Connecticut law, *Queen Anne* does not comport with Connecticut law.

In *Queen Anne Park Homeowners Assoc. v. State Farm Fire and Casualty Co.*, the Supreme Court of Washington defined “collapse” following certification of a question from the Ninth Circuit. It decided that “[c]ollapse” in the Policy means the “substantial impairment of structural integrity of a building or part of a building that renders such building or part of a building unfit for its function or unsafe in a manner that is more than mere settling, cracking, shrinkage, bulging, or expansion.” *Queen Anne Park*, 352 P.3d at 794.

Connecticut state courts and federal courts interpreting Connecticut law “have consistently declined to follow the reasoning of *Queen Anne* and like cases.” *Roberts*, 264 F. Supp. 3d at 407; *see also Belz*, 204 F. Supp. 3d at 464; *see also Metsack*, 2017 WL 706599, at *5 (finding “no reason to deviate” from approach in *Belz*).

In *Roberts*, Judge Underhill found no reason to adopt Washington state law when the standard in Connecticut is relatively clear following the *Beach* decision. Further, Judge Underhill noted that “[t]he facts in *Beach* also indicate that the *Queen Anne* standard is inapposite. The Beaches’ “house never actually caved in,” and “the plaintiffs continued in occupancy during the period ... [of] needed structural repairs.” *Roberts*, 264 F. Supp. 3d at 407 (citing *Beach*, 205 Conn. at 248). Most Connecticut cases are factually closer to *Beach* than *Queen Anne*. Further, until the Connecticut Supreme Court decides otherwise, Connecticut law concerning “substantial impairment” to a home’s “structural integrity” does not align with the law as described in *Queen Anne*.

b. Policy Exclusions for “Cracking” and Deterioration

Several Defendants argue that the type of damage alleged by Plaintiffs is explicitly excluded under language stating that the “collapse” provision “does not include settling, cracking, shrinking, bulging or expansion.” See, e.g., Kemper Independence Ins. Co. Mot. Dismiss at 11; Bunker Hill Ins. Co. Mem. in Supp. Mot. to Dismiss at 18. Others point to language that excludes the coverage for deterioration, latent defect, or vice. See Kemper Independence Ins. Co. Mot. Dismiss at 10. The Court notes, however, that Plaintiffs’ claims go beyond simply cracking or bulging; Plaintiffs allege substantial impairment. Identical claims have regularly survived motions to dismiss. See e.g., *Belz*, 204 F. Supp. 3d at 465; *Roberts*, 264 F. Supp. 3d at 407.

c. “Foundation” and “Retaining Wall” Exceptions

*12 The policies at issue in this case frequently exclude coverage for the “foundation,” and several Defendants argue that the claimed damage to basement walls would qualify as damage to the foundation. See, e.g., Mem. of Law in Supp. of New London Co. Mut. Ins. Co. Mot. to Dismiss, ECF No. 503, at 24; Bunker Hill Ins. Co. Mem. in Supp. Mot. to Dismiss, ECF No. 506, at 17; Standard Fire Ins. Co. et al. Mot. to Dismiss at 20; Liberty Entities Mem. of Law in Supp. of Mot. to Dismiss, ECF No. 517, at 15; Homesite Mem. of Law in Supp. of Mot. to Dismiss at 20; Amica Mut. Ins. Co., Mem. of Law in Supp. of Mot. to Dismiss, ECF No. 521, at 18. This Court, however, has previously determined that “foundation”

in nearly identical language to the 1997 ISO Language “is ambiguous because it is reasonably susceptible to the ... interpretation to mean footings under the basement walls that support the entire structure or the lowest-load bearing part of the building ... [or] a concrete structure, including basement walls, that supports a building from underneath.” *Gabriel v. Liberty Mut. Fire Ins. Co.*, No. 3:14-CV-01435-VAB, 2015 WL 5684063, at *4 (D. Conn. Sept. 28, 2015).

In *Gabriel*, the Court noted that each similar case in the District had been decided the same way, and determined that the term “foundation” is ambiguous. See *Bacewicz v. NGM Ins. Co.*, No. 3:08-cv-1530 (JCH), 2010 WL 3023882, at *1-4 (D. Conn. Aug. 2, 2010) (in a case involving cracks in concrete basement walls caused by chemical compound within concrete, Judge Underhill held that the term “foundation” in identical policy language was “reasonably susceptible to more than one reading”); *Karas v. Liberty Ins. Corp.*, 33 F. Supp. 3d 110, 115-16 (D. Conn. 2014) (in a case involving nearly identical facts, policy language, and arguments, Judge Underhill held that the terms “foundation” and “retaining wall” were ambiguous, and denied the motion to dismiss the breach of contract claim). Such ambiguity must be resolved in favor of the Plaintiffs at this stage. See, e.g., *Agosti v. Merrimack Mut. Fire Ins. Co.*, No. 3:16-cv-01686 (SRU), 2017 WL 3710786, at *4 (D. Conn. Aug. 28, 2017) (“For the reasons stated by the Connecticut Supreme Court in *Beach v. Middlesex Mutual Assurance Co.*, and subsequently followed by many judges of this court, I conclude that the term ‘collapse,’ standing alone, ‘is sufficiently ambiguous to include coverage for any substantial impairment of the structural integrity of a building.’”).

d. Timing Considerations

Multiple Defendants raise arguments related to the timing of claims, alleging that the claims are barred by the suit limitations provisions of each policy. See e.g., Certain Defs. Mot. to Dismiss at 22, fn 13.

As the Court has previously noted in this case, suit limitations under Connecticut law do not function in the same way as a statute of limitations. See Leave to Amend Order at 13-14; *Roberts v. Amica Mut. Ins. Co.*, No. 3:14-cv-1589 (SRU), 2015 WL 7458510, at *3

(D. Conn. Nov. 24, 2015) (“Though the contractual suit limitation is enforceable, it ‘does not operate as a statute of limitations.’”) (quoting *Monteiro v. American Home Assurance Co.*, 177 Conn. 281, 283 (1979)). Ultimately, suit limitation provisions are affirmative defenses that require a review of the record and are more appropriately dealt with at summary judgment. See *Garcia v. Pancho Villa’s of Huntington Vill., Inc.*, 268 F.R.D. 160, 166 (E.D.N.Y. 2010) (granting leave to amend because “the determination” of a statute of limitation defense “requires a consideration of the merit of both parties’ claims and defenses” and is “better addressed on a motion for summary judgment or at the time of trial.”).

Relatedly, New London contends that the Masciovecchios were required to bring suit by September 2016 under the terms of their policy and that they cannot relate the allegations of the Fourth Amended Complaint back to earlier filings. Mem. of Law in Supp. of New London Mot. to Dismiss at 25. The Court disagrees.

The Federal Rules of Civil Procedure permit relation back of an amendment to an earlier pleading when “the amendment asserts a claim or defense that arose out of the conduct, transaction, or occurrence set out--or attempted to be set out--in the original pleading.” FED. R. CIV. P. 15(c)(B). Rule 15 permits relation back when a defendant “(i) received such notice of the action that it will not be prejudiced in defending on the merits; and (ii) knew or should have known that the action would have been brought against it, but for a mistake concerning the proper party’s identity.” FED. R. CIV. P. 15 (c)(C)(i-ii). In a case involving a single plaintiff and known defendant(s), the Second Circuit typically limits relation back to cases of “‘mistake’ concerning the identity of the parties....” *Barrow v. Wethersfield Police Dep’t*, 66 F.3d 466, 470 (2d Cir. 1995), *modified*, 74 F.3d 1366 (2d Cir. 1996). But in more complex cases, the Court must consider Rule 15 and Rule 21 in concert. FED. R. CIV. P. 15, 21.

*13 Rule 15(a) provides that the Court “should freely give leave [to amend] when justice so requires.” FED. R. CIV. P. 15(a)(2). This license, however, is not unlimited. The Court should deny “motions to amend ... in instances of futility, undue delay, bad faith or dilatory motive, repeated failure to cure deficiencies by amendments previously allowed, or undue prejudice to the non-moving party.” *Burch v. Pioneer Credit Recovery, Inc.*, 551 F.3d 122, 126 (2d Cir. 2008) (citation omitted). Rule 21 provides

that a party may be added “at any stage of the action and on such terms as are just.” FED. R. CIV. P. 21. Under either Rule 15 or 21, district courts have discretion to give or deny leave to amend a complaint. *Lego A/S v. Best-Lock Const. Toys, Inc.*, 886 F. Supp. 2d 65, 71 (D. Conn. 2012) (noting that Rules 15(a), 20(a) and 21 “all leave the decision whether to permit or deny amendment to the district court’s discretion”) (quoting *Oneida Indian Nation of N. Y. State v. Cty. Of Oneida*, 199 F.R.D. 61, 72 (N.D.N.Y. 2000)); see also *Foman v. Davis*, 371 U.S. 178, 182 (1962).

The Masciovecchios’ were original Plaintiffs in this case, which was complex even in its initial filing on January 29, 2016. Compl. New London appeared in the case within months of the original filing and prior to the filing of the First Amended Complaint. ECF Nos. 265–268. On April 31, 2016, New London was served electronically. ECF No. 173. New London was named as a Defendant on May 7, 2016, in the Second Amended Complaint. Sec. Am. Compl., ECF No. 290. Based upon this history, the Court finds that New London had sufficient notice that it was a defendant in the present litigation. Further, New London’s role in this litigation is similar to the other Defendants’ roles: it is an insurer that denied or will deny homeowners insurance claims related to deficient concrete. For these reasons, the Court finds that the Masciovecchios’ claims against New London in the fourth amended complaint sufficiently relate back to the original Complaint. Compl. The Court will address whether the Masciovecchios’ claims are barred by suit limitation provisions at a later stage.

Given the discussion above, the Court divides the counts in the Fourth Amended Complaint into three categories:

- i. counts involving a Plaintiff(s) holding a single policy with a Defendant, and the policy does not define collapse using a temporal modifier;
- ii. counts involving a Plaintiff(s) holding a single policy with a Defendant, and the policy defines collapse using a temporal modifier (e.g., abrupt, suddenly); and
- iii. counts involving a Plaintiff(s) with two or more policies with the same Defendant where the policy language changed over time.

i. Counts Involving a Plaintiff(s) Holding a Single Policy with a Defendant, and the Policy Does Not Define Collapse Using a Temporal Modifier

Given the discussion above, Connecticut law and numerous cases in this District make it clear that policies that include collapse provisions without temporal modifiers such as “abrupt” are sufficiently ambiguous to survive a motion to dismiss. The Court therefore denies the motions to dismiss with respect to the following breach of contract counts in the Fourth Amended Complaint: 1, 4, 8, 9, 10, 12, 13, 14, 21, 22, 24, 28, 29, 32, 35, and 40. Because the Connecticut Supreme Court will be reviewing this issue, this denial is without prejudice in the event a decision there suggests a different result.

ii. Counts Involving a Plaintiff(s) Holding a Single Policy with a Defendant, and the Policy Defines Collapse Using a Temporal Modifier (e.g., abrupt, suddenly)

A second category of counts involves Plaintiffs whose policies with single Defendants include temporal modifiers for the collapse provision. These claims include two different types of “collapse” provisions. First, the policy might require the “collapse” to be “abrupt” and the building to be unusable for its normally intended purposes. *See, e.g.*, Mot. to Dismiss by Nationwide Property & Casualty Insurance Company, ECF No. 533, at 1. Second, the language might require the collapse to be “sudden and accidental.” *See, e.g.*, Mem. of Law in Support Allstate’s Mot. to Dismiss, ECF No. 515, at 13.

*14 Under both sets of policy language, the “collapse” provision is not ambiguous; it requires a temporal element or, as one court in the District described it, a “sudden” collapse. *Adams*, 2017 WL 3763837 at *4 (finding that plaintiffs had failed to allege a sudden collapse); *see also Manseau v. Allstate Insurance Co.*, No. 3:16-CV-1231 (MPS), 2017 WL 3821791, at *5 (D. Conn. Aug. 31, 2017) (“Regardless of whether the loss is characterized as a collapse or a chemical reaction, Plaintiffs fail to allege that any loss occurred suddenly, that is, temporally abruptly, as required for coverage to apply.”); *Valls v. Allstate Ins. Co.*, No. 3:16-cv-01310 (VAB), 2017 WL 4286301, at *5 (D. Conn. Sept. 27, 2017) (“The Vallses’ policy, however, explicitly requires that any collapse be ‘a sudden and accidental direct physical loss’ and a ‘complete collapse.’

As addressed above, they have not alleged a sudden collapse.”); *England v. Amica Mut. Ins. Co.*, No. 3:16-CV-1951 (MPS), 2017 WL 3996394, at *5 (D. Conn. Sept. 11, 2017) (holding that policies defining “abrupt” collapse “unambiguously require an abrupt event for collapse coverage to apply” and that “[e]ven when the allegations are construed in the light most favorable to Ms. England, Ms. England does not allege that any collapse occurred abruptly, or that any change occurred to the Property without preparation or warning.”).

Several counts here invoke temporally modified language in a single contract between a Plaintiff(s) and Defendant, and those Plaintiffs have not pled a sudden or abrupt collapse in the Fourth Amended Complaint. The motions to dismiss therefore will be granted with respect to those counts: 7, 11, 19, 20, 23, 25, 36, 37, 38, 39, 41, and 44, relating to Defendants, in alphabetical order, Allstate Insurance Company, American Commerce Insurance Company, CSAA Fire & Casualty Insurance Company, Metropolitan Group Property and Casualty Insurance Company, Middlesex Mutual Assurance Company, Nationwide Property & Casualty Insurance Company, Travelers Home & Marine Insurance Company, and Trumbull Insurance Company.

iii. Counts Involving a Plaintiff(s) with Two or More Policies with the Same Defendant Where the Policy Language Changed Over Time

The remaining counts implicate policies that, over time, adopted more restrictive language. When the claims of one plaintiff invoke multiple policies, courts in this District normally dismiss any claim against a defendant or as to a class of policies that includes the modified language. *See, e.g. Kowalyshyn v. Excelsior Ins. Co.*, No. 3:16-CV-00148 (JAM), 2018 WL 888724, at *1 (D. Conn. Feb. 13, 2018) (granting summary judgment as to one insurer and denying as to another, where plaintiff had different policy language with different insurers at different times).

Plaintiffs with modified coverage argue that “insurers were obligated by Connecticut law—specifically CONN. GEN. STAT. § 38a-323 and Conn. Insurance Bulletin PC-66 (Dec. 21, 2009)—to give adequate notice to their insureds that there were significant reductions in the coverage which the Plaintiffs had come to expect, and the insurers failed to give that notice.” May 2018 Pl. Mem. in

Opp. Combined at 74. They argue that the alleged lack of notice would require a revision to the old policies, because Plaintiffs “were not adequately informed as a matter of law and, as a result, the new language is not effective and the Plaintiffs’ claims are covered under the prior policy language” *Id.* at 74–75.

The Court need not reach this question at the motion to dismiss stage for two reasons. First, this question requires the factfinder to determine when a given property might be considered “substantially impaired” and therefore in collapse. That determination will then dictate which policy is at issue in a given claim. *Cf. Jemiola v. Hartford Cas. Ins. Co.*, No. CV-15-6008837-S, 2017 WL 1258778, at *7 (Conn. Super. Ct. Mar. 2, 2017) (granting summary judgment where the factual record and expert testimony demonstrated the loss “can be traced to October 2006” and that the policy’s changes in the years before the loss precluded coverage) with *Gabriel II*, 2017 WL 6731713, at *7 (“Put another way, Liberty Mutual does not just dispute whether there has been a substantial impairment, but when the damages would have amounted to a substantial impairment. Viewed this way, it is clear that the question of when the damage to the wall rose to the level [of] a substantial impairment is a factual inquiry best left to the jury.”).

*15 Second, the notice analysis requires both a dissection of Connecticut law and a determination of fact as to the notice that Plaintiffs actually received. Because it is not necessary to address the matter of law at this point, the Court will decline to do so and address it, if necessary, on a fuller factual record. *Cf. PDK Laboratories Inc. v. U.S. Drug Enforcement Admin.*, 362 F.3d 786, 799 (D.C. Cir. 2004) (Roberts, J., concurring in part and concurring in the judgment) (noting the “cardinal principle of judicial restraint – if it is not necessary to decide more, it is necessary not to decide more....”).

As a result, the Court will deny the motions to dismiss with respect to the remaining breach of contract counts: 2, 3, 5, 6, 15, 16, 17, 18, 26, 27, 30, 31, 33, 34, 42, 43, 45, and 46.

B. Declaratory Judgment Counts

Counts 47 through 92 of the Fourth Amended Complaint seek declaratory judgments against each of the Defendants. Plaintiffs characterize these claims in three different ways, depending on which ISO policy language each addresses. *See* May 2018 Pl. Mem. in Opp. Combined

at 9–10. First, under the 1997 ISO Form, Plaintiffs argue the terms “foundation” and “retaining wall” are ambiguous and that the policy requires Defendants to pay for the cost of replacing the walls. *Id.* Second, for renewal policies that modified policy language, Plaintiffs seek a declaration that the new language represented “a significant reduction of coverage” without adequate notice, and therefore the new language is not effective and the Defendants “are obligated to cover the costs of replacing the concrete in the Plaintiffs’ homes under the previous policy language.” May 2018 Pl. Mem. in Opp. Combined at 10. The Court finds that these two categories of claims relate to questions certified to the Connecticut Supreme Court. The Court therefore will not grant declaratory judgment on these claims at this time.

Third, the remaining plaintiffs seek declaratory judgment on the argument that the 1999 ISO language, or similar language containing temporal modifiers, is ambiguous. *See e.g.*, FAC ¶ 1391. As discussed above, courts in this District have held that collapse provisions containing the language “sudden and accidental” or “abrupt” are unambiguous. *See, e.g., Valls*, 2017 WL 4286301, at *5; *Manseau*, 2017 WL 3821791, at *5; *Hurlburt*, 2018 WL 1035810, at *5. Because these collapse provisions are unambiguous, the remaining plaintiffs are not entitled to declaratory judgment as a matter of law. The Court therefore must dismiss the following counts: 54, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, and 92, relating to Defendants, in alphabetical order, Allstate Insurance Company, American Commerce Insurance Company, CSAA Fire & Casualty Insurance Company, Metropolitan Group Property and Casualty Insurance Company, Middlesex Mutual Assurance Company, Nationwide Property & Casualty Insurance Company, Travelers Home & Marine Insurance Company, and Trumbull Insurance Company.

C. Breach of Implied Covenant of Good Faith and Fair Dealing Claims

Certain Defendants move to dismiss the Breach of Implied Covenant of Good Faith and Fair Dealing Claims (“good faith”) claims. *See* Certain Def. Mem. at 12.

In Connecticut, “[e]very contract imposes upon each party a duty of good faith and fair dealing in its performance and its enforcement.” *Warner v. Konover*, 553 A.2d 1138, 1140 (Conn. 1989). To fulfill its duty, a party may not “do anything that will injure the right of the other to receive the benefits of the agreement.” *De La Concha of Hartford*,

Inc. v. Aetna Life Ins. Co., 849 A.2d 382, 388 (Conn. 2004) (internal quotation marks and citation omitted). Courts examine “the acts by which a defendant allegedly impedes the plaintiff’s right to receive benefits that he or she reasonably expected to receive under the contract must have been taken in bad faith.” *Id.* “Bad faith in general implies both actual or constructive fraud, or a design to mislead or deceive another, or a neglect or refusal to fulfill some duty or some contractual obligation, not prompted by an honest mistake as to one’s rights or duties, but by some interested or sinister motive.... Bad faith means more than mere negligence; it involves a dishonest purpose.” *Id.*

*16 The Court must address two categories of good faith claims. First, there are a set of claims for which the Court has dismissed the breach of contract claims. Connecticut law requires a breach of contract in order to plead bad faith. *See, e.g. Capstone Bldg. Corp. v. American Motorists Ins. Co.*, 308 Conn. 760, 798 (2013) (concluding that “bad faith is not actionable apart from a wrongful denial of a benefit under [an insurance] policy.”). Because several Plaintiffs have not pled a plausible claim for breach of contract, those claims for breach of the implied covenant of good faith and fair dealing also fail. *See, e.g., Manseau*, 2017 WL 3821791, at *5 (dismissing breach of implied covenant claim in concrete case after court dismissed breach of contract claim); *Agosti*, 2017 WL 3710786 at *8 (same). The Court therefore must dismiss the following counts: 100, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, and 138, relating to Defendants, in alphabetical order, Allstate Insurance Company, American Commerce Insurance Company, CSAA Fire & Casualty Insurance Company, Metropolitan Group Property and Casualty Insurance Company, Middlesex Mutual Assurance Company, Nationwide Property & Casualty Insurance Company, Travelers Home & Marine Insurance Company, and Trumbull Insurance Company.

The remaining counts, however, relate to claims where the breach of contract counts will proceed to discovery for now. Certain Defendants move to dismiss these remaining counts because the claims allegedly fail to assert bad faith and/or fail to include individualized allegations with respect to each Defendant. Certain Defs. Mot. to Dismiss at 15–29.

Plaintiffs argue that they have properly alleged facts that demonstrate bad faith. May 2018 Pl. Mem. in Opp. Combined at 136. They allege that Defendants here have

consistently denied claims even though the companies should have known the claims were covered based on previous court cases. *Id.* at 136 n.88. They also note that they allege Defendants’ participation in ISO, and that the Defendants changed their policies to try to avoid coverage. *Id.* at 136. Plaintiffs claim that “[t]hese allegations, taken together and presumed to be true for purposes of this motion, support a claim of actual or constructive fraud or a design by the Defendants to mislead or deceive their policyholders in an effort to avoid their obligations.” *Id.* at 136–137.

In the Fourth Amended Complaint, Plaintiffs allege that Defendants knew that Plaintiffs’ claims were covered. Plaintiffs claim participation in this malfeasance by ISO, *see* FAC ¶ 58, and Plaintiffs further allege that Defendants conspired to limit coverage they knew they should have provided. *Id.* ¶¶ 62–64. Plaintiffs allege that Defendants misled Plaintiffs in order to receive their premiums without provided the requisite coverage. *Id.* at ¶ 77. Plaintiffs contend that their insurance companies “provid[ed] bogus responses when they knew the claims were good, while at the same time, casting about for a way to try to shore up the language in their policies.” *Id.* ¶ 72.

In short, the allegations raise the inference of bad faith. Similar allegations have sustained similar claims in this District beyond a motion to dismiss. *See, e.g., Belz*, 46 F. Supp. 3d at 165; *Gabriel*, 2015 WL 5684063, at *5 (“Read in the light most favorable to the Gabriels, these allegations state a claim for breach of the implied covenant of good faith and fair dealing because they give rise to a plausible inference that Liberty Mutual acted to mislead the Gabriels, or neglected to fulfill a duty to provide coverage out of a self-interested motive.”); *Karas v. Liberty Ins. Corp.*, 33 F. Supp. 3d 110, 116–17 (D. Conn. 2014) (“These factual allegations describe the failure of Liberty Mutual to conduct an adequate investigation, accompanied by its intent to mislead the insured and a motive to benefit itself.”). For these reasons, the Court denies the motions to dismiss the remaining good faith claims for now.

D. CUIPA/CUTPA Claims

Finally, Certain Defendants move to dismiss claims arising under CUIPA/CUTPA. CUIPA defines a number of actions as “unfair methods of competition and unfair and deceptive acts or practices in the business of insurance....” CONN. GEN. STAT. § 38a-816. Included

in CUIPA's prohibited acts are "[u]nfair claim settlement practices" such as "not attempting in good faith to effectuate prompt, fair and equitable settlements of claims in which liability has become reasonably clear." *Kim v. State Farm Fire & Cas. Co.*, No. 3:15-CV-879 (VLB), 2015 WL 6675532, at *5 (D. Conn. Oct. 30, 2015).

*17 Under Connecticut law, plaintiffs may assert a CUTPA claim based on a violation of CUIPA. *Karas*, 33 F. Supp. 3d at 117 (citing *McCulloch v. Hartford Life & Acc. Ins. Co.*, 363 F. Supp. 2d 169, 181 (D. Conn. 2005) and *Mead v. Burns*, 199 Conn. 651, 663 (1986)). To prevail on such a claim, a plaintiff must show that a defendant engaged in an act prohibited by CUIPA and that the act proximately caused the plaintiff's harm. *Belz*, 46 F. Supp. 3d at 165 (citing *McCulloch*, 363 F. Supp. 2d at 181). "A claim of unfair settlement practice under CUIPA/CUTPA requires the plaintiff to allege that the defendant has committed the alleged proscribed act with sufficient frequency to indicate a general business practice.... The plaintiff must show more than a single act of insurance misconduct...." *Karas*, 33 F. Supp. 3d at 117 ("A claim of unfair settlement practice under CUIPA/CUTPA requires the plaintiff to allege that the defendant has committed the alleged proscribed act with sufficient frequency to indicate a general business practice.... The plaintiff must show more than a single act of insurance misconduct...."). Prohibited acts include "[m]isrepresenting pertinent facts or insurance policy provisions relating to coverages at issue ... not attempting in good faith to effectuate prompt, fair and equitable settlements of claims in which liability has become reasonably clear [and] attempting to settle claims on the basis of an application which was altered without notice to, or knowledge or consent of the insured ..." among others. CONN. GEN. STAT. § 38a-816(6)(A),(F), (I).

Plaintiffs pursue two separate theories of liability under CUIPA/CUTPA. First, they argue that Defendants who adopted newer policy language did so without proper notice. May 2018 Pl. Mem. in Opp. Combined at 159 (citing CONN. GEN. STAT. § 38a-823). Second, for Defendants who sold the New Policy Form, they argue that these policies were "ephemeral coverage." Plaintiffs contend that this coverage violated CUIPA's "[m]isrepresentations and false advertising of insurance policies" provision or amounted to a general business policy of "[m]isrepresenting pertinent facts or insurance

policy provisions relating to coverages at issue." *Id.* (citing CONN. GEN. STAT. §§ 38a-816(1), (6)(I)).

1. Unfair Settlement Practices

The Fourth Amended Complaint alleges that Defendants participate in ISO, an organization composed mostly of insurance companies that collects data about insurance claims. FAC ¶ 58. Through its participation in ISO, each insurance company would have had knowledge of claims "[a]t least as early as 1996." *Id.* ¶ 63. As noted above, the Fourth Amended Complaint alleges that "[b]esieged by insureds raising this issue the Defendant Insurance Companies kept denying claims," and "provid[ed] bogus responses when they knew the claims were good, while at the same time, casting about for a way to try to shore up the language in their policies." *Id.* ¶ 72.

This particular set of allegations—claim denials for false and misleading reasons, broad denials of similar claims, and participation in ISO—have sustained CUIPA/CUTPA claims on several occasions. *Belz v. Peerless Ins. Co.*, 46 F. Supp. 3d 157, 165–67 (D. Conn. 2014); *Karas*, 33 F. Supp. 3d at 117; *Gabriel*, 2015 WL 5684063, at *5. The Court sees no reason to deviate from these decisions in this case.⁸

⁸ Defendants' reliance on *Roberts* is misplaced. *See* Defs. Rep. Br. at 16. First, *Roberts* addressed a motion for summary judgment, not a motion to dismiss. *Roberts v. Liberty Mut. Fire Ins. Co.*, 264 F. Supp. 3d 394, 404. Second, *Roberts* turned on the evidence in the record, not the allegations themselves. That is, the *Roberts* plaintiffs failed to put evidence in the record to show there was a disputed issue of material fact.

In order to pursue an unfair settlement practices claim, however, "a plaintiff must show that the defendant engaged in an act prohibited by CUIPA's substantive provisions, and that the act proximately caused the harm alleged." *Belz*, 46 F. Supp. 3d at 165. "The requirement that the insurer settle when the insured's liability is 'reasonably clear' means that the existence of liability has to be substantially certain." *Tucker v. AIG*, No. 3:09-cv-1499 (CSH) 2015 WL 403195, at *27, n.48 (D. Conn. Jan. 28, 2015). CUIPA/CUTPA liability therefore is not appropriate where there has not been a breach of contract.

For these claims, then, Plaintiffs must assert some other authority.

2. Misrepresentations

*18 In order to rely on information that occurred pre-contract, and therefore would not require a breach, Plaintiffs also pursue two additional separate theories of liability. First, they argue that Defendants who adopted newer policy language did so without proper notice. May 2018 Pl. Mem. in Opp. Combined at 159 (citing CONN. GEN. STAT. § 38a-823). Second, for Defendants who sold the New Policy Form, they argue that these policies “sold ephemeral coverage.” This coverage allegedly constituted violation of CUIPA’s “[m]isrepresentations and false advertising of insurance policies” provision or amounted to a general business policy of “[m]isrepresenting pertinent facts or insurance policy provisions relating to coverages at issue.” *Id.* (citing CONN. GEN. STAT. §§ 38a-816(1), (6)(I)).

In order to support a claim for misrepresentation, Plaintiffs argue that Defendants violated CUIPA/CUTPA by first, failing to provide notice as required by Connecticut law and, second, by providing “illusory” coverage. May 2018 Pl. Mem. in Opp. Combined at 183. They provide no support for their proposition, however, and can cite to no authority—even at the trial level, either in state or federal court—that has held that CUIPA/CUTPA is intended to cover the types of conduct alleged here.

Defendants’ motions to dismiss therefore will be granted with respect to the same claims addressed previously: 146, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, and 184 relating to Defendants, in alphabetical order, Allstate Insurance Company, American Commerce Insurance Company, CSAA Fire & Casualty Insurance Company, Metropolitan Group Property and Casualty Insurance Company, Middlesex Mutual Assurance Company, Nationwide Property & Casualty Insurance Company, Travelers Home & Marine Insurance Company, and Trumbull Insurance Company. Defendants’ motions to dismiss the remaining claims are denied.

E. Certain Defendants Motion to Strike

Certain Defendants have moved to strike the class allegations. Certain Def. Class Mem., ECF No. 498. Their motion argues that (1) Plaintiffs will not be able to show commonality, and that each claim raises numerous individualized inquiries that would defeat the class certification motion, Def. Mem. at 11, and (2) that the Plaintiffs cannot meet any of the requirements under Rule 23(b)’s subsections and therefore class certification would be inappropriate. Def Mem. at 11, 25–35. At this stage of the case, the Court disagrees.

“A court is not bound by the class definition proposed in the complaint and should not dismiss the action simply because the complaint seeks to define the class too broadly.” *Robidoux v. Celani*, 987 F.2d 931, 937 (2d Cir. 1993). Courts have “broad discretion to modify the class definition as appropriate.” *In re LIBOR-Based Fin. Instruments Antitrust Litig.*, No. 11 CIV. 5450 (NRB), 2018 WL 1229761, at *7 (S.D.N.Y. Feb. 28, 2018). Modifying the class definition may be particularly appropriate at the certification stage, including the certification of subclasses. *See Robdioux*, 987 F.2d at 937; *see also* FED. R. CIV. P. 23(c)(5) (“When appropriate, a class may be divided into subclasses that are each treated as a class under this rule.”); FED. R. CIV. P. 23(d)(1) (D) (noting that a court “may issue orders that ... require that the pleadings be amended to eliminate allegations about representation of absent persons and that the action proceed accordingly”).

Motions to strike are generally disfavored, and more so when they related to class allegations. *See Chen-Oster v. Goldman, Sachs & Co.*, 877 F. Supp. 2d 113, 117 (S.D.N.Y. 2012) (collecting cases and noting that motions to strike class claims are disfavored before plaintiffs are permitted to complete discovery). A court may, however, exercise its discretion to strike parts of a class allegation at the motion to dismiss stage if those claims could not be maintained as a matter of law. *See, e.g., Davito v. AmTrust Bank*, 743 F. Supp. 2d 114, 115 (E.D.N.Y. 2010) (“Several district courts, however, have held that such motions may be addressed ‘prior to the certification of a class if the inquiry would not mirror the class certification inquiry and if resolution of the motion is clear.’”) (quoting *In re Initial Public Offering Sec. Litig.*, 21 MC 92 (SAS), 2008 WL 2050781, *2 (S.D.N.Y. May 13, 2008)). This limited exception applies to “a motion to strike that addresses issues separate and apart from the issues that will be decided on a class certification motion.” *Chen-Oster*, 877

F. Supp. 2d at 117 (internal quotation marks omitted) (denying motion to strike arguing plaintiffs could not show commonality).

*19 While certain Defendants raise significant arguments, these issues will be better addressed when the motion for class certification is considered, after more development of the record in this case. Defendants' motion to strike therefore is denied. Nevertheless, while the Court will not strike the class allegations at this time, the Court notes that the numerous amendments of the Complaint have delayed the resolution of this case, for years, such that the Court must ensure that the case moves forward.

District courts have both the authority and an obligation to manage their dockets with a "view toward the efficient and expedient resolution of cases." *Deitz*, 136 S. Ct. at 1892. In service of expedience and justice, courts may disallow further amendment when there is "undue delay, bad faith or dilatory motive on the part of the movant." *Foman*, 371 U.S. at 182; *Cf. Pappas v. Bank of Am. Corp.*, 309 F. App'x 536, 539 (2d Cir. 2009) (summ. order), citing *In re Parmalat Sec. Litig.*, 1:04-md-01653-LAKHBP, slip order at 3 (S.D.N.Y. Sept. 4, 2007) (holding that the district court properly denied plaintiffs leave to file a third amended complaint because "plaintiffs, with their unjustifiably verbose pleadings, ... contributed more than their share to its extraordinary cost and burden.")

Nearly three years following the filing of the Complaint, class certification remains an unsettled matter and discovery remains open. The Court gave leave for Plaintiffs to file a Third Amended Complaint in December 2016, ECF No. 339, and a Fourth Amended Complaint more than nine months later, in September 2017, ECF No. 462, yet the case has languished. The numerous amendments to the Complaint have occasioned considerable delay and expense. Further, given this case's procedural history, there is a distinct possibility that the case will never be properly and efficiently litigated without direction from the Court. The Court therefore rules that it will not be granting any leave to further amend the Fourth Amended Complaint, which will be the operative complaint for this case, absent unforeseen circumstances not now readily apparent.

As a result of this ruling, and given the continuing issues regarding the viability of a class action as well as

the uncertainty regarding the viability of certain claims, the parties shall submit a revised scheduling order with deadlines for the completion of discovery relating to the class allegations only and for the submission of a motion for class certification.

IV. CONCLUSION

For the reasons stated above, the Court **GRANTS IN PART AND DENIES IN PART** Defendants' motions to dismiss, ECF Nos. 497, 499, 502, 504, 508-510, 512, 514, 516, 518, 520, 522, 524, 526, 528, 530, 533, **WITHOUT PREJUDICE TO RENEWAL** following resolution by the Connecticut Supreme Court of the pending certified questions.

As explained above, a subset of the counts in the Fourth Amended Complaint contain policy language that, as a matter of law, is unambiguous and does not support a claim for relief. The Court dismisses each Plaintiff whose entire claim for relief rested on a policy that unambiguously excluded coverage for abrupt or sudden collapse: Kathy Noblet, Dawn L. Norris, and Steven and Colleen Swart. Relatedly, the Court dismisses each Defendant whose entire liability rested on a policy that unambiguously excluded coverage for abrupt or sudden collapse: American Commerce Insurance Company, Allstate Insurance Company, Metropolitan Property & Casualty Insurance Company, Nationwide Property & Casualty Insurance Company, and Trumbull Insurance Company. The remainder of Plaintiffs and Defendants remain for the reasons stated above.

*20 The Court **DENIES** Defendants' motion to strike class allegations. ECF No. 498.

A revised scheduling order with deadlines for the completion of discovery relating to the class allegations only and for the submission of a motion for class certification shall be submitted by **Friday, November 16, 2018**, jointly, if possible, but if the various parties cannot agree, separately. The Court then will hold an in-person status conference on **Thursday, November 29, 2018 at 2:00pm**.

SO ORDERED at Bridgeport, Connecticut, this 19th day of October, 2018.

All Citations

Slip Copy, 2018 WL 5840031

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2018 WL 2002480

Only the Westlaw citation is currently available.
United States District Court, D. Connecticut.

Steven KARAS, and Gail Karas, Plaintiffs,
v.
LIBERTY INSURANCE CORP., Defendant.

No. 3:13-cv-01836 (SRU)

|
Signed 04/30/2018

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ORDER CERTIFYING QUESTION TO THE CONNECTICUT SUPREME COURT

Stefan R. Underhill, United States District Judge

*1 Steven and Gail Karas sued their insurer, Liberty Insurance Corp. (“Liberty”), for denying coverage under their homeowners’ insurance policy for a loss to their basement walls. The Karases allege that Liberty (1) breached its insurance contract with the Karases; (2) breached the implied covenant of good faith and fair dealing; and (3) committed unfair and deceptive practices proscribed by the Connecticut Unfair Insurance Practices Act (“CUIPA”) and the Connecticut Unfair Trade Practices Act (“CUTPA”). Liberty moved for summary judgment on September 5, 2017. Doc. No. 57. At a hearing held on December 14, 2017, Doc. No. 69, I denied Liberty’s motion with respect to the breach of contract claim and granted it with respect to the bad faith and CUTPA/CUIPA claim, substantially for the reasons stated in my decision in *Roberts v. Liberty Mutual Insurance Co.*, 264 F. Supp. 3d 394 (D. Conn. 2017).

On December 20, 2017, Liberty moved to certify questions to the Connecticut Supreme Court. Doc. No. 70. The Karases initially opposed certification, but changed their

position upon learning that my colleague United States District Judge Robert N. Chatigny was likely to certify questions in another concrete collapse case, *Vera v. Liberty Mutual Fire Insurance Co.*, 3:16-cv-00072 (RNC). All parties to both cases now support certification. Furthermore, the question presented by this case and by *Vera*—whether the definition of “collapse” given in *Beach v. Middlesex Mutual Assurance Co.*, 205 Conn. 246 (1987), requires coverage in the present circumstances—has the potential to resolve a large number of lawsuits pending throughout the state.¹ Therefore, I grant Liberty’s motion to certify questions to the Connecticut Supreme Court.

¹ In addition to a dozen or more federal lawsuits, the state “judicial district of Tolland presently has over forty such cases pending.” See *Roy v. Liberty Mut. Fire Ins. Co.*, 2017 Conn. Super. LEXIS 506, at *1 n.1 (Conn. Super. Ct. Feb. 22, 2017).

I. Standard of Review

Under Connecticut law, “[t]he Supreme Court may answer a question of law certified to it by a court of the United States ... if the answer may be determinative of an issue in pending litigation in the certifying court and if there is no controlling appellate decision, constitutional provision or statute of this state.” Conn. Gen. Stat. § 51-199b(d). When deciding whether to certify a question to the Connecticut Supreme Court, a court should consider, among other factors, “(1) the absence of authoritative state court decisions; (2) the importance of the issue to the state; and (3) the capacity of certification to resolve the litigation.” *O’Mara v. Town of Wappinger*, 485 F.3d 693, 698 (2d Cir. 2007). “Where a question ... implicates the weighing of policy concerns, principles of comity and federalism strongly support certification.” *Parrot v. Guardian Life Ins. Co. of Am.*, 338 F.3d 140, 144 (2d Cir. 2003).

II. Background²

² Except where otherwise indicated, the facts are taken from the parties’ Local Rule 56(a)1 and Local Rule 56(a)2 Statements and their accompanying exhibits.

*2 The Karases’ house is among many in northeastern Connecticut built with concrete supplied by the J.J. Mottes Concrete Co. (“Mottes”). The stone aggregate used in Mottes concrete contains significant amounts of pyrrhotite (Fe_{1-x}S), a ferrous mineral that reacts with

water, oxygen, and concrete paste to form expansive secondary minerals such as gypsum, ettringite, and thaumasite. The expanding minerals crack and destabilize the concrete, “lead[ing] to [its] premature deterioration.” See generally Conn. Dep’t of Consumer Prot., *Report on Deteriorating Concrete in Residential Foundations*, App’x D, at 52 (2016).

In October 2013, the Karases discovered that their basement walls were cracking, crumbling, and deteriorating in the manner typical of Mottes concrete. On November 15, 2013, the Karases reported a claim under their homeowners’ insurance policy to Liberty. Liberty denied the Karases’ claim the same day, asserting that the loss described was “deterioration” and was therefore not covered under the policy.

On December 11, 2013, the Karases filed suit against Liberty, contending that the loss was a “collapse” under the construction given in *Beach v. Middlesex Mutual Assurance Co.* The Karases’ policy covers “collapse” as follows:

Collapse. We insure for direct physical loss to covered property involving collapse of a building or any part of a building caused only by one or more of the following:

...

- b. Hidden decay;
- c. Hidden insect or vermin damage;
- d. Weight of contents, equipment, animals or people;
- e. Weight of rain which collects on a roof; or
- f. Use of defective material or methods in construction, remodeling or renovation.

Loss to an awning, fence, patio, pavement, swimming pool, underground pipe, flue, drain, cesspool, septic tank, foundation, retaining wall, bulkhead, pier, wharf or dock is not included ... unless the loss is a direct result of the collapse of a building.

Collapse does not include settling, cracking, shrinking, bulging or expansion.

In *Beach v. Middlesex Mutual Assurance Co.*, the Connecticut Supreme Court held that the term “collapse” in a homeowners’ insurance policy, when otherwise

undefined, was “sufficiently ambiguous to include coverage for any substantial impairment of the structural integrity of a building.” 205 Conn. at 252. The *Beach* Court specifically rejected the insurer’s contention that “ ‘collapse’ ... unambiguously contemplates a sudden and complete falling in of a structure,” but did not further define the standard of “substantial impairment of [] structural integrity.” *Id.* at 250, 252. In the present case—as in many others pending in this district—the parties essentially dispute whether the damage constitutes a “collapse” under *Beach*.

III. Discussion

In previous concrete collapse cases, I have declined to certify state law questions to the Connecticut Supreme Court. I determined that “there were ‘several Connecticut state court cases ... applicable to the legal question[s] raised,’ ” and concluded that “sufficient precedents exist[ed] for me to make a prediction of how the [Connecticut Supreme Court] would decide the question[s].” *Roberts*, 264 F. Supp. 3d at 402 n.4 (quoting *Goodlett v. Kalishek*, 223 F.3d 32, 37 n.4 (2d Cir. 2000); *Karagozian v. Luxottica N. Am.*, 2016 WL 2944149, at *4 (D. Conn. May 20, 2016)). Like my colleague United States District Judge Victor A. Bolden, I continue to think that the standard enunciated in *Beach* is “relatively clear.” See *Belz v. Peerless Ins. Co.*, 204 F. Supp. 3d 567, 464 (D. Conn. 2016). Nevertheless, because this “unsettled question of state law raises important issues of public policy,” and is “likely”—indeed, almost certain—“to recur,” see *In re World Trade Ctr. Lower Manhattan Disaster Site Litig.*, 846 F.3d 58, 69 (2d Cir. 2017) (“*World Trade Ctr.*”), I now deem it advisable to seek direct guidance from Connecticut’s highest court.

*3 Conn. Gen. Stat. § 51-199b(d) authorizes “[t]he Supreme Court [to] answer a question of law certified to it by a court of the United States ... if the answer may be determinative of an issue in pending litigation in the certifying court and if there is no controlling appellate decision, constitutional provision or statute of this state.” Those criteria are met here. First, appellate guidance with respect to the definition of “collapse” will be “determinative” of not only this case, but also many others pending throughout the state. A final resolution of the issue “will assist the administration of justice in both federal and state courts.” *Parrot*, 338 F.3d at 145.

Second, “there is no controlling appellate decision,” because *Beach* (though highly instructive) arguably “provides insufficient guidance.” *Id.* at 144. No Connecticut appellate decision has squarely applied *Beach* and arrived at a definition of “substantial impairment of structural integrity.”³ Heretofore, I and my colleagues on the federal and state trial courts have felt that “sufficient precedents exist for us to make a prediction of how the [Connecticut Supreme Court] would decide the question.” See *Goodlett*, 223 F.3d at 37 n.4. But in light of the frequency with which the collapse issue has recurred, I now conclude that certification would “save time, energy, and resources” by enabling the state’s highest court to provide a “conclusive” interpretation of “substantial impairment of structural integrity.” See *Arizonans for Official English v. Arizona*, 520 U.S. 43, 77 (1997) (internal quotation marks omitted); *Freedman v. Am. Online*, 412 F. Supp. 2d 174, 191 (D. Conn. 2005). In short, certification “will provide the Connecticut Supreme Court with the opportunity to decide this ... repetitive question and to promote uniformity in its law.” *Hume v. Hertz Corp.*, 628 F. Supp. 763, 767 (D. Conn. 1986).

³ A Superior Court decision, *Sansone v. Nationwide Mut. Fire Ins. Co.*, 47 Conn. Supp. 35, 39 (Conn. Super. Ct. 1999), applied *Beach* and was affirmed and adopted in its entirety by the Appellate Court. 62 Conn. App. 526 (2001) (per curiam). *Sansone* indicated that “whether a plaintiff has proven [a substantial] impairment is a question of fact,” 47 Conn. Supp. at 41, which supports my conclusion in *Roberts* that “whether a building has suffered a substantial impairment of [] structural integrity is a question ... of fact, not one of law.” *Roberts v. Liberty Mut. Fire Ins. Co.*, 264 F. Supp. 3d 394, 410 (D. Conn. 2017) (internal quotation marks omitted). *Sansone* ultimately was decided on other grounds, however. The Superior Court held that there was no coverage because the plaintiffs’ loss “was the proximate result of ... [an] excluded” cause—termites damage—and the insurance policy at issue did not “ma[ke] specific reference to collapse that ensues from otherwise excluded activity.” 47 Conn. Supp. at 41. Therefore, *Sansone* is “inconclusive” with respect to the question here. See *Parrot v. Guardian Life Ins. Co. of Am.*, 338 F.3d 140, 144 (2d Cir. 2003).

I also think that certification is warranted because the concrete collapse cases “are plainly of great importance to the State.” See *World Trade Ctr.*, 846 F.3d at 69. Not only is “[i]nsurance ... an important industry in Connecticut,”

Fireman’s Fund Ins. Co. v. TD Banknorth Ins. Agency, 644 F.3d 166, 172 (2d Cir. 2011), but also the concrete collapse issue affects thousands of Connecticut residents and “implicates broad questions of Connecticut public policy.”⁴ See *Munn v. Hotchkiss Sch.*, 795 F.3d 324, 334 (2d Cir. 2015). Determining the extent to which the substantial loss should fall on homeowners or on their insurers entails “value judgments and important public policy choices that the [Connecticut Supreme Court] is better situated ... to make.” *Beck Chevrolet Co. v. GM LLC*, 787 F.3d 663, 682 (2d Cir. 2015).

⁴ As many as 34,000 homes may be affected by collapsing concrete. See Lisa W. Foderaro & Kristin Hussey, *Financial Relief Eludes Connecticut Homeowners with Crumbling Foundations*, N.Y. Times, Nov. 14, 2016, <https://www.nytimes.com/2016/11/15/nyregion/financial-reliefeludes-connecticut-homeowners-with-crumbling-foundations.html>.

*⁴ Liberty has requested that I certify the following three questions:

1. Is “substantial impairment of structural integrity” the applicable standard for “collapse” under the provision at issue?
2. If the answer to question one is yes, then what constitutes “substantial impairment of structural integrity” for purposes of applying the “collapse” provision of this homeowners’ insurance policy?
3. Under Connecticut law, do the terms “foundation” and/or “retaining wall” in a homeowners’ insurance policy unambiguously include basement walls? If not, and if those terms are ambiguous, should extrinsic evidence as to the meaning of “foundation” and/or “retaining wall” be considered?

Mot. Certification, Doc. No. 70, at 1.

I conclude that only the second question merits certification. With respect to the first question, there is no dispute that the insurance policy in this case does not define “collapse,” which means that *Beach* clearly provides the relevant standard.⁵ With respect to the third question, Connecticut courts have “consistently rejected” insurers’ arguments concerning the term “foundation,” have “determined that th[ose] policy terms

were ambiguous,” and have “construed them against” the insurers.⁶ *Jang v. Liberty Mut. Fire Ins. Co.*, 2018 WL 1505574, at *3 (D. Conn. Mar. 27, 2018); *see also, e.g., Gabriel v. Liberty Mut. Fire Ins. Co.*, 2017 WL 6731713, at *2 (D. Conn. Dec. 29, 2017) (noting prior determination “that the terms ‘foundation’ and ‘retaining wall,’ as used in the policy, were ambiguous.”); *Belz v. Peerless Ins. Co.*, 46 F. Supp. 3d 157, 164 (D. Conn. 2014); *Karas v. Liberty Ins. Corp.*, 33 F. Supp. 3d 110, 115 (D. Conn. 2014) (“Each party thus has a reasonable but different interpretation of the phrases [‘foundation’ and ‘retaining wall’] supported by dictionaries and case law, so the phrases are ambiguous, and the insurance policy should be construed against Liberty Mutual.”); *Bacewicz v. NGM Ins. Co.*, 2010 WL 3023882, at *4 (D. Conn. Aug. 2, 2010) (“[A] reasonable jury could find that the basement walls of the Bacewicz’s house did not constitute the ‘foundation’ of the house.”). I have not found, and Liberty has not cited, any Connecticut case (state or federal) that ruled for an insurer on the basis of the “foundation” exclusion. Therefore, I do not think that the third question presents a sufficiently “[n]ovel” or “unsettled” question to merit certification. *Arizonans for Official English*, 520 U.S. at 79; *see also Metsack v. Liberty Mut. Fire Ins. Co.*, 2015 WL 5797016, at *10 (D. Conn. Sept. 30, 2015) (declining to “certify the question of whether the terms ‘foundation’ and ‘retaining wall’ are ambiguous” because “[t]he Connecticut Supreme Court ... has provided the necessary guidance for this Court to determine whether, under Connecticut law, an ambiguity exists in a given contract”); *Gabriel v. Liberty Mut. Fire Ins. Co.*, 2015 WL 5684063, at *4 (D. Conn. Sept. 28, 2015) (declining to certify question whether “the terms ‘foundation’ and ‘retaining wall’ ... [are] ambiguous’ because court was “capable of making a sound decision, in light of the applicable authorities, that the terms ‘foundation’ and ‘retaining wall’ are ambiguous in the context of the policy language at issue in this case”).

⁵ Liberty asserts that *Beach* “is not binding authority with respect to the policy language at issue here,” because the policy “define[s] collapse ... [as] not include[ing] settling, cracking, shrinking[,] bulging[,] or expansion.” Mem. Supp. Mot. Certification, Doc. No. 70-1, at 6. In fact, though—as I noted in another concrete collapse case—*Beach* “held that an identically worded exclusion could ‘reasonably be read to exclude loss related to “settling, cracking, shrinkage, bulging[,] or expansion,” only so long as

“collapse” d[id] not ensue.’ ” *Agosti v. Merrimack Mut. Fire Ins. Co.*, 279 F. Supp. 3d 370, 376 (D. Conn. 2017) (quoting *Beach v. Middlesex Mut. Assur. Co.*, 205 Conn. 246, 251 (1987)). Notwithstanding Liberty’s reliance on out-of-state cases, *Beach* clearly controls with regard to the undefined term “collapse.”

⁶ Most persuasively, Judge Susan Quinn Cobb of the Connecticut Superior Court has observed that the “foundation” and “retaining wall” exclusions are located in a “section of the policy [that] appears to exclude items that would be found outside of a building, and not inside a building, such as an awning, fence, patio, pavement, pool, septic tank.” *Roy*, 2017 Conn. Super. LEXIS 506, at *19. Under the interpretive canon of *noscitur a sociis*—which provides that “a word is given more precise content by the neighboring words with which it is associated,” *United States v. Williams*, 553 U.S. 285, 294 (2008)—the provision as a whole “suggests that what was intended by th[e] [‘foundation’ and ‘retaining wall’] exclusion language includes only items found outside of the home[,] or at a minimum renders [the language] ambiguous.” *See Roy*, 2017 Conn. Super. LEXIS 506, at *20.

*5 Liberty’s second proposed question does warrant certification, however. In *Roberts*, I “interpret[ed] *Beach* to require that a ‘collapse’—in the form of ‘substantial impairment of [] structural integrity’—be proved by evidence that a building ‘would have caved in had the plaintiffs not acted to repair the damage.’ ” 264 F. Supp. 3d at 407 (quoting *Beach*, 205 Conn. at 249). For the reasons discussed above, Connecticut’s highest court should have the opportunity to decide whether my interpretation of *Beach* was correct. Therefore, pursuant to Conn. Gen. Stat. § 51-199b(d), I certify the following question to the Connecticut Supreme Court:

What constitutes a “substantial impairment of structural integrity” for purposes of applying the “collapse” provision of this homeowners’ insurance policy?

Of course, “[t]he Connecticut Supreme Court may modify th[at] question as it sees fit and add any pertinent questions of Connecticut law ... that the Court chooses to answer.” *Fireman’s Fund Ins. Co.*, 644 F.3d at 173. I will make

available to the Connecticut Supreme Court any part of the record in this case that might assist the Court in its review of the issue. This court “retains jurisdiction over this case,” and will conduct further proceedings after “the Connecticut Supreme Court has either provided [me] with its guidance or declined certification.”⁷ *Id.*

⁷ I note that a case currently pending before the Connecticut Supreme Court, *Jemiola v. Hartford Casualty Insurance Co.*, No. SC 19978, might already provide an opportunity to clearly define “substantial impairment of structural integrity.” The policy in *Jemiola*, however, included the qualification that the collapse must be “abrupt,” which the trial court interpreted to mean that “a ‘collapse’ requires a sudden and catastrophic type event.” 2017 WL 1258778, at *9 (Conn. Super. Ct. Mar. 2, 2017). Thus, the Connecticut Supreme Court might decide

Jemiola on the grounds that the loss—regardless of whether it constituted a “substantial impairment”—was not “abrupt.” The policy in this case, which does not include an “abrupt” or “sudden” qualifier, more squarely presents the issue of what constitutes a “substantial impairment of structural integrity.”

IV. Conclusion

I grant Liberty’s motion for certification, Doc. No. 70, and deny as moot its motion to defer ruling, Doc. No. 74. The Clerk shall effect certification to the Connecticut Supreme Court.

So ordered.

All Citations

Slip Copy, 2018 WL 2002480

2016 WL 6246300

Only the Westlaw citation is currently available.
United States District Court, D. Connecticut.

Lynne LISTON-SMITH, et al., Plaintiff,

v.

CSAA FIRE & CASUALTY

INSURANCE COMPANY, Defendants.

CIVIL ACTION NO.: 3:16-CV-00510 (JCH)

Signed 10/25/2016

Attorneys and Law Firms

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RULING RE: MOTION TO DISMISS (DOC. NO. 12)

Janet C. Hall, United States District Judge

I. INTRODUCTION

*1 The plaintiffs, Lynne Liston-Smith and John Smith (collectively “the plaintiffs”), filed this action against their homeowner’s insurance provider, defendant CSAA Fire & Casualty Insurance Company (“CSAA”), because CSAA failed to pay for damage to the plaintiffs’ basement walls that they allege is covered under their homeowner’s insurance policy. The Complaint (Doc. No. 1-1) contains three counts. The First Count alleges breach of contract; the Second Count alleges a breach of the implied covenant of good faith and fair dealing; and the Third Count alleges that CSAA’s claim settlement practices violate the Connecticut Unfair Insurance Practices Act, section 816 of title 38A of the Connecticut General Statutes (“CUIPA”), and the Connecticut Unfair Trade Practices Act, section 110b of title 42 of the Connecticut General Statutes (“CUTPA”).

On May 4, 2016, CSAA filed a Motion to Dismiss (Doc. No. 12) Counts Two and Three of the Complaint, arguing that those two counts are legally insufficient and fail to state a claim. More specifically, with regard to Count Two, CSAA argues that the dispute

over whether the claim is covered does not, by itself, demonstrate that it acted in bad faith, and that the correspondence, subsequently withdrawn, threatening to cancel the insurance was unrelated to the claim dispute. Defs. Mot. At 1-2. CSAA argues that Count Three fails because the plaintiffs have not alleged sufficient conduct to show a general business practice of unfairly settling claims. *Id.* at 2.

For the following reasons, the court GRANTS in part and DENIES in part CSAA’s Motion to Dismiss.

II. FACTUAL ALLEGATIONS

When considering a motion to dismiss, the court must accept all of the allegations contained within the Complaint as true and make all reasonable inferences in favor of the non-moving party. *In re NYSE Specialists Sec. Litig.*, 503 F.3d 89, 95 (2d Cir. 2007).

The plaintiffs Lynne Liston-Smith and John Smith own and reside at their home in Toland, Ct. Compl. at ¶ 1. The plaintiffs have at all relevant times insured their home through CSAA. *Id.* at ¶ 3. Over time, they noticed cracks in the concrete walls of their basement and decided to hire a structural engineer to inspect those cracks. *Id.* at ¶¶ 5-6. The engineer informed them that the cracks were due to a chemical reaction in the concrete that would ultimately render the walls unstable and recommended that the concrete be replaced. *Id.* at ¶ 7.

On September 5, 2015, the plaintiffs made a claim to CSAA for coverage of the damages caused by the chemical reaction based on the report made by the structural engineer. *Id.* at ¶ 8. The claim was based on the terms of the insurance coverage, which specifically stated that one of the “Perils Insured Against” was the “risk of direct physical loss to property.” *Id.* at ¶ 9. Additionally, the homeowner’s insurance policy covers “collapse,” which the plaintiffs contend includes progressive deterioration of the concrete in the basement walls. *Id.* at ¶ 11. CSAA disagreed with the plaintiffs, citing contrary policy provisions to deny the claim on October 12, 2015. *Id.* at ¶¶ 12-13.

*2 On October 26, 2015, CSAA informed the plaintiffs that it was planning on cancelling their insurance coverage if the plaintiffs did not repair their foundation by February 15, 2016. *Id.* at ¶ 17. CSAA sent this letter despite an order from the Commissioner of the

Department of Insurance specifically prohibiting policy cancellations due to the deterioration of concrete in houses like the plaintiffs. *Id.* at ¶ 18. Ultimately, after counsel and public officials applied pressure, CSAA reversed its position and withdrew its plan to cancel the plaintiffs insurance. *Id.* at ¶ 19.

Finally, the plaintiffs claim that CSAA violated CUTPA and CUIPA through its participation in an insurance data aggregation organization. *Id.* at ¶¶ 22, 28-29. CSAA is a member of the Insurance Services Office, Inc. (“ISO”), an organization that collects and shares policy language and claim data between most insurance companies. *Id.* at ¶ 22. The plaintiffs claim that CSAA, through ISO, has a general business practice of denying claims like the plaintiffs' despite a lack of justifying language in their policy. *Id.* at ¶¶ 25-27.

III. LEGAL STANDARD

To survive a motion to dismiss under Federal Rule of Civil Procedure 12(b)(6), the plaintiff must plead a legally cognizable claim through allegations that, if true, would entitle the plaintiff to relief. See *Bell Atlantic v. Twombly*, 550 U.S. 544, 557 (2007). When considering a motion to dismiss pursuant to Rule 12(b)(6), the court takes the factual allegations made within the Complaint as true, *Hemi Grp., LLC v. City of New York*, 559 U.S. 1, 5 (2010), and draws all reasonable inferences in the plaintiff's favor, *Fulton v. Goord*, 591 F.3d 37, 43 (2d Cir. 2009). However, the court's acceptance of the allegations in a complaint is limited to allegations of facts; the court is “not bound to accept as true a legal conclusion couched as a factual allegation.” *Ashcroft v. Iqbal*, 556 U.S. 662, 678 (2009) (quoting *Twombly*, 550 U.S. at 555).

Thus, the court must determine whether the plaintiff has pled sufficient “factual content [to] allow the court to draw the reasonable inference that the defendant is liable for the misconduct caused.” *Id.* The notice pleading standard adopted in Rule 8 does not require the Complaint to contain “detailed factual allegations,” but it must have more than “naked assertion[s] devoid of further factual enhancement.” *Id.* (internal quotation marks omitted).

IV. DISCUSSION

A. Plaintiff has failed to state a Claim that CSAA Breached the Implied Covenant of Good Faith and Fair Dealing

In Count Two, the plaintiffs allege that the CSAA breached the implied covenant of good faith and fair dealing. The plaintiffs allege that CSAA acted in bad faith by (1) denying benefits based on alternative, allegedly irrelevant sections of the policy, despite plaintiffs' belief that the policy expressly conferred those benefits, and (2) threatening to cancel the plaintiffs' insurance if the plaintiffs' did not repair the foundation on their own within four months. Compl. at ¶¶ 16-17. CSAA contends that neither of these acts demonstrate the requisite bad faith. The court agrees and therefore grants CSAA's Motion to Dismiss Count Two.

“Every contract imposes upon each party a duty of good faith and fair dealing in its performance and enforcement.” *Warner v. Konover*, 210 Conn. 150, 154 (1989). To constitute a violation of the duty of good faith and fair dealing, a party to a contract acts in bad faith when its acts impede the other party's right to receive the benefit of the agreement. *De La Concha of Hartford, Inc. v. Aetna Life Ins. Co.*, 269 Conn. 424, 433 (2004). Bad faith requires more than a dispute over the discretionary application or interpretation of a contract term. See *Celentano v. Oaks Condominium Assn.*, 265 Conn. 579, 617 (2003). Bad faith instead refers to “neglect or refusal to fulfill some duty or some contractual obligation, not prompted by an honest mistake as to one's rights or duties, but by some interested or sinister motive.” *De La Concha of Hartford, Inc.*, 269 Conn. at 4.

*3 In the instant matter, the plaintiffs allege that CSAA sought out policy provisions that allowed it to deny benefits and interpreted those provisions unreasonably in bad faith. However, the plaintiffs' allegations only support the inference that they disagree with CSAA in the interpretation of their contract. Nothing in the Complaint provides the court with allegations that plausibly support an inference that CSAA acted in bad faith or with a sinister motive. It does not explain what policy provisions were used unreasonably, how they were applied, or even allege a sinister motive other than a denial of benefits. *Cf. Belz v. Peerless Ins. Co.*, 46 F. Supp.3d 157, 165 (2014) (denying the motion to dismiss because the complaint specifically laid out the terms of the policy, included as an attachment to the complaint, that were used unreasonably by the insurance company). The allegation that they acted

unreasonably, without more, cannot support an allegation of bad faith. See Capstone Bldg. Corp. v. Am. Motorists Ins. Co., 308 Conn. 760, 796 (2013) (requiring that the rejected claim be mandatorily covered in the policy in order for the rejection to constitute bad faith); cf. Panciera v. Kemper Independence Ins. Co., No. 3:13-cv-1009, 2014 WL 1690387 at *4 (D. Conn. Apr. 29, 2014) (denying a motion to dismiss because the complaint contains specific allegations about the defendant's "design to deceive" the plaintiffs using misleading sections of the policy).

The plaintiffs also allege that CSAA threatened to cancel their insurance, despite an order by the Commissioner of the Department of Insurance that specifically prohibited cancellations due to concrete issues. They contend that the correspondence threatening cancellation is further support that CSAA acted in bad faith when it denied their claim. However, the Complaint does not provide the court with sufficient basis to conclude that the threatened cancellation was related to the allegedly sinister claim denial. First, the only damages alleged are those that stem from the breach of contract, and the Complaint makes no allegations that relate the threat of cancellation, whether or not in bad faith, to the breach of contract damages alleged in paragraph 21. Compl.¹ Second, the cancellation letter was withdrawn without effect, and thus there is no plausible inference of damages without more. The plaintiffs do not allege any damages stemming from the threatened cancellation, nor do they explain how the threatened but never effectuated cancellation impeded the plaintiffs' receipt of benefits they were contractually entitled to. Cf. Kowalchuk v. Travelers Pers. Sec. Ins. Co., No. CV116012608, 2014 WL 3397940 at *4 (Conn. Super. Ct. June 4, 2014) (allowing claim that alleges that defendant attempted to force plaintiff into a lesser settlement through the threat of trial). Accordingly, CSAA's Motion to Dismiss Count Two is granted. However, the plaintiff is given leave to amend the Complaint in accordance with this opinion.

¹ Additionally, the plaintiffs do not make any reference to the ISO in Count Two and so the court does not consider whether or not CSAA's knowledge about other insurance claims bears on claims that CSAA acted in bad faith. Cf. Panciera, 2014 WL 1690387 at *4.

B. The plaintiffs have stated a claim that CSAA violated CUTPA and CUIPA

In Count Three, the plaintiffs allege that CSAA is engaged in a general business practice that is intended to put plaintiffs at a disadvantage in violation of CUIPA and CUTPA. Compl. at ¶¶ 28-29. "A plaintiff may assert a private cause of action based on a substantive violation of CUIPA through CUTPA's enforcement provision." Karas v. Liberty Ins. Corp., 33 F. Supp. 3d 110, 117 (D. Conn. 2014). In fact, because CUIPA occupies the field of Connecticut public policy regarding insurance practices, any insurance related conduct that does not violate CUIPA cannot violate CUTPA. State v. Acordia, 310 Conn. 1, 37 (2013). A properly stated claim must plausibly allege that the defendant engaged in behavior that is prohibited under CUIPA and that behavior caused the harm alleged. Belz v. Peerless, 46 F. Supp. 3d. 157, 165 n.1 (2014) (noting that an explicit citation to the specific section violated is unnecessary as long as the pleading alleges sufficient facts to find a violation). The most relevant CUIPA provision to the instant matter is the prohibition of unfair settlement practices. Conn Gen. Stat. § 38a-816(6). In order to support a claim of unfair settlement practices, it is essential that the Complaint allege that the defendant engaged in more than a single unfair act; it must have engaged in the proscribed act often enough that it constitutes a general business practice. Karas, 33 F. Supp. 3d at 117. By narrowing the proscribed conduct to general business practices, "the legislature has manifested a clear intent to exempt from coverage under CUIPA isolated instances of insurer misconduct." Lees v. Middlesex Ins. Co., 229 Conn. 842, 849 (1994).

*4 Thus, the specific question for the court at this stage is whether the Complaint contains "facially plausible factual allegations that, in the circumstance of the particular case, the defendant has engaged in the alleged wrongful acts enough to suggest it has a general business practice of doing so." Belz, 46 F. Supp. 3d. at 166.

In the instant matter, the plaintiffs allege that CSAA also regularly denies similar claims of concrete deterioration for unjustified reasons in order to place the policyholders at a disadvantage in violation of CUIPA. Compl. at ¶ 27-28. The plaintiffs' Memorandum cites to multiple Connecticut cases that deny motions to strike based on the use of the plural in the complaint. See Pls.' Opp. Br. At 9 (citing Kowalchuk, 2014 WL 3397940 at *7-8). Unfortunately for the plaintiffs, those cases rely on the Connecticut pleading standard, not the heightened federal standard first announced in Twombly. 550 U.S. at 557.

The allegation that CSAA engages in this practice with other claimants, if offered without additional facts in support, would be insufficient to meet the higher threshold demanded in federal court under Iqbal and Twombly.

However, when the Complaint is looked at in its entirety, the necessary additional allegations can be found. The plaintiffs' opposition memorandum highlights three additional individual matters brought against CSAA, as well as one potential class action that lists CSAA as a defendant. Pls.' Opp'n Br. (Doc. No. 16) at 9.² Normally, the court is limited to considering only those facts in the Complaint when considering a motion to dismiss. See Panciera, 2014 WL 1690387 at * 5 n. 4. However, the court can take judicial notice of facts that are not subject to reasonable dispute because they "can be accurately and readily determined from sources whose accuracy cannot reasonably be questioned." Fed. R. Evid. 201(b)(2). "It is well established that a district court may rely on matters of public record in deciding a motion to dismiss under Rule 12(b)(6)," and the court does so here. Pani v. Empire Blue Cross Blue Shield, 152 F.3d 67, 76 (2d Cir. 1998). CSAA is listed as a defendant in all of these matters, and as such was aware of them such that the court's reliance is not unfair. These repeated claims that CSAA is unfairly denying claims sufficiently allege a general business practice in violation of CUIPA to survive this Motion to Dismiss.

² The individual cases are: Cyr, et al. v. CSAA Fire & Cas. Ins. Co., 3:16-cv-85 No. 1 (D. Conn. Jan. 20, 2016); Haugh v. CSAA Fire & Cas. Ins. Co., 3:16-cv-169 No. 1 (D. Conn. Feb. 3, 2016); Makufka, et al. v. CSAA Fire & Cas. Ins. Co., 3:16-cv-567 No. 1 (D. Conn. Apr. 11, 2016). The proposed class action is Halloran, et al. v. Harleysville Preferred Ins. Co., et al., 3:16-cv-133 No. 1 (D. Conn. Jan. 29, 2016).

Additionally, the plaintiffs' Complaint contains further factual allegations that support their claim that CSAA

was engaged in a general business practice in violation of CUIPA. The plaintiffs allege that CSAA violated CUIPA and CUTPA by using information received from the ISO to reject plaintiffs' claim and those of others similarly situated. Compl. at ¶ 25. The plaintiffs allege that, through the ISO, CSAA involved itself in an industry-wide practice of denying claims of deteriorating concrete to the disadvantage of the insured, despite knowledge that the claims were meritorious. Id. at 24-25. Such an allegation supports a plausible inference that CSAA has engaged in an unfair settlement practice often enough to constitute a general business practice in violation of CUIPA. Because the court must take as true all factual allegations in the Complaint, and draw all reasonable inferences in favor of the non-moving party, the Motion to Dismiss Count Three is denied. In re NYSE Specialists Sec. Litig., 503 f.3d at 95.

V. CONCLUSION

*5 For the above-stated reasons, the Motion to Dismiss (Doc. No. 12) is **DENIED** as to Count Three of the Complaint. The court **GRANTS** CSAA's Motion to Dismiss Count Two without prejudice. The court grants plaintiffs leave to amend the pleading consistent with this Ruling and Federal Rule of Civil Procedure 11. The plaintiffs may file an Amended Complaint within 14 days of this Ruling.

SO ORDERED.

Dated at New Haven, Connecticut this 25th day of October, 2016.

All Citations

Not Reported in Fed. Supp., 2016 WL 6246300

TOP STORY

Crumbled insurance: Commissioner defends change excluding failing foundations

By Eric Bedner
Journal Inquirer Aug 30, 2017

HARTFORD — Insurance Commissioner Katharine Wade is defending her decision to approve recent changes that exempt failing foundations from homeowners coverage, saying it has been a standard practice for decades and complies with state law.

The policy language changes, such as one that went into effect in June 2016 for customers of Hanover Insurance Group, make successful litigation less likely for those suffering with crumbling concrete foundations.

Disclosure of the Hanover changes at a forum in Tolland last week sparked a furious reaction from legislators across north-central Connecticut.

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Wade's office authorized the Hanover coverage changes in the midst of a state investigation into the cause of the crumbling concrete crisis, which has been linked to aggregate from a Willington quarry.

Wade said that the Insurance Services Office, an advisory organization that drafts homeowner policy language throughout the nation, periodically amends language to clarify coverage intent.

In the mid-1990s and early 2000s, ISO filed new policy language with various changes, she said.

In 2005, Wade said, the state Insurance Department determined that the changes complied with state law.

"These facts have not changed," she said. "When a company files a homeowners policy, it may use the ISO language verbatim."

Wade said that it is the responsibility of a company to inform its customers of the language change.

U.S. Sen. Richard Blumenthal, D-Conn., said this month that insurance companies were aware of the problem with concrete foundations long before their customers, and that changing policies without proper notice "may be tantamount to fraud."

Standard homeowner policies generally cover a collapse caused by a sudden and accidental occurrence unless the policyholder was aware of the deterioration prior to collapse.

However, language was found to be vague in a 1987 lawsuit against Middlesex Mutual Assurance, in which Connecticut's Supreme Court determined the term "collapse" was sufficiently ambiguous to include coverage for any substantial impairment of the structural integrity of a building, even a substantial impairment that occurred over many years.

As a result of that case and other similar cases, ISO changed policy language to clarify the original intent of insurance policies – to exclude coverage for collapse that is not abrupt.

Wade declined to comment on whether there have been more recent changes to Connecticut policies or who specifically authorized the Hanover changes.

Either the commissioner or her staff is authorized to approve the changes.

A spokeswoman for Hanover Insurance Group said the language change was made to be consistent with its competitors and to ensure their coverage would be interpreted with its original intent.

“The industry’s intent always has been to insure homeowners for the abrupt and unexpected collapse of their homes rather than for a slow deterioration,” said the spokeswoman, who declined to be identified.

Had the state not approved modifications to policies, Hanover and other companies “likely would have stopped writing policies in the state or would have cut back substantially,” she added.

This scenario would have made it difficult, if not impossible, to obtain coverage for other hazards, including fire, storm or water damage, and personal liability, the spokeswoman said.

The company also clarified that while the language change went into effect in June 2016, the state authorized the change in February 2016.

By that time, the crumbling foundation issue was widely known, considering that in August 2015, Gov. Dannel P. Malloy asked the attorney general and the Department of Consumer Protection to investigate the issue, and multiple homeowners had already begun litigation against their insurance companies for declining claims.

Wade added that the department has taken steps to ensure that consumers are protected from cancellation or non-renewal due to a failing foundation, and that consumers are provided proper notice about contractual limitations and policy changes.

Financial Relief Eludes Connecticut Homeowners With Crumbling Foundations

By Lisa W. Foderaro and Kristin Hussey

Nov. 14, 2016

After more than a year of waiting for a state investigation to conclude, Connecticut homeowners have some answers but no financial relief in the slow-motion disaster of crumbling concrete foundations.

A report released this month by the state attorney general's office cited excessive amounts of the mineral pyrrhotite in the concrete mixture as a "contributing factor" in the deterioration of hundreds of foundations in the state's northeast corner.

The report also found, however, that Connecticut's consumer protection laws would not provide any broad monetary relief to homeowners, because state codes had "never prohibited, limited or otherwise regulated" the use of pyrrhotite in the construction of residential foundations.

At the same time, state officials have said that a plan for insurance companies to contribute voluntarily to a fund that would have helped homeowners pay for hugely expensive foundation repairs has not gotten off the ground, because of a lack of interest by insurers. Insurance companies have generally denied homeowners' claims, saying that the problem did not constitute "abrupt collapse," and therefore was not covered by their policies.

The Federal Emergency Management Agency, which was asked for help by the office of Gov. Dannel P. Malloy, a Democrat, said last week that it would not offer assistance because it is not a "natural catastrophe." That left affected homeowners, who were cheered last year when the governor commissioned the state report, frustrated and anxious. All of the foundations were traced to the same quarry business, the Becker Construction Company, and an affiliated concrete maker, the Joseph J. Mottes Company, whose owners temporarily agreed to stop selling their products for residential use.

Tim Heim, whose basement walls have cracked and are getting worse, said the report's focus on the science of iron sulfide minerals, among other analyses, left homeowners unsatisfied. "The governor ordered an investigation, not a scientific analysis," Mr. Heim, who lives in Willington, said.

The joint investigation involved several state agencies, including the Insurance Department, the Banking Department and the Consumer Protection Department. Homeowners began alerting state officials about their failing foundations as early as 2001. State officials did not investigate

until 2015, after WVIT, the NBC station in Hartford, reported that hundreds of home foundations were crumbling.

A year ago, Jonathan Harris, the commissioner of the consumer protection agency, wrote in an email to colleagues that the investigation involved interviews with more than 100 people, including contractors, homeowners, engineers and other experts.

Much of that information has yet to surface in public reports. When the attorney general's office issued its findings on Nov. 3, consumer protection officials said the department would soon release its own report.

"We're still where we were a year and a half ago," said Mr. Heim, who founded the Connecticut Coalition Against Crumbling Basements. "The only thing that's changed is the problem is getting worse."

To date, nearly 400 property owners across nearly two dozen towns have submitted complaints to the consumer protection agency, asserting that their foundations are deteriorating.

James Mahoney and his wife, who live in Ellington, noticed the telltale cracking in their foundation in March. Further testing confirmed that their concrete was failing. The cost to fix their home: \$230,000.

"I went through all the phases of feeling glum, and decided to get angry and put my expertise to use," Mr. Mahoney said.

Mr. Mahoney, a director at an engineering research center, has an expertise in transportation construction materials, including concrete. During his free time, Mr. Mahoney gathered data from building permits and census information to estimate the number of houses potentially affected by the bad concrete, and the economic impact to Connecticut. Mr. Mahoney's analysis led him to believe that as many as 10,000 homes may be involved at a cost of \$1 billion.

Over the past 30 years, the Becker quarry, in Willington, has provided concrete for thousands of houses. The stone aggregate used in the concrete mixture has higher levels of pyrrhotite, an iron sulfide mineral that can react with oxygen and water to cause swelling and cracking.

The recent report gave a highly technical analysis, conducted by scientists at the University of Connecticut, of that chemical reaction. It described the resulting formation of secondary minerals that "might ultimately lead to the premature deterioration of the concrete foundation."

In July, when the state attorney general, George Jepsen, provided preliminary findings, he explained that a few high-profile failures of concrete containing pyrrhotite had occurred around the world, including a dam in Spain and home foundations in Quebec.

Nonetheless, there are scant warnings about the mineral in the industry's standards or in state regulations. The preliminary report concluded that there was little recourse against Mottes, the concrete company, which blamed improper installation, or the related quarry, for the failing

foundations.

The report concluded that a claim by the state of “improper conduct” under the Connecticut Unfair Trade Practices Act was “undermined by the absence of scientific consensus or regulatory restrictions” on the dangers of pyrrhotite.

In the meantime, the Insurance Department asked insurers how many of their policies cover homes that were built since 1983, within a 20-mile radius of the Mottes concrete company’s Stafford Springs headquarters. Through the end of September, homeowners in that region had filed 322 foundation-related insurance claims — about 1 percent of the 34,130 homes the department had determined were potentially built with stone aggregate from the quarry. It is unclear exactly how many foundations used materials from the quarry and the concrete company.

A number of homeowners have also sued their insurance companies. A class-action suit was filed in February accusing insurers of a “concerted scheme” to deny coverage.

While financial aid may be elusive for affected homeowners, those without cracks yet could be protected. Mr. Jepsen has urged state lawmakers to limit, either through statute or regulation, the level of pyrrhotite and other iron sulfide minerals in home concrete.

He noted that the agreement by Becker and Mottes to stop selling products for homes expires next summer. “The failure to do so,” Mr. Jepsen said in the findings in July, referring to lawmakers not limiting pyrrhotite, “would hamper any legal effort to protect consumers from future use of residential concrete containing dangerous levels of destructive minerals.”

Pyrrhotite was also identified as a culprit in Quebec, where 4,000 residential foundations, as well as concrete in some public buildings, are failing. A coalition of homeowners from Quebec visited the state to meet with residents and to commiserate about the financial and emotional stresses.

“Their trials and tribulations mimicked ours almost exactly,” said Linda J. Tofolowsky, who noticed cracks in the concrete foundation of her home in Tolland in the early 1990s, one of the earliest known cases of concrete foundation problems in Connecticut. In the past two decades, home inspectors have referred homeowners to Ms. Tofolowsky for information and support. She tracked their problems and ultimately identified a link with the concrete company.

“This is a tragedy,” she said. “But in a way, it was comforting to know that someone else cares and has been through the same devastating concrete issue.”

A version of this article appears in print on Nov. 15, 2016, on Page A24 of the New York edition with the headline: Financial Relief Eludes Connecticut Homeowners With Cracking Foundations



With Connecticut Foundations Crumbling, 'Your Home Is Now Worthless'

By Kristin Hussey and Lisa W. Foderaro

June 7, 2016

STAFFORD SPRINGS, Conn. — Sandra Miller was at work in January when her daughter called from their home here on Oakridge Drive with alarming news. The house was making loud noises, as if someone had jumped off the counter and landed with a bang. For seconds afterward, the house shook.

A while later, it happened again, and again. Over the next several hours, terrifying bangs rattled the house. The next morning, Ms. Miller called Bill Neal, a structural engineer, who delivered the same stunning assessment to her that he has now told hundreds of homeowners: The concrete foundation was crumbling and, as a result, her house was gradually collapsing.

Across nearly 20 towns in northeastern Connecticut, a slow-motion disaster is unfolding, as local officials and homeowners wrestle with an extraordinary phenomenon. Hundreds, possibly thousands, of home foundations that have been poured since the 1980s are cracking, with fissures so large you can slip a hand inside.

“This is such an emotional roller coaster,” said Tim Heim, a homeowner who started the group Connecticut Coalition Against Crumbling Basements. “You can’t eat, you can’t sleep. When you’re told your home is now worthless and your biggest investment is now worthless, it’s devastating.”

The scope of the problem is so vast that state officials have begun an investigation, and they recently announced that the crumbling foundations had been traced to a quarry business and a related concrete maker, which have agreed to stop selling their products for residential use. The stone aggregate used in the concrete mixture has high levels of pyrrhotite, an iron sulfide mineral that can react with oxygen and water to cause swelling and cracking. Over the past 30 years, the quarry has provided concrete for as many as 20,000 houses.

As officials continue their investigation, the cascade of crumbling foundations poses a thicket of legal, emotional and financial issues and has prompted the state to create an official web page dedicated to the problem. Connecticut is also seeking help from the Federal Emergency Management Agency.

“It’s the psychological toll of the uncertainty,” said Jonathan A. Harris, the commissioner of the State Consumer Protection Department.

Beyond the financial hit, Mr. Harris said, a person's home is "where their kids were born and grandchildren play."

"There's an intangible side to this that's horrible," he continued.

Insurers have generally refused to pay for repairs, strictly defining the coverage of collapse by inserting the word "abrupt" in policy language. Repairing the homes requires replacing the entire foundation at costs that typically range from \$100,000 to over \$200,000. So far, 223 residents have filed formal complaints about crumbling foundations with the department, but officials believe many homeowners may be reluctant to contact the state, fearing problems from their banks and insurers.

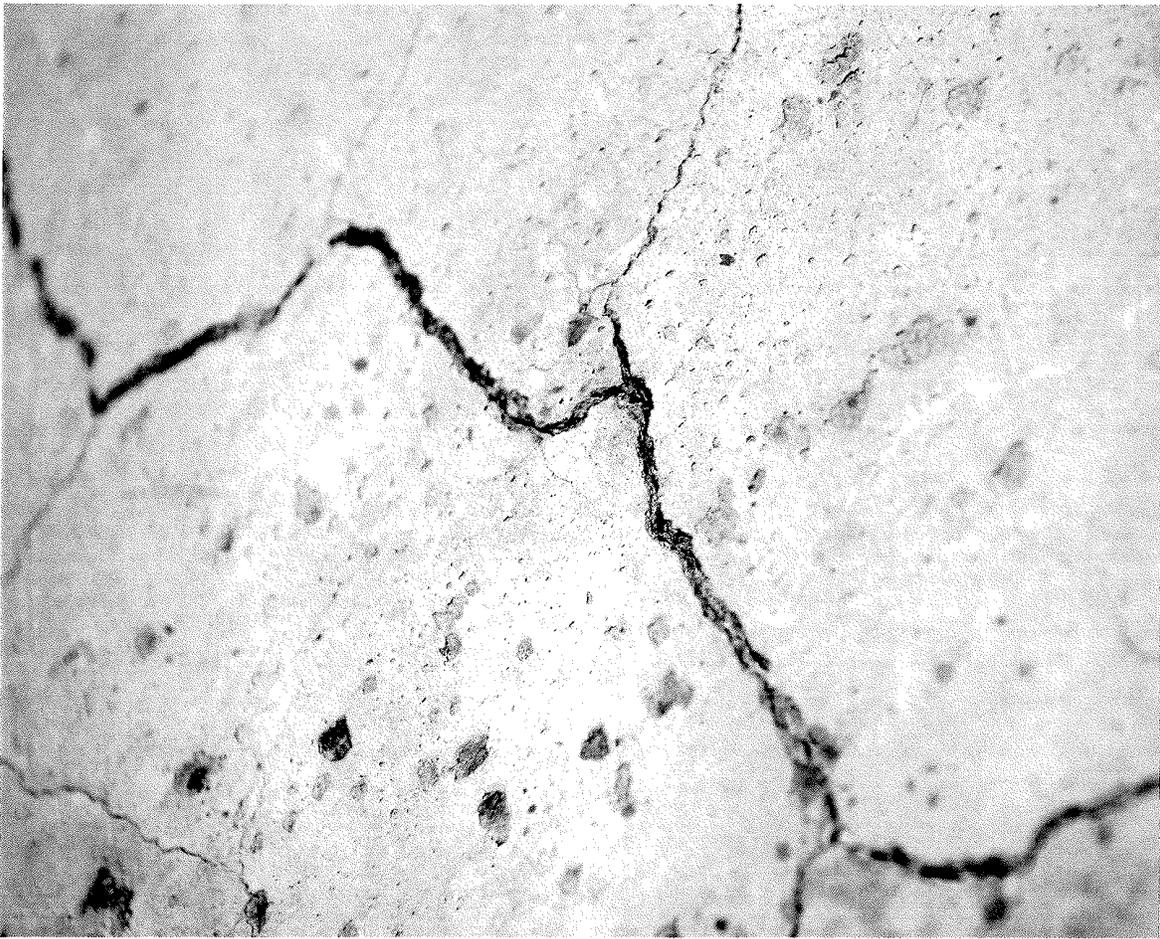
Because the affected swath of the state is home mostly to working- and middle-class families, many face financial ruin since their homes represent the biggest part of their nest egg. Ms. Miller, whose insurance company has provided no financial assistance, rented a nearby condominium after she was told that her family was no longer safe in their home.

But Ms. Miller said she could not pay both the monthly rent and the mortgage. Paying out of pocket to replace her home's foundation, she said, is well beyond reach. "I don't know too many people that have \$170,000 in their wallet," she said. "And that's what it's going to cost to fix my home."

Mr. Neal, the structural engineer, has inspected hundreds of houses. In nearly all, he found concrete walls with distinctive crack patterns that resemble a road map with lines and fissures snaking in all directions — much different than the vertical cracks typically seen in foundations as they settle.

After hearing from tearful, angry residents at packed public meetings, state officials stepped in. In October, the state's Insurance Department warned insurers not to cancel policies because of a foundation's condition. Since insurers are denying claims, that warning may not help with the concrete problem, officials say, but it should at least prevent homeowners from losing insurance protection all together.

Last month, the Connecticut General Assembly passed a bill that would, among other things, allow homeowners with failing foundations to request a reassessment of their property values and require contractors to record the supplier of concrete for residential foundations. Gov. Dannel P. Malloy, a Democrat, signed the bill into law last week.



Cracks in Mr. Halloran's basement. He said the homes of some of his friends were also crumbling. Jessica Hill for The New York Times

Another measure that sought to ease victims' financial losses was less successful. State Senator Tony Guglielmo, a Republican, had proposed a \$50 million bond to help homeowners. But Democrats in the State House rejected it, arguing such a measure should wait until the full extent of the problem was better understood.

"I'm not a big-government guy, by any stretch, but there are some problems where you need government intervention because of the magnitude," Mr. Guglielmo said. "We've had meetings where there were 500 people, and it's been very emotional."

After an investigation by the NBC station WVIT, the governor directed the Consumer Protection Department and the attorney general to investigate possible wrongdoing and to determine the scope of the problem and what, if any, assistance was available for homeowners.

While the state has traced the affected concrete to the quarry business, Becker Construction Company, which operates in Willington, officials have not ruled out other factors. One riddle is the absence of official reports of failing concrete in public or commercial projects that used material from the same quarry, and a concrete maker, the Joseph J. Mottes Company.

John Patton, a spokesman for both companies, has attributed the crumbling foundations to improper installation, specifically the tendency of some contractors to add water to wet concrete to make it pour faster. That was especially true, he said, during a building boom in the 1980s.

By law, Mr. Patton noted, inspectors are on site during commercial and public jobs, ensuring that concrete is mixed and installed properly. “We also know that during the time frame in question, other ready mix providers in the area used the same aggregate from the same source,” he said.

Stephan Lackman, a former Mottes employee, said the Becker family, which owns both Mottes and Becker, started using material from the Willington quarry after its gravel supply was depleted during the 1980s. Mr. Patton acknowledged that Mottes first began using aggregate from the quarry in the 1980s, but said the company’s original gravel supply was in use until 2014.

Linda J. Tofolowsky and her husband, Robert, sued the Joseph J. Mottes Company, which supplied the concrete for her home’s foundation, in 1995 and lost.

Jessica Hill for The New York Times

The mineral has been identified as a culprit in disintegrating foundations elsewhere. In April, Prime Minister Justin Trudeau of Canada repeated a pledge to allot \$30 million in aid to homeowners in the province of Quebec whose foundations were failing.

“I saw with my very own eyes the difficult situation in which too many families live because of pyrrhotite,” Mr. Trudeau told reporters.

As officials seek answers in Connecticut, homeowners are looking for someone to hold accountable. A class-action lawsuit filed in February accuses insurers of a “concerted scheme” to deny coverage. And some residents are angry that it has taken the state so long to address the problem.

Mike Halloran, a plaintiff in the lawsuit, said some of his co-workers, neighbors and acquaintances also had cracking foundations. “Ken the plumber,” Mr. Halloran, a hospital mechanic, said. “A nurse in the O.R. A guy my wife works out with at the gym has it.”

Mr. Heim, the homeowner who started the coalition, faulted state officials for ignoring warnings from a number of homeowners with the problem in the early 2000s. In 2003, a meeting was held in Hartford among lawmakers, homeowners and representatives of the attorney general’s office and Consumer Protection Department. Nothing came of it.

“They had the power to stop this problem,” Mr. Heim said, “and they chose not to.”

It was only after the report by WVIT last summer that politicians at the state level took action, homeowners said.

Fifteen years ago, Linda J. and Robert Tofolowsky filed a formal complaint with the Consumer Protection Department against Mottes. It detailed the cracks that had formed in the foundation of their home here during the mid-1990s. The couple said several other homeowners had similar problems with concrete supplied by Mottes.

The couple sued the company in 1995 and lost. But before the resolution of the lawsuit, Mrs. Tofolowsky, in a handwritten note attached to the 2001 complaint, warned of the calamity to come.

“It has been six years since we filed against J. J. Mottes,” she wrote. “But I am not waiting for the court to make a decision, since we have found these seven other homes with failed foundations. I need to let the public know about this company, J. J. Mottes. So that maybe someone else will not lose their biggest investment, their home.”

Kristin Hussey reported from Stafford Springs, and Lisa W. Foderaro from New York.

A version of this article appears in print on June 8, 2016, on Page A16 of the New York edition with the headline: Connecticut Homes Become ‘Worthless’ as Foundations Crack



State of Connecticut

GEORGE JEPSEN
ATTORNEY GENERAL



Hartford

November 3, 2016

Dannel P. Malloy
Governor
State of Connecticut
210 Capitol Avenue
Hartford, Connecticut 06106

Jonathan A. Harris
Commissioner
Department of Consumer Protection
165 Capitol Avenue
Hartford, Connecticut 06106

Re: Consumer Protection Investigation of Crumbling Concrete Home Foundations

Dear Governor Malloy and Commissioner Harris:

I am writing to share with you the enclosed final report of the experts that my office and the Department of Consumer Protection hired to conduct a scientific investigation into the cause of the crumbling concrete home foundations in northeastern Connecticut. The report confirms the conclusion that the mineral pyrrhotite is a necessary contributing factor in the deterioration of the concrete.

As explained in my July 7, 2016 letter to you, consumer protection laws do not provide a viable source of broad-based relief to the homeowners affected by deteriorating concrete resulting from pyrrhotite reactions. Connecticut law has never prohibited, limited or otherwise regulated the presence of pyrrhotite in residential concrete foundation construction.

You will note that the report is limited to the experts' investigation into the cause of the crumbling concrete. The report does not address or resolve some important questions, such as the precise amount of pyrrhotite in concrete necessary to cause deterioration, other potential contributing factors that might explain why certain homes and not others experience a reaction, or the number of homes potentially affected by this problem. Resolution of those questions, while not material to my legal analysis, remains of interest to the public and policy makers.

Feel free to contact me with any questions or concerns.

Very truly yours,

A handwritten signature in blue ink, appearing to read "G. Jepsen".

George Jepsen

Enc.

INVESTIGATING THE DETERIORATION OF BASEMENT WALLS MADE OF CONCRETE IN CT

by

Kay Wille¹ and Rui Zhong²

¹ Associate Professor and PI of the project, ² Postdoctoral Researcher

August, 31st 2016



Department of Civil and Environmental Engineering

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**This report was produced for the
Attorney General of the State of Connecticut.**

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1. INTRODUCTION

1.1 BACKGROUND

On August 6, 2015, the Attorney General and Commissioner of Consumer Protection of the State of Connecticut were asked by Governor Dannel P. Malloy to investigate whether Connecticut's consumer protection laws were violated in connection with the construction of homes in Eastern Connecticut experiencing deterioration of their concrete foundations. Pursuant to that investigation, the Attorney General and Commissioner of Consumer Protection retained the authors to assist in understanding the likely causes of the deterioration.

Early deterioration of concrete home foundations located in an area of Eastern Connecticut has caused alarm to homeowners, and thus to state agencies, affected communities and others. Many homeowners face significant financial and other burdens relating to the deterioration of their concrete home foundations. In some cases, the deterioration is severe. In light of these circumstances, it is of great public interest, and academic value, to understand what may have caused the deterioration.

Through site inspections and the rigorous testing and analysis of samples of deteriorating home foundation concrete and concrete aggregate, this report seeks to bridge an existing knowledge gap concerning why some home foundations in Eastern Connecticut are prematurely deteriorating. While the potential methods of repair, as well as the full scope of the problems in terms of the number of potentially affected structures, are beyond the scope of the Governor's referral and of this report, the information contained herein represents a significant advancement of the scientific understanding of the basic causal factors underlying this problem.

1.2 OBJECTIVE

The objective of the proposed research is to investigate the deterioration of concrete foundation in an area of Eastern Connecticut and thereby gain a better understanding of what could have caused

the premature deterioration. Special emphasis will be placed on answering the following questions:

- 1) What are the symptoms and characteristics of the deterioration?
- 2) What is the strength loss of the material?
- 3) Is the concrete mixture (i.e., choice of aggregate and cement, mixture design) linked to the deterioration?
- 4) Did environmental conditions, including soil conditions, impact the deterioration?
- 5) Was knowledge about the deterioration potential of concrete constituents available at the time that the affected concrete was produced and the home foundations were installed?

1.3 EXECUTIVE SUMMARY OF RESEARCH APPROACH

Based on the investigators' experience in concrete technology, material design and characterization, the following research steps were undertaken:

- 1) SITE VISITS AND SAMPLING: Selecting houses for potential inspection and investigation based on their construction date, degree of deterioration and geographical distribution. Documenting the symptoms of deterioration, such as crack pattern, crack opening, discoloring and spatial distribution of deposition at the vicinity of cracking surface. Collecting material samples at the cracking surface and drilling core samples out of concrete foundation walls and slabs both at damaged and intact areas.
- 2) CONCRETE STRENGTH: Testing of the residual compressive strength and analyzing the failure pattern of deteriorated concrete.
- 3) MINERAL CHARACTERIZATION: Emphasis of this characterization is placed on the detection of iron sulfide such as pyrite (FeS_2) and pyrrhotite (Fe_{1-x}S ($x=0$ to 0.125)). Aggregates of the obtained core samples and aggregates of the supplying quarry were examined and in their mineral phases analyzed. Additionally, the mineral phases of the depositions at the vicinity of the cracking surface were characterized. X-ray diffraction

(XRD) and X-ray fluorescence (XRF) technologies were used for analysis purpose. Supplementary scanning electron microscopy (SEM) coupled with energy dispersive X-ray (EDX) test was also conducted for the investigation of quarry aggregate to overcome the limits of the XRD technology and confirm the XRF results.

- 4) INVESTIGATION OF SULFATE BASED REACTION PRODUCTS: Emphasis was placed on investigating the micro structure of the interfacial transition zone (ITZ) between aggregate and cement matrix, as well as the matrix itself, using SEM coupled with EDX. Point analysis was conducted to confirm the existence of minerals such as ettringite and thaumasite and their delayed formation. Mapping analysis was used to validate the oxidization of the pyrrhotite-bearing aggregates.

Fig. 1.1 schematically summarizes the research approach, in which visible macroscopic properties are linked to scientific microstructural parameters.

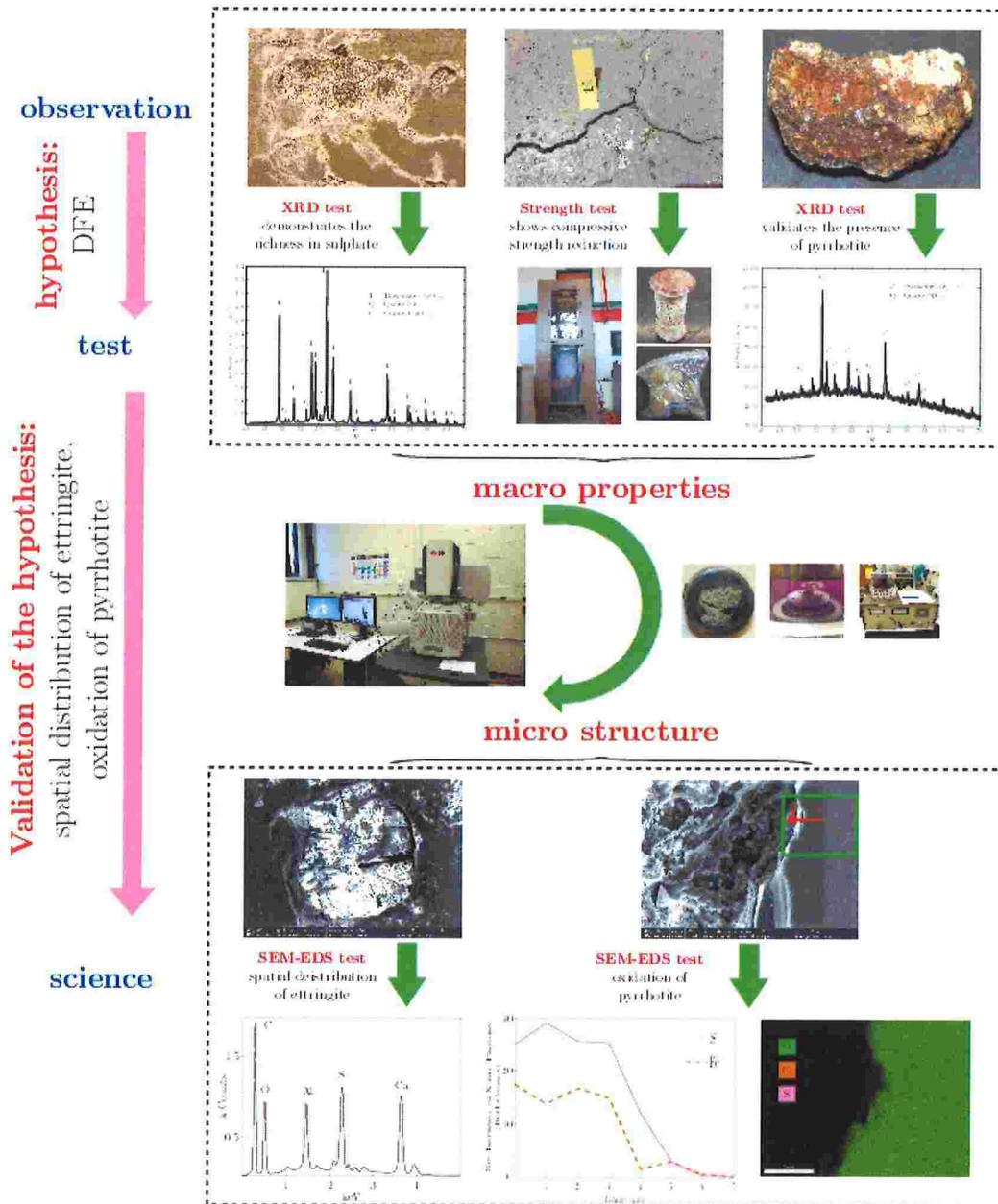


Fig. 1.1 Research Approach

Based on visual inspection typical deterioration symptoms can be identified, such as map cracking, whitish formation of minerals at the vicinity of the cracking surface and reddish - brownish discoloring. After experimental testing and microstructural investigation the results were analyzed and correlated to the deterioration symptoms of the visual inspection. Based on the

obtained results the investigators conclude that the oxidation of pyrrhotite-containing aggregates and the associated secondary formation of expansive minerals are the primary cause of the early deterioration of these concrete wall foundations. It is worth noting that the presence of pyrrhotite-containing aggregates alone does not necessarily lead to its oxidation and concrete deterioration.

1.4 OUTLINE OF REPORT

This final report is divided into seven chapters. The first chapter is an introduction to the research project, its objectives and research approach. Chapter two provides background information such as deterioration of concrete derived from sulfate attack and secondary mineral formation, historical investigation and existing standards related to concrete deterioration induced by sulfide-bearing aggregate. Chapter three presents detailed onsite survey results of candidate houses. Chapter four provides information regarding the compressive strength investigation. Chapters five and six cover mineralogical assessment of the quarry aggregate, aggregate from the crushed core samples and mineral formations at the vicinity of cracking surface. Chapter seven presents the microstructural investigation of deteriorated concrete. Chapter eight summarizes the principal findings and conclusions.

2. BACKGROUND INFORMATION

Based on the reported typical symptoms of deterioration, it is hypothesized that the damage is caused by the oxidation of sulfide-bearing aggregate that leads to expansive secondary mineral formation such as iron hydroxide, gypsum, ettringite, and thaumasite. Therefore research emphasis is placed on the mechanisms of such deterioration.

2.1 SULFATE ATTACK

2.1.1 INVESTIGATION OF THE DETERIORATION OF CONCRETE STRUCTURE DERIVED FROM SULFATE ATTACK

Normal Portland cement concrete is known to undergo an increase in volume and subsequently cracking under long exposure to sulfate enriched solutions. This phenomenon is called sulfate attack. It results from the chemical reaction between the products of cement hydration and the sulfates. The problem of sulfate attack raised concerns around 1890 due to failures on a railway in southern France. In 1900 and 1902 further problems due to sulfate attack by gypsum, magnesium and sodium sulfate were found in tunnels in France and in structures in southern Algeria [1]. Lea and Desch point out that clays and soils are found containing considerable amount of mineral sulfates in many parts of Great Britain and in many extensive regions outside of England [2]. Sulfate-bearing soils are also present in France and other parts of Europe, as well as across large areas of the United States and Canada. The problems associated with sulfate attack are therefore of widespread interest across North America and Europe.

In the early 1990s, the National Bureau of Standards (NBS), the U.S. Department of Agriculture (USDA) and the Portland Cement Association (PCA) in the United States, as well as the Engineering Institute and the National Research Council in Canada conducted extensive research on the deterioration of concrete due to sulfate attack. The field and laboratory studies conducted and conclusions drawn by these organizations are reviewed in the following sections.

The NBS initiated a study in 1910 to investigate the resistance of concrete exposed to seawater [3]. However, this program eventually developed into a study of the deterioration of concrete by sulfate-containing water. Hollow mortar cylinders with varying cement-sand ratios were filled with salt solutions in the preliminary study. One conclusion from this study was:

Portland cement mortar or concrete if porous enough can be disintegrated by the mechanical forces exerted by the crystallization of almost any salt in its pores, if a sufficient amount of it is permitted to accumulate and a rapid formation of crystals is brought about by drying. Porous stone, brick and other structural materials are disintegrated in the same manner. Therefore, in alkali regions where a concentration of salts is possible, a dense nonporous surface is essential.

This preliminary study was followed by a cooperative investigation in 1914 involving the USDA, U.S. Bureau of Reclamation and the American Portland Cement Manufacturers Association [4]. Drain tile made with Portland cement was exposed to alkali soils in South Dakota, Colorado, Washington, New Mexico, Arizona, Minnesota, Missouri and Iowa. The experiments were extended to include concrete blocks containing reinforcing steel. Progress reports on this work were prepared in 1917, 1922 and 1926 [4-6]. Some of the conclusions were as follows:

- 1) Disintegration may be manifested in sulfate water by physical disruption by expansion resulting from crystallization of salts in pores, but it is primarily due to chemical reaction between salts in solution and the constituents in cement.*
- 2) The use of tile in soils containing alkali salts of the sulfate type in considerable quantities is hazardous, since some specimens of the best quality have been disintegrated during an exposure of less than 6 years.*

In the spring of 1919, a number of failures of drain tile in the ground in southwestern Minnesota drew attention of the USDA. Consequently, a laboratory at the University of Minnesota was established for the purpose of investigating the issues associated with the deterioration of concrete. An extensive study was conducted under the direction of Dalton G. Miller [7-9]. The

chemical analysis from the U.S. Bureau of Soils on 1062 water samples and 150 soil samples revealed that the failures were closely associated with the presence of sodium and magnesium sulfates. The performance of specimens made by 122 cements stored in tap water, Medicine Lake and solutions of Na_2SO_4 and MgSO_4 were evaluated. Based on the strength ratio between the samples stored in Medicine Lake and tap water and the number of months required to reach an expansion for 0.01%, Miller and Manson concluded that there was a definite correlation between sulfate resistance of Portland cement and the quantity of C_3A as calculated. The extensive research at the University of Minnesota established that normal cured concrete of low permeability had good resistance to sulfates when the calculated C_3A in cement is no more than 5.5%.

In 1921 a Committee on the Deterioration of Concrete in Alkali Soils was established by the Council of the Engineering Institute of Canada [10] and financially supported by the Research Council of Canada, the Canada Cement Company, the Canadian Pacific Railroad and the three Prairie Provinces of Canada [11]. After the inspection of field exposed specimens in 1927 [12], it was stated that:

The results obtained from the field exposure tests are quite in accord with those obtained in other field investigations. The main effort should be centered upon research in the chemical laboratory was the original decision of the Committee, and this has proven sound. Few new data or ideas have been brought by the field, but the chemical research has greatly extended our knowledge of the behaviors of cements when exposed to sulfate solutions.

The chemical investigation was conducted under the direction of Dr. Thorvaldson from the University of Saskatchewan [10]. The reaction of the principal minerals in Portland cement clinkers (C_3S , C_2S and C_3A) with water and sulfate solutions were studied. Strength and length change, extraction and microscopical studies were conducted for dilute suspensions of each mineral after exposure in water and salt solutions for different periods of time. The results of these studies with the pure compounds indicated that improved sulfate resistance can be achieved

either by decreasing the alumina content of kiln feed or adding some ferric oxide to it, either of which should decrease the C_3A content of the clinker.

The Portland Cement Association started a large-scale program in 1921 [13]. Approximately 2,000 10 in. by 24 in. concrete cylinders were made in the laboratory and were transported to the field and stored in sulfate soils and waters at Montrose, Colorado and Medicine Lake, South Dakota after two to three months of curing. Laboratory tests using 4 in. by 8 in. cylinders were also carried out under different storage conditions such as water and salt solutions. In short periods of time, serious deterioration of the concrete was observed which are similar to those of the studies conducted by NBS and the University of Minnesota. Over 400 cements with controlled composition were prepared using laboratory kiln and mills [14]. Glass contents were controlled by different cooling and quenching methods. Clinkers with different ratios of C_3S to C_2S , varying free CaO and free MgO contents, low to high C_3A contents with varying C_4AF contents were designed. The performance of specimens exposed to water and 2% solutions of sodium and magnesium sulfates were evaluated. Principal findings with respect to sulfate attack resistance were as follows:

- 1) Changes in the ratio of C_3S to C_2S lead to little observable effect on expansion in water or sulfate solutions.*
- 2) Expansions of specimens in 2% sodium and magnesium sulfate solutions increase rapidly with increase in C_3A concentration.*
- 3) The effect of C_4AF on the sulfate resistance is usually masked by a much greater effect of C_3A but becomes apparent once the C_3A is controlled at constant concentration. Increases in C_4AF to high values (20~27%) may result in marked acceleration in the length increase rate of specimens.*
- 4) Crystalline C_3A is less resistant to sulfate attack than glass C_3A . In contrary, crystalline C_4AF is more resistant to sulfate attack than glass C_4AF .*

2.1.2 MECHANISMS OF SULFATE ATTACK

While the formation of ettringite in regular Portland cement concrete is well established as the cause of deterioration during sulfate attack, the precise mechanism by which ettringite causes expansion is still an open question. The following theories have been formulated for possible explanations.

FORMATION OF ETTRINGITE

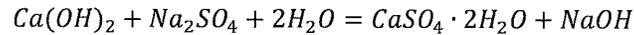
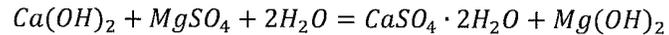
The most widely accepted mechanism of sulfate attack ascribes the expansion to the formation of AFt phase (ettringite) within cement paste through a topochemical reaction [15-23]. The alumina-bearing phase reacts with the sulfate ions to form ettringite which occupies a larger volume than the solid which participates in its formation. A local expansion occurred as the ettringite forms, which pushes the surroundings outward.

DOUBLE DECOMPOSITION BETWEEN THE SULFATE AND CALCIUM HYDROXIDE

One sewer constructed in 1890 was so severely deteriorated after a relatively short time in service that portions of it had to be rebuilt [24]. The remaining portions of the sewer were disintegrated in many locations and occasionally portions of the pipe were gone. These observations led to an investigation of chemical reactions involved in the deterioration under the direction of Burke and Pinkey [25]. Based on the chemical analysis results, a hypothesis explaining the deleterious effect of sulfate was proposed as follows:

The chemical reaction of alkali that is destructive to cement work is double decomposition between the various alkali salts and calcium hydroxide, which is an unavoidable constituent, and probably the binding constituent, of all set cement, whether the cement is classed as Portland, natural or slag. This reaction removes greater or lesser amounts of the calcium hydroxide and deposits in its place, in most cases, a molecular equivalent amount of other compounds, which have good cementing properties but occupy more space than calcium hydroxide. This increase in space occupied disrupts the cement, causing it to bulge, crack and crumble.

Typical double decomposition reactions can be represented as follows:



Burke and Pinckey found that there is an increase of volume between the reactant and the reaction products. Based on the assumptions that these reaction products tended to be deposited in the space originally occupied by the calcium hydroxide and that these reactions are solid-liquid type as discussed by Hansen [26], they concluded that the volume change of the decomposition cause the cement to expand.

ADSORBED WATER BY GEL SYSTEM

No volume increase was found after careful calculation of the volume of the reactants and reaction products. It seems impossible for a through-solution double decomposition to form solid reaction products, in a capillary pocket, that occupy a greater volume than the pocket plus the volume of the solid calcium hydroxide taking part in the reaction. Therefore the mechanism involving the water adsorption by the gel system was formulated. A colloidal product is surrounded by a shell of adsorbed water due to its surface energy [1]. Precipitation of colloidal solid in the gel pore resulted from the reaction between calcium hydroxide and sulfate disrupted the equilibrium of the water in the pore with the surface energy. The equilibrium can be restored by additional water entering the pore from the surrounding solution to furnish the newly formed solid particles with their shells of adsorbed water. This entrance of water causes the gel system to expand.

UPTAKE OF WATER AND SWELLING OF COLLOIDAL ETTRINGITE

Experimental work demonstrated that the expansion associated with ettringite formation itself was insignificant compared to the expansion when ettringite was exposed to excessive water [27]. Scanning microscopy test by Mehta indicated that the ettringite formed at the presence of lime is colloidal but not lath-like crystals [28]. The colloidal ettringite is characterized by high specific

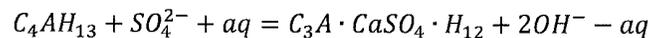
surface and peculiar structure with a negative net charge as proposed by Moor and Taylor [29]. It was proposed that this colloidal form of ettringite is probably responsible for attracting a large quantity of surrounding water molecules and the cause of interparticle repulsion which eventually result in an overall expansion of the system.

REDUCTION OF THE STIFFNESS OF C-S-H DUE TO THE ADSORPTION OF SULFATE IONS

Since not all the physical manifestation (expansion, cracking, loss of strength and stiffness, and disintegration) of sulfate attack can be adequately explained by the chemical phenomenon of ettringite formation as a result of reaction between sulfate water and hydration product of Portland cement, another less widely accepted theory was forwarded to explain the deterioration associated with sulfate attack [30]. It is speculated that sulfate adsorption on C-S-H surfaces reduces their adhesive ability. Therefore expansion in a system suffered from a loss of stiffness can easily result in large dilatations of the paste and cracking.

SOLID STATE CONVERSION OF C_4AH_{13} TO MONOSULFATE

During the study of the paste hydration of C_3A -gypsum system with and without $Ca(OH)_2$, Chatterji and Grudemo observed that the pastes containing $Ca(OH)_2$ cracked before three months while those without $Ca(OH)_2$ remained intact. X-ray diffraction and electron-optical examination revealed that the initial sulfate-bearing compound was ettringite but the final one was calcium aluminate monosulfate ($C_3A \cdot CaSO_4 \cdot xH_2O$). The expansion seems to be connected with the formation of monosulfate at the expense of ettringite. Based on these observations, they proposed that the sulfate explanation is resulted from the solid state conversion of C_4AH_{13} to monosulfate [31].



There is a net volume increase of about 14% during the solid state conversion. In the case of C_3A -gypsum system, part of the C_4AH_{13} crystal will dissolve and diffuse out to other part of the matrix

and will be precipitated. The increase in volume will be accommodated by this dissolution-diffusion-precipitation process. However, the concentration of lime is high for the case of C_3A -gypsum- $Ca(OH)_2$ mixtures. The solubility of C_4AH_{13} is depressed thus the accommodative process is inoperative. Consequently there will be a disruptive expansion.

OSMOTIC FORCES

After discussing theories of sulfate resistance, Thorvaldson made the following statement [32]:

Many observations such as these suggest that volume changes in mortars are controlled by osmotic forces concerned with the swelling of gels, that the chemical reactions condition the gel system and destroy cementing substances while the formation of crystalline material is incidental to these chemical reactions, and that the increased resistance to volume changes with increased richness of mix may not be primarily due to decreased permeability but rather to the more prolonged maintenance of conditions within the mortar unfavorable to the swelling of the gels.

2.2 DETERIORATION MECHANISMS OF CONCRETE DUE TO SECONDARY MINERAL FORMATION

A significant problem associated with concrete deterioration is the formation of secondary minerals such as ettringite and thaumasite long after the concrete has hardened [33]. The formation of those minerals leads to significant expansion resulting in cracking when the stress in the concrete matrix exceeds its tensile strength. The secondary minerals must be differentiated from the primary minerals normally formed in the first days of cement hydration. For instance, primary ettringite is formed by the reaction between gypsum and the alumina phase of the cement (tricalcium aluminate $3CaO \cdot Al_2O_3$ abbreviated as C_3A). It turns into monosulfoaluminate ($3CaO \cdot Al_2O_3 \cdot CaSO_4 \cdot 12H_2O$) which is a more stable form of sulfoaluminate, and finally into hydrogarnet (C_4AH_{13}) [34]. The remaining sulfate ions are trapped in the structure of the C-S-H gel. Secondary ettringite can be expansive and its volume is three to eight times larger than that of the original solid [35]. Though the mechanisms involved remain controversial, the delayed

formation of these minerals is believed by many researchers to cause the expansion and premature deterioration of concrete [36-43].

2.2.1 OXIDATION OF SULFIDE-BEARING AGGREGATE AND PRIMARY EXPANSION

Secondary mineral formation is strongly dependent on the availability of sulfate which can be supplied either from internal or external sources. External sources include natural or polluted ground water, moisture in soils and sulfate-rich acid rain [44-45]. Sulfur dioxide from the combustion of motor fuels and the sulfate impurities of deicing salt are also potential external sources [46]. Internal sources are primarily sulfate or sulfide rich components of concrete, such as cement and aggregate. SO_3 content in cement is usually within the range of 2.5 to 4.0 wt.% which is considered safe to avoid delayed ettringite formation [47]. Therefore aggregates rich in sulfide become critical internal sources of sulfur for delayed mineral formation. Pyrite (FeS_2) and pyrrhotite (Fe_{1-x}S) are the most common iron sulfide in nature and are common minerals disseminated in various rock types. Oxidation of these sulfides at the presence of water and oxidant (oxygen or ferric ion) leads to series of chemical reactions and to the formation of products with larger volume than the initial reactant [48].

Table 2-1 summarizes the expansive oxidation reactions of these sulfides which have been referred as “primary expansion” [49]. It is worth noting that volume changes listed in **Table 2-1** represent maximum expansion at complete reaction thus it overestimates the potential volume expansion. From the thermodynamic stability point of view, ferrihydrite ($\text{Fe}(\text{OH})_3$) is the predominant sulfide oxidation product under the alkaline conditions that are representative for concrete [50].

Table 2-1 Primary expansion induced by the oxidation of pyrite and pyrrhotite in aqueous systems and their associated volume changes. Pyrrhotite reactions balanced for $x=0.125$, after [49]

	Reaction	ΔV_{solids} ($\text{cm}^3/\text{mole of sulfide}$)
	$8F_{1-x}S + \frac{31}{2}O_2 + 8H_2O \rightarrow 7(FeSO_4 \cdot H_2O) + SO_4^{2-} + 2H^+$	209.96
Pyrrhotite	$8F_{1-x}S + 21O_2 + 11H_2O \rightarrow 7Fe(OH)_3 + 8SO_4^{2-} + H^+$	6.04
	$8F_{1-x}S + \frac{67}{4}O_2 + \frac{25}{2}H_2O \rightarrow 7FeOOH + 8SO_4^{2-} + 16H^+$	0.64
	$FS_2 + \frac{9}{2}O_2 + 2H_2O \rightarrow FeSO_4 \cdot H_2O + SO_4^{2-} + 2H^+$	209.96
Pyrite	$FS_2 + \frac{18}{4}O_2 + 2H_2O \rightarrow Fe(OH)_3 + 2SO_4^{2-} + H^+$	3.05

2.2.2 INTERNAL SULFATE ATTACK AND SECONDARY EXPANSION

It can be seen from **Table 2-1** that sulfate and hydrogen ions are released during oxidation. In hardened concrete, hydrogen ions attack the matrix and react with portlandite ($Ca(OH)_2$), a hydration product of Portland cement, to gypsum ($CaSO_4 \cdot 2H_2O$). Gypsum then reacts with the alumina phase in cement (tricalcium aluminate $3CaO \cdot Al_2O_3$) resulting in the formation of monosulfoaluminate ($C_4\bar{A}SH_{12}$) and, eventually, ettringite ($C_6\bar{A}S_3H_{32}$). The expansions of these secondary minerals have been referred as “secondary expansion” [50]. **Table 2-2** lists these secondary expansion reactions in increasing order of volume expansion. The predominance of one or another reaction is controlled by pH and the availability of sulfate ions. Formation of gypsum is preferable at $pH < 10.5$. Due to the strong alkalinity of concrete it is unlikely that gypsum is a principle contributor to secondary expansion.

It is worth pointing out that under alkaline conditions in concrete, ferrihydrite is the most stable product of sulfide oxidation. Its volume increase (**Table 2-1**) is small compared to that of

monosulfate or ettringite (**Table 2-2**) resulting from the reaction of sulfate ions with portlandite and tricalcium aluminate, respectively.

Table 2-2 Secondary expansion reactions due to delayed formation of ettringite and their associated volume changes, after [49]

Reaction	ΔV_{solids} (cm ³ /mole of sulfide)
$CH + \bar{S} + 2H^+ \rightarrow C\bar{S}H_2$ (gypsum)	41.63
$CH + C_3A + \bar{S} + 11H \rightarrow C_4A\bar{S}H_{12}$ (monosulfoaluminate)	182.89
$3CH + C_3A + 3\bar{S} + 29H \rightarrow C_6A_3\bar{S}_3H_{32}$ (ettringite)	172.19

2.3 HISTORICAL INVESTIGATION

Scientific knowledge of deteriorating concrete home foundations due to internal sulfate attack and secondary expansion is limited, as evidenced by the scarcity of written work, and there remains no broadly recognized scientific consensus about the problem. Most published literatures of concrete deterioration associated with the expansion of pyritic rocks are linked to external causes, usually cracking and uprising of concrete buildings lying on swelling rock foundation or on a swelling rock fill. In very few cases concrete deterioration is caused by internal conditions, such as the expansion of sulfide rich aggregates as a result of the oxidation of pyrite or pyrrhotite [51-53].

To the best knowledge of the authors, the first internal sulfate attack induced by sulfide containing aggregate was reported in the Oslo region of Norway, 1959 [54].

Numerous cases of concrete deterioration due to sulfide containing rocks have been reported in Canada. The first deterioration cases associated with heaving of rock foundations due to pyrite oxidation were published during the 1970s [55-56]. In the providence of Quebec, deterioration related to pyrite oxidation was first found in the region of Quebec City in 1983 and Matane in

1984 [57]. The cases in the Montreal area were officially reported in the 1990s [58-59]. The first symposium concerning harmful pyritic rock fills was held in May 1997 by the Montreal section of the Association of Engineering Geologists (AEG). More recently, premature deterioration of concrete foundations two to four years after construction in the Trois-Rivières area (Québec, Canada) were reported [60]. Rodrigues et al. investigated the importance of thaumasite formation on the reaction mechanism of concrete damage resulted from the oxidation of sulfide containing aggregates [61].

Although sulfide containing aggregates induced premature deterioration of concrete, only a limited number of scientists were aware of this problem before 1998. However, increasing interests arise as more and more damage is reported worldwide. Lee et al. investigated Iowa (USA) highway concrete deterioration in 2005 [62]. Oliveira et al. reported the downstream face and galleries damage of the Graus Dam (Spain) in 2014 [63].

2.4 STANDARDS OF IRON SULFIDES IN AGGREGATE FOR CONCRETE

In Europe, there are different standards regulating the content of iron sulfides in aggregates for concrete. Spanish Regulations of Structural Concrete (EHE), in force between 1999 and July 2008, prohibits the use of aggregates containing oxidizable sulfur compounds (Article No. 28). It is clarified in the comments section that “*oxidizable sulfurs (e.g. pyrrhotite, marcasite, and some forms of pyrite), even in small quantities are very damaging to concrete since, as through oxidation and hydration, they form sulfuric acid and iron oxide/hydroxide minerals*”. Similar requirements are stated in ASTM C294-05 (Section No. 13): “*marcasite and certain forms of pyrite and pyrrhotite are reactive in mortar and concrete, producing a brown stain accompanied by an increase in volume that has been reported as a source of popouts in concrete*”. It is worth noting that no obligatory European standard was in place in 1998. Recent European standard EN 12620:2008 (Section 6.3.2) makes the following statement: “*should the presence of oxidizable iron sulfides in the form of pyrrhotite be detected, the sulfur content provided by them, expressed*

in S, will be lower than 0.1%". This is the same requirement as that in the updated Spanish Regulations of Structural Concrete EHE-08 (Section 28.7.3). Notably, American regulators have not responded to either scientific findings or incidents of sulfur attacks by enacting regulations in building codes or statutes that limit the amount of iron sulfides in concrete.

3. ON SITE SURVEY

A list of candidate residences had been preselected to conduct onsite inspection and collect core samples based on their construction date, degree of deterioration and geographical distribution. The distribution of these homes is illustrated in **Fig. 3.1**. In this report seven homes (marked as 1 through 7 in **Fig. 3.1**) from the preliminary list were chosen for further investigation. Typical deterioration symptoms are summarized as follows:

- map cracking with wide opening and/or significant deformation of the wall
- whitish formation of minerals at the vicinity of cracking surface
- reddish - brown discoloring

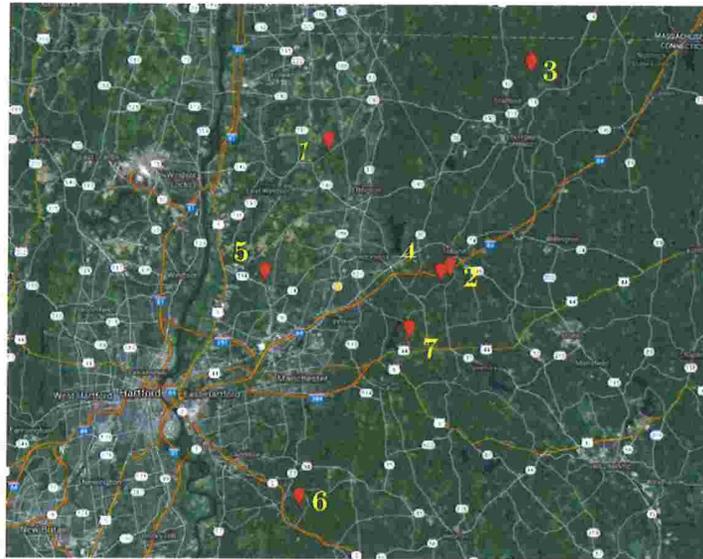
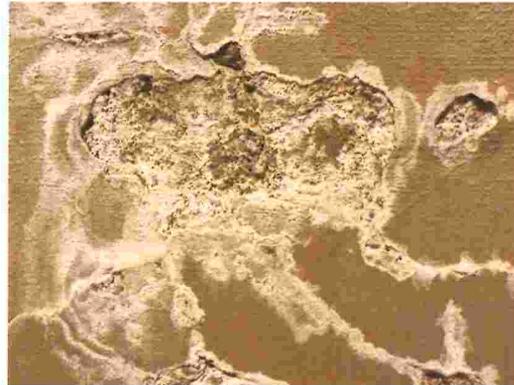


Fig. 3.1 Geographical distribution of candidate housing



a) map cracking



b) Abundant whitish powder



c) reddish – brown discoloring



d) crack opening (>4mm)



e) significant deformation of the concrete foundation wall



Fig. 3.2 Typical symptoms of deteriorated foundation

Since the inspected houses where core samples were taken show similar symptoms, only visual inspection was conducted for additional 14 houses. Soil samples were also taken and examined in the soil laboratory at the University of Connecticut.

4. COMPRESSIVE STRENGTH

4.1 SAMPLE COLLECTION

Cylinder cores with a diameter of 3 inch and a minimum length of 6 inch were drilled out of the walls both at relatively intact and deteriorated areas for compressive strength test. The lengths of the cores drilled out of slabs were restrained by the actual thickness of the slab and ranged from 3 to 4 inches. An experienced third party contractor was hired to carry out the coring process (Fig. 4.1). In general, at least 9 concrete samples were cored from the foundation wall of each house.



Fig. 4.1 Coring process carried out by a third party contractor

4.2 SPECIMEN PREPARATION AND COMPRESSION TESTING

The collected samples were cut to 6 inch in length using a diamond saw. Special emphasis was placed in achieving high quality of the load face ends in terms of planeness and perpendicularity. After cutting the load faces were ground (**Fig. 4.2b**) and capped with sulfur (**Fig. 4.2c**). The capping process was conducted following ASTM C617. The cutting and grinding/polishing equipment are shown in **Fig. 4.3a** and **b** (MetLab Corporation – Metpol 300-1V) respectively.



Fig. 4.2 Specimen preparation procedure



a) Cutting saw



b) Rotary grinding and polishing machine



c) Load frame

Fig. 4.3 Specimen preparation and test equipment

Once the preparation procedure had been completed the specimens were placed and carefully aligned between the load platens of a hydraulic compression load frame (**Fig. 4.3c**) with a capacity of 400,000 pounds (1780 kN) of force. The machine displacement was set to a rate of 0.5 mm/min. Failure usually occurred within 1-2 minutes. Compressive strength was determined in accordance to ASTM C39.

4.3 TESTING RESULTS

The compressive strength of individual specimens is summarized in **Table 4-1** along with the average (AVG), standard deviation (STD) and coefficient of variation (CV). It can be seen that most of the CV for intact (IT) zone is smaller than 9% as required by ASTM C42. The CV for severely deteriorated (SD) area is significantly higher than 9% while the CV for moderately deteriorated (MD) zone lies in between. It is worth noting that due to the severe deterioration of the concrete foundation wall, some of the collected core samples are just a group of pieces of disintegrated aggregates with attached matrix (**Fig. 4.4**) thus the compressive strength of such samples are 0 MPa and the compressive strength reduction is considered as 100%. As summarized in **Table 4-1**, the compressive strength reduction of concrete foundation wall ranges from 27% to 100%.



Fig. 4.4 Completely disintegrated core sample of concrete foundation wall– house 1

Table 4-1 Summary of compressive strength test result

House	Wall/Slab	Location	Individual (MPa)	AVG (MPa)	STD (MPa)	CV (%)
1	Wall	SD	0	-	-	-
		SD	0	-	-	-
		SD	0	-	-	-
		IT	21.8			
		IT	21.9	21.0	1.4	6.7
		IT	19.4			
		IT	18.7			
		IT	18.8	18.9	0.3	1.7
		IT	19.3			
	Slab*	IT	50.8			
	IT	51.3	49.1	3.4	6.9	
	IT	45.2				
2	Wall	SD	15.7			
		SD	12.6	14.3	1.6	10.9
		SD	14.6			
		IT	16.7			
		IT	18.5			
		IT	17.7	19.5	3.8	19.7**
		IT	25.2			
	Slab*	IT-R	34.0			
	IT-R	31.6	36.7	2.3	6.2	
	IT-R	30.2				
3	Wall	SD	11.1	-	-	-
		SD	9.6	11.3	1.9	16.7
		SD	13.4			
		MD	17.8			
		MD	13.4	15.2	2.3	14.9
		MD	14.5			
		IT	27.6			
	IT	24.5	26.0	1.5	5.9	

		IT	25.8			
		IT	43.3			
	Slab	IT	38.6	38.9	4.2	10.9
		IT	34.9			
		SD	-	-	-	-
		SD	-	-	-	-
		SD	-	-	-	-
		MD	17.2			
	Wall	MD	18.5	17.4	0.9	5.4
		MD	16.6			
4		IT	27.0			
		IT	22.6	24.5	0.1	9.3
		IT	23.8			
		IT	32.1			
	Slab	IT	36.1	34.8	0.1	6.7
		IT	36.2			
		SD	0	-	-	-
		SD	0	-	-	-
		SD	0	-	-	-
		MD	-	-	-	-
	Wall	MD	15.0	13.3	2.5	18.7
		MD	11.5			
5		IT	22.6			
		IT	19.4	21.0	1.6	7.7
		IT	20.8			
		IT	38.4			
	Slab	IT	37.4	37.1	1.4	3.7
		IT	35.6			
		SD	11.1			
		SD	13.7	12.3	1.3	10.3
6	Wall	SD	12.2			
		MD	10.9			
		MD	14.1	14.1	3.2	22.5

		MD	17.3			
		IT	13.6			
		IT	12.3	13.6	1.3	9.7
		IT	14.9			
		IT	38.1			
		IT	28.4	31.1	6.1	19.6
		IT	26.8			
	Slab	C	38.1			
		C	28.4	25.7	5.2	20.3
		C	26.8			
		SD	8.8			
		SD	13.5	10.3	2.8	27.7
		SD	8.4			
		MD	24.9			
	Wall	MD	24.2	22.0	4.5	20.4
		MD	16.8			
		IT	-	-	-	-
		IT	-	-	-	-
		IT	-	-	-	-
		IT	27.5			
	Slab	IT	27.2	26.0	2.2	8.6
		IT	23.5			

* A strength correction factor was applied due to the smaller than 1 length to diameter ratio (l/d) in accordance with ASTM C42/C42 M.

** This higher than standard allowed (9%) coefficient of variation (CV) may be attributable to the inhomogeneity of concrete or disturbance of the bond between the mortar and coarse aggregate during the coring process.

5. ASSESSMENT OF THE QUARRY AGGREGATE

5.1 XRD EXAMINATION

5.1.1 SAMPLE PREPARATION AND TEST SET UP

Aggregate with a brown color, indicating signs of oxidation, were selected for this investigation (**Fig. 5.1a**). Brown parts were separated from the original coarse quarry aggregate (**Fig. 5.1b**), ground in a mortar (**Fig. 5.1c**) and sieved (**Fig. 5.1d**) through a series of sieves. Powder smaller than 45 μm were collected [34]. Prior to the XRD analysis, samples were set down and compacted on the rough surface of a plastic block to be randomly disoriented (**Fig. 5.1e**). Prepared sample was mounted (**Fig. 5.1f**) and tested in a Bruker D2 Phaser X-ray diffractometer as shown in **Fig. 5.2**. Cu K α radiation ($\lambda=1.5418\text{\AA}$) generated at 10 mA and 30 kV is used in this research. The mineralogical phase of aggregate is analyzed by a commercial package Jade[®].



a) piece of coarse quarry aggregate with a brown color



b) parts separated from the original crushed concrete piece



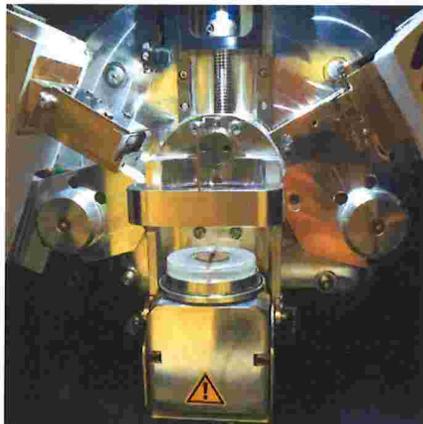
c) ground sample using mortar and pestle



d) sieved sample



e) sample in the vehicle for XRD test



f) sample mounted for XRD test

Fig. 5.1 Sample preparation for XRD testing



Fig. 5.2 Bruker D2 phaser X-ray diffractometer

All specimens were step-scanned as random powder mounts from 11° to 80° at 0.02° 2θ steps integrated at 1 s step^{-1} . This step size and scanning time was selected based on the consideration of both detailed spectrum and appropriate testing time. Three scanning times (0.1s, 1s and 10s) were initially selected. For the purpose of comparison, the XRD patterns are normalized with respect to their peak intensity. **Fig. 5.3** compares the normalized XRD patterns at different scanning time. It can be seen that the 0.1s scanning time is too short and the background noise level is high. Increased scanning time (1s and 10s) leads to lower noise level and smoother XRD pattern. Increase of scanning time from 1s to 10s does not result in profound further improvement of the XRD pattern. The effect of scanning time on the XRD pattern can be seen more apparently once the relative difference is compared (**Fig. 5.4**). The relative difference is defined as the ratio of the difference between the XRD pattern of interest and the XRD pattern with 10s scanning time to the normalized XRD pattern with 10s scanning time. It is observed that the relative difference for the XRD pattern with 0.1s scanning time is at the level of 30% and can be as high as 75%. In contrast, the relative difference for the XRD pattern with 1s scanning time is at a low level of

10%. Therefore 1s scanning time is selected for all the XRD testing in this research. It is worth noting that it is based on the assumption that the XRD pattern with 10s scanning time represents the real XRD pattern.

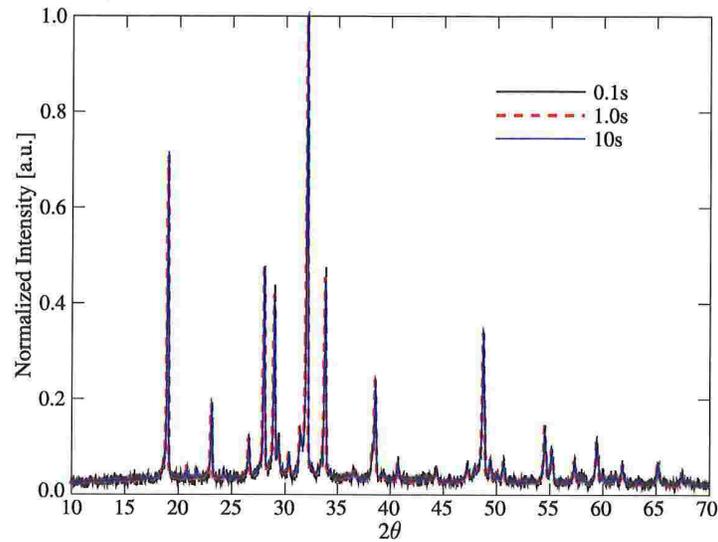


Fig. 5.3 Normalized XRD pattern at different scanning time

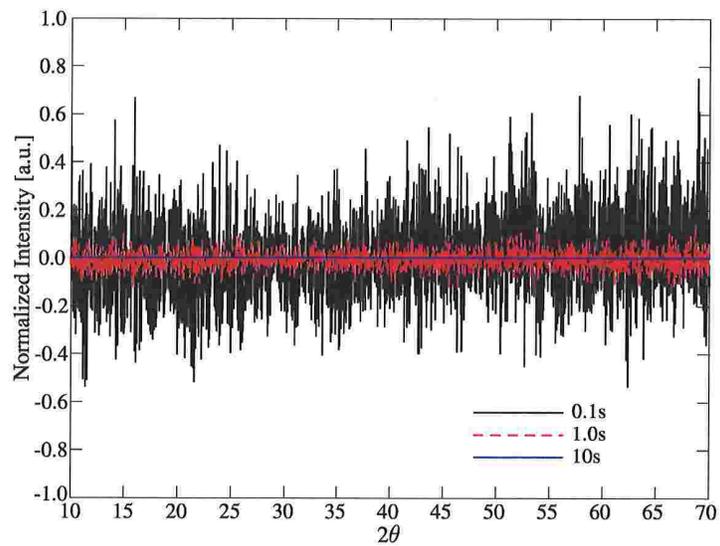


Fig. 5.4 Relative difference plot for different scanning time

5.1.2 TEST RESULTS

Typical XRD pattern for the coarse quarry aggregate is illustrated in **Fig. 5.5**. It can be seen that no pyrrhotite was detected. This is attributable to the limitation of the XRD test that phases with a

concentration below 5% is not detectable. Therefore supplementary XRF and SEM-EDX tests were carried out.

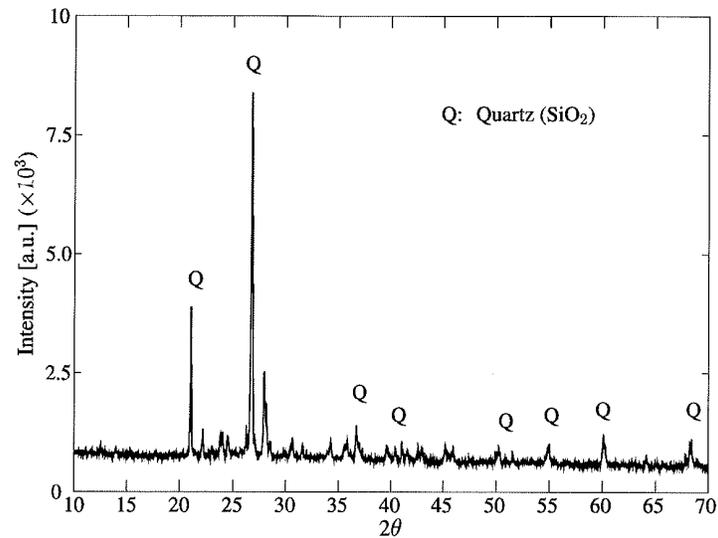


Fig. 5.5 Typical XRD pattern of the coarse quarry aggregate

5.2 XRF

To overcome the limit of XRD test, elemental analysis using XRF technology was conducted for both the quarry aggregate showing signs of pyrrhotite and the reference aggregate. Emphasis was laid on iron and sulfur elements which iron sulfides consists of. The following sections present detailed information on the sample preparation and test results.

5.2.1 SAMPLE PREPARATION AND TEST SET UP

The coarse aggregate was processed for XRF test following the procedures described in section 5.1.1. The prepared powder was put in a plastic cell with a diameter of 31mm and covered with a special thin film 6μ in thickness designed for XRF test (**Fig. 5.6**). The covered cell was then mounted on a INNOV-X Systems analyzer for XRF test.



(a) Sample in cell covered by thin film



(b) INNOV-X Systems XRF analyzer

Fig. 5.6 Sample preparation and test set up for XRF test

5.2.2 TEST RESULTS

The XRF test results are listed in **Table 5-1**. It can be seen that a significant amount of sulfur (2.542% on average) was detected in the quarry aggregate with brown color while no sulfur was detected for the reference aggregate. Iron was detected in both types of aggregate. However, the amount in the brown aggregate is several orders of magnitude higher than that in the reference aggregate. The higher level of sulfur and iron in the brown aggregate than the reference aggregate suggests the existence of iron sulfide in the quarry aggregate.

Table 5-1 XRF test result for the brown and reference quarry aggregate

	Quarry aggregate samples with brown color				Reference quarry aggregate samples			
	1	2	3	Average	1	2	3	Average
S	2.784	2.513	2.326	2.542	-	-	-	-
Fe	6.793	6.415	5.830	6.346	0.00092	0.00091	0.00093	0.00092

5.3 ION CHROMATOGRAPHY

The inclusion of pyrrhotite in and the release of sulfate from quarry aggregate was confirmed by an accelerated oxidation test designed for this investigation. Due to the extremely slow natural oxidation process, quarry aggregate samples were submerged in 40% hydrogen peroxide solution to accelerate the oxidation process. The hydrogen peroxide solution was swapped out and tested

for sulfate concentration using a DIONEX ICS-1100 ion chromatography (Fig. 5.7). The use of hydrogen peroxide matrix instead of deionized water delays the retention time and blurs the signal for sulfate (Fig. 5.8). To overcome these disadvantages, all samples were diluted ten times using deionized water. The signal for sulfate becomes apparent once the samples were diluted. It is worth noting that the signal for the diluted sample was adjusted by a ratio of the peak signal between original and diluted samples for comparison purpose.



Fig. 5.7 DIONEX ICS-1100 ion chromatography

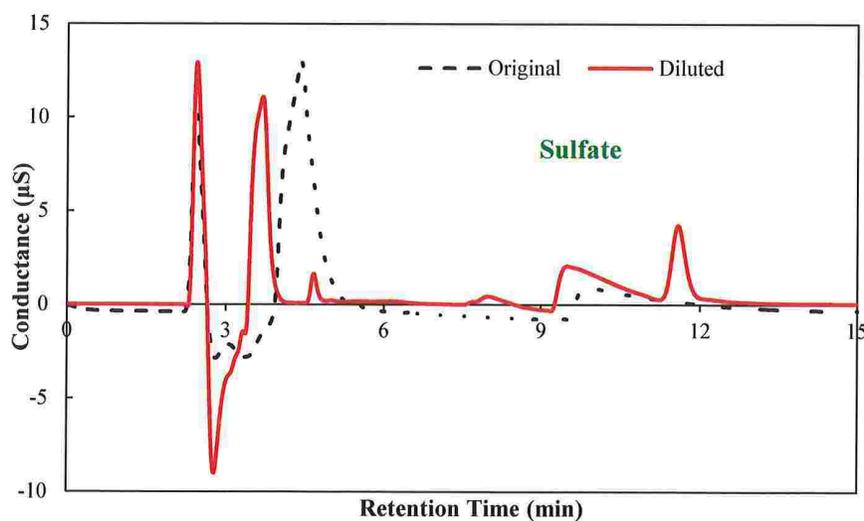


Fig. 5.8 Comparison of IC signal

Increment of the released sulfate due to aggregate oxidation was measured twice a week at predetermined intervals and ceased once the increment is smaller than 5% compared to previous measurement. They were summed up to obtain the accumulated amount of released sulfate. It is worth pointing out that the concentration was normalized by the sample aggregate weight to eliminate the influence of the size of aggregate. The development of concentration of the released sulfate is illustrated in Fig. 5.9. It can be seen that the sulfate released by the control sample remains negligible up to the end of the test. In comparison, the normalized sulfate released by the pyrrhotite bearing aggregate increased significantly during the test period. The amount of higher than control aggregate released sulfate through the accelerated aggregate oxidation is a direct evidence of the existence of pyrrhotite in the quarry aggregate.

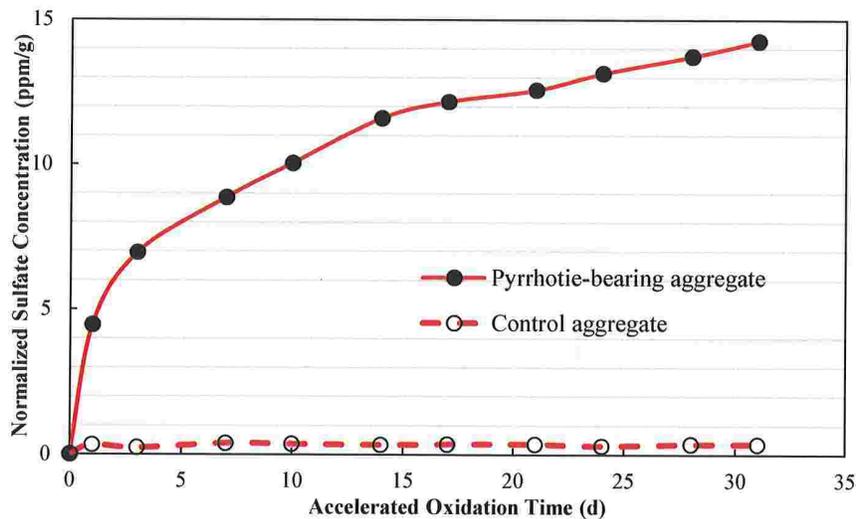


Fig. 5.9 Time history of the normalized concentration of released sulfate

5.4 SEM-EDX

SEM coupled with energy dispersive X-ray test was also conducted to validate the existence of pyrrhotite in the quarry aggregate. SEM-EDX test results confirmed the finding of XRF test results.

5.4.1 SAMPLE PREPARATION

Sub-samples were separated from the coarse quarry aggregate and then dried and impregnated with low viscosity resin (**Fig. 5.10a**) which facilitates the grinding and polishing process. The resin impregnated sample was then ground and polished. To avoid damage to concrete during grinding and polishing, water was used as lubricant and excessive heating was avoided. The polished resin impregnated sample was dried at environmental temperature for 24 hours. To increase the conductivity, the surface of samples was sputter coated with a thin layer of gold/palladium (Au/Pd) alloy (**Fig. 5.10b** and **c**) prior to SEM micro structural examination and EDX elementary analysis. **Fig. 5.11** shows the Teno Field Emission SEM used in this research. Operating conditions were set at 10~15 kV under secondary electron mode.

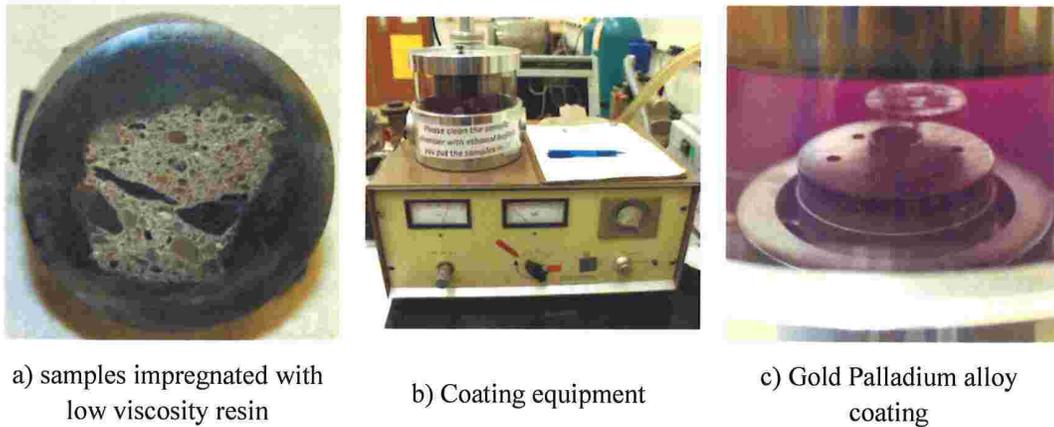


Fig. 5.10 SEM sample preparation

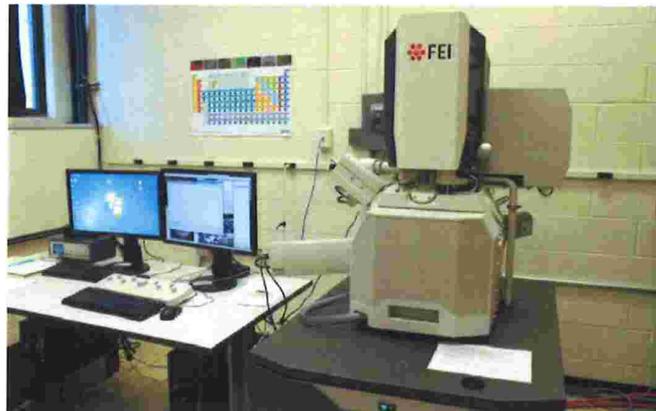


Fig. 5.11 Teno field emission SEM

5.4.2 TEST RESULTS

The SEM image (Fig. 5.12) shows two different phases: the dark grey and the light grey phase. Therefore point and area mapping EDX analysis were used to access their elementary composition.

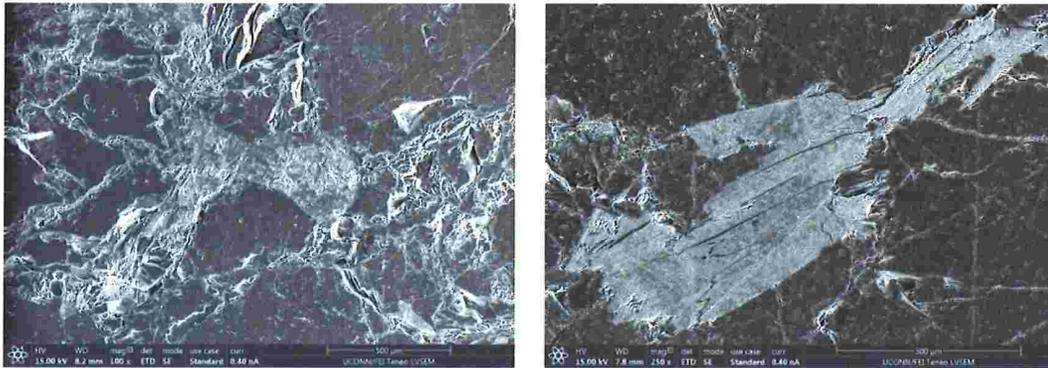
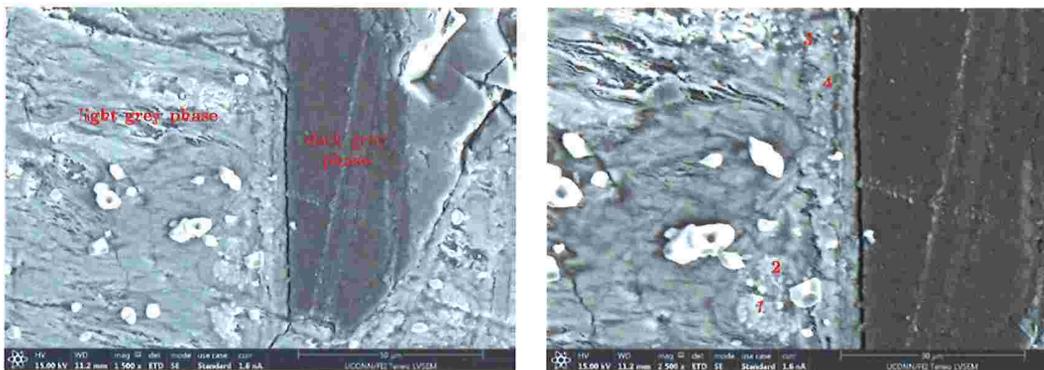


Fig. 5.12 SEM images of the brown aggregate samples

The interface zone between the light grey and dark grey phase, as shown in Fig. 5.13, is selected for further analysis. Fig. 5.14 illustrates the EDX mapping analysis result within the targeted zone (Fig. 5.13b) for sulfur (S) and iron (Fe). It can be seen that the light grey phase is rich in sulfur and iron which are the elements for pyrrhotite. In contrast, the dark phase does not demonstrate the existence of any of these elements. Therefore it is hypothesized that this light grey phase is the combination of pyrrhotite. In fact, later XRD analysis of the aggregate from crushed concrete validates this hypothesis. More detailed information can be found in the next chapter.



(a) Interface zone between two phases

(b) close up view of the interface zone

Fig. 5.13 Interface zone between two different phases

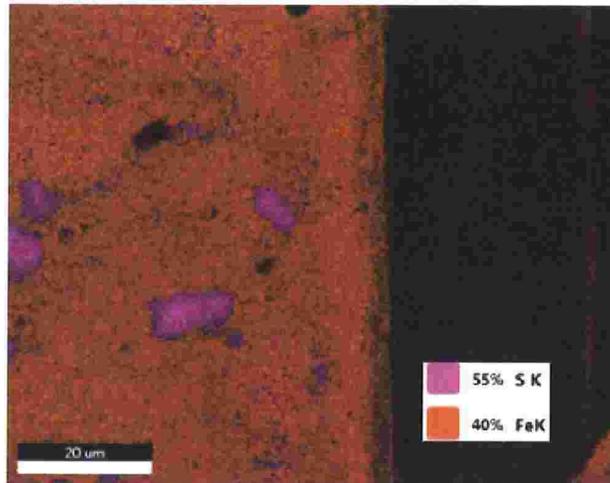
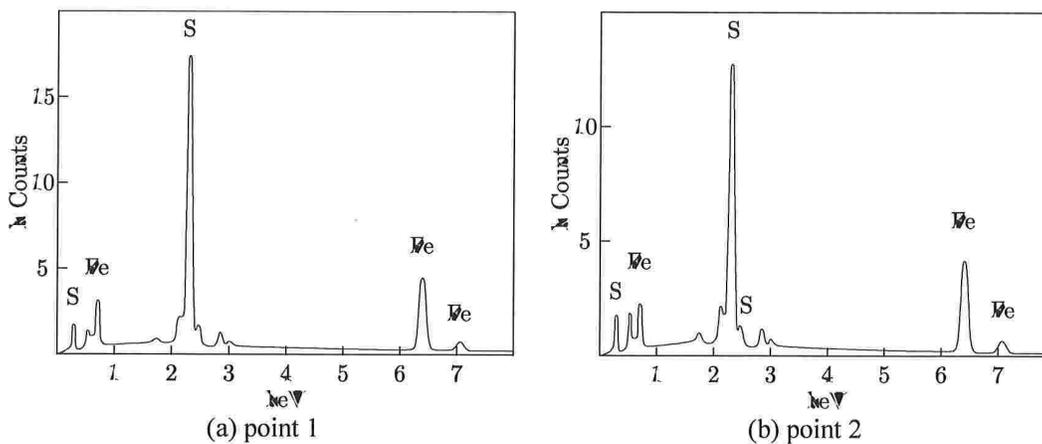


Fig. 5.14 EDX mapping elementary analysis for the interface zone - Sample 1

Four random points (Fig. 5.14) in the light grey phase were selected for the EDX point analysis. The results are illustrated in Fig. 5.15. Two of the four points demonstrate solely sulfur and iron. It is attributable to the iron sulfides inclusions in the coarse quarry aggregate. The other two points indicates the existence of oxygen along with sulfur and iron. The oxidation of iron sulfide may be the source of oxygen. Similar results were obtained for the other samples. Detailed information can be found in APPENDIX B.



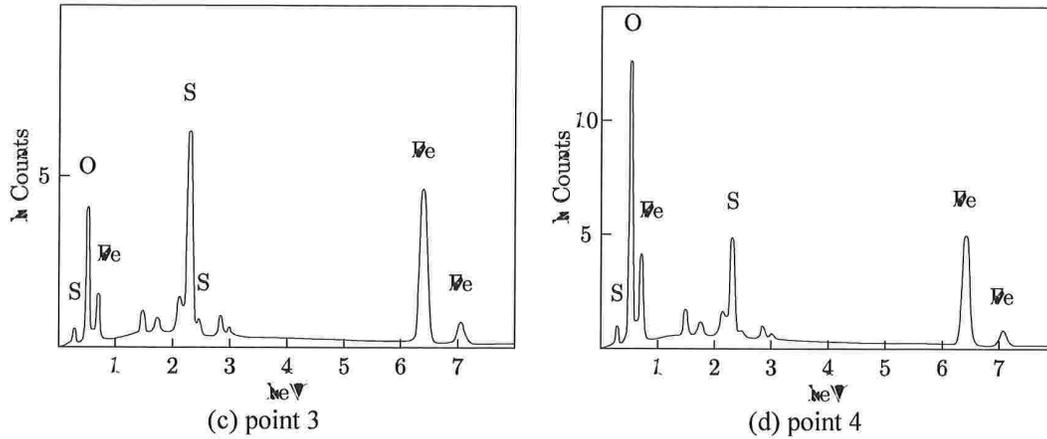


Fig. 5.15 EDX spectrum for point 1 to 4

6. MINERALOGICAL ASSESSMENT: AGGREGATES FROM CRUSHED CONCRETE AND FORMATION AT THE VICINITY OF CRACKING SURFACE

6.1 SAMPLE PREPARATION

Brown aggregate, which is a sign of iron sulfide oxidation, were selected for this investigation. Aggregates were separated from cement matrix (**Fig. 6.1a**). Similar procedures described in section 5.1.1 were followed. The whitish formation was scratched off the surface of the deteriorated concrete foundation for XRD testing (**Fig. 6.1b**). All specimens were step-scanned as random powder from 11° to 80° at 0.02° 2θ steps integrated at $1s$ $step^{-1}$.



a) separated aggregate

b) scratched whitish powder

Fig. 6.1 Sample preparation for XRD testing

6.2 AGGREGATE FROM CRUSHED CONCRETE

Fig. 6.2 through **Fig. 6.5** illustrates the typical XRD pattern of crushed aggregates collected from different houses. As it can be seen from these patterns, most of the aggregates contain pyrrhotite (**Fig. 6.2-Fig. 6.4**). A variety of minerals such as quartz and calcite (**Fig. 6.2**) are also detected. These minerals are common for concrete aggregate. Another important common characteristic is the presence of different pyrrhotite oxidization products, such as ferrihydrite (**Fig. 6.3**), sulfur (**Fig. 6.4**) and goethite (**Fig. 6.5**). It is worth noting that the predominant sulfide oxidation product ferrihydrite [50] under alkaline condition which is typical for concrete is detected (**Fig. 6.3**). This is a strong evidence of pyrrhotite oxidation. The presence of pyrrhotite is potentially oxidized at the presence of water and oxidant (oxygen or ferric ion) forming primary expansion products. More importantly the corresponding release of sulfate can lead to delayed formation of secondary expansive minerals such as ettringite and thaumisite. Both of the primary and secondary expansion products contribute to and ultimately result in the early deterioration of concrete foundation walls. The XRD patterns for the crushed aggregate from different houses are similar and are summarized in **APPENDIX C**.

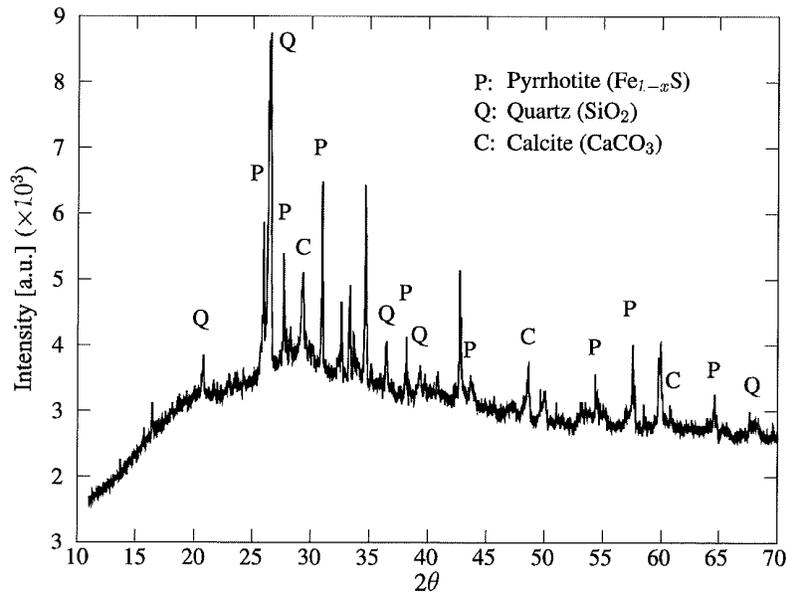


Fig. 6.2 XRD pattern of aggregate indicating the existence of pyrrhotite

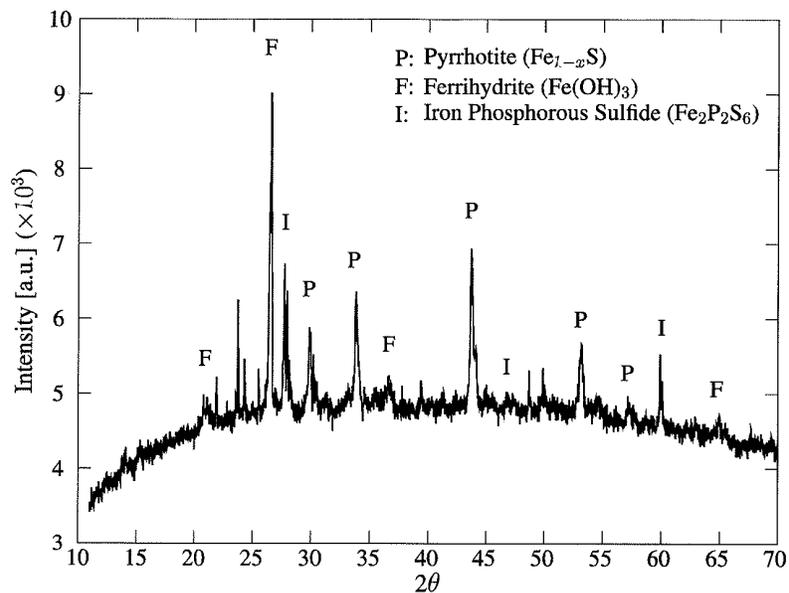


Fig. 6.3 XRD pattern of aggregate showing the oxidation product of ferrihydrite

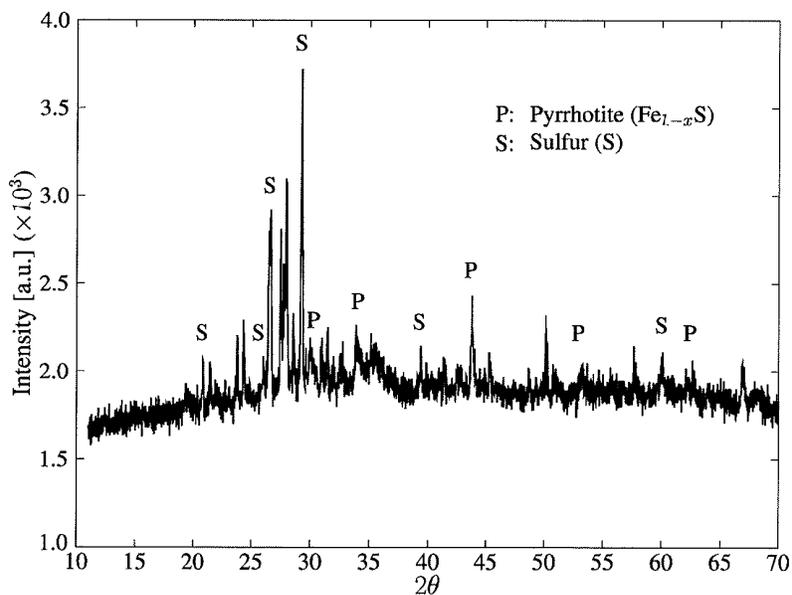


Fig. 6.4 XRD pattern of aggregate showing the oxidation product of sulfur

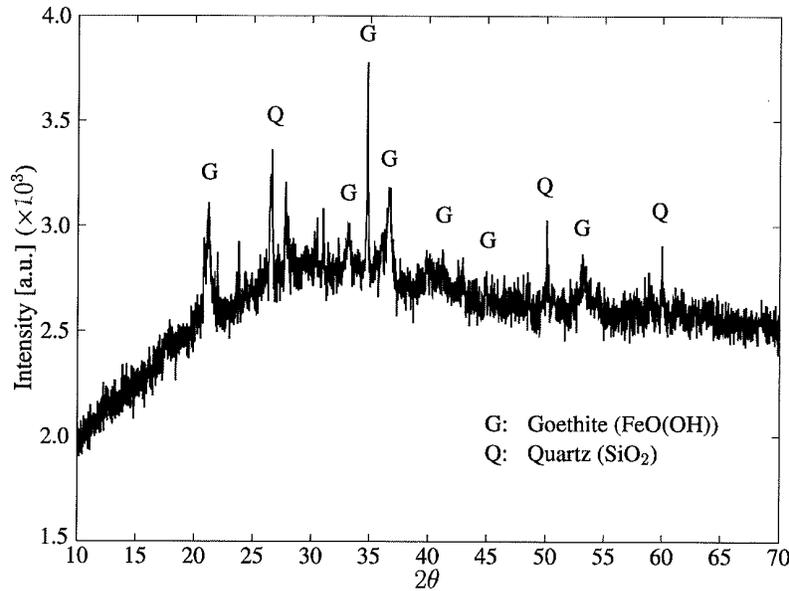


Fig. 6.5 XRD pattern of aggregate showing the oxidization product of goethite

6.3 WHITISH FORMATION AT THE VICINITY OF CRACKING SURFACE

Typical XRD patterns of the whitish formation at the vicinity of cracking surface are present in **Fig. 6.6** and **Fig. 6.7**. It can be seen that quartz (Q) and calcite (C) are detected. This is attributable to remains of aggregate particles mixed with the whitish formation during sample preparation (**Fig. 6.1b**). In addition, gypsum is also observed. This is attributable to the remains of cement matrix during the scratching process of sample preparation. Therefore sulfate rich thenardite (T) and apththitalite (L) are considered as the primary mineral phases in this whitish powder. The source of sulfate in thenardite and apththitalite is potentially the released sulfate during the oxidization process of pyrrhotite. It is worth noting that three samples from each inspected houses were tested if enough whitish formation was obtained. Most of the samples demonstrated the existence of sulfate rich minerals such as thenardite (T) or apththitalite (L) or both. This finding suggests the oxidization of pyrrhotite-bearing aggregate and the potentially delayed formation of minerals such as ettringite and thaumasite.

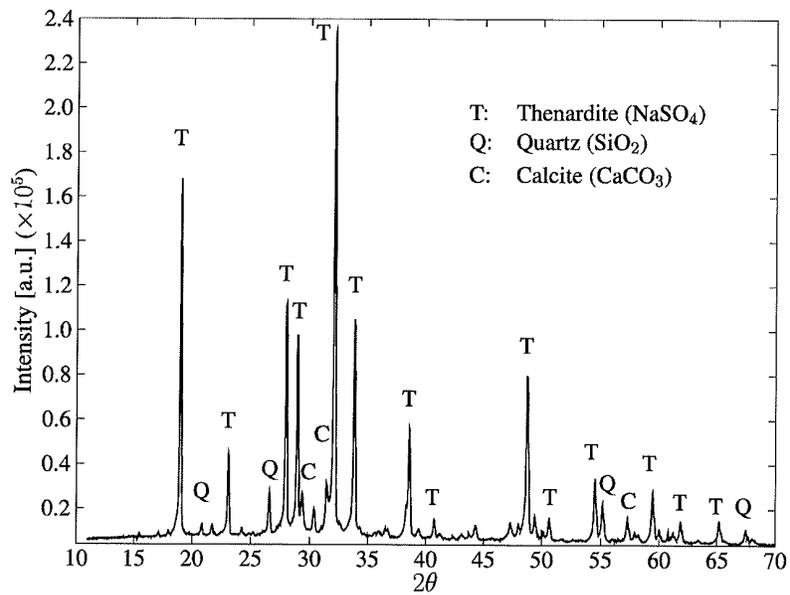


Fig. 6.6 Typical XRD pattern of whitish formation - housing 1

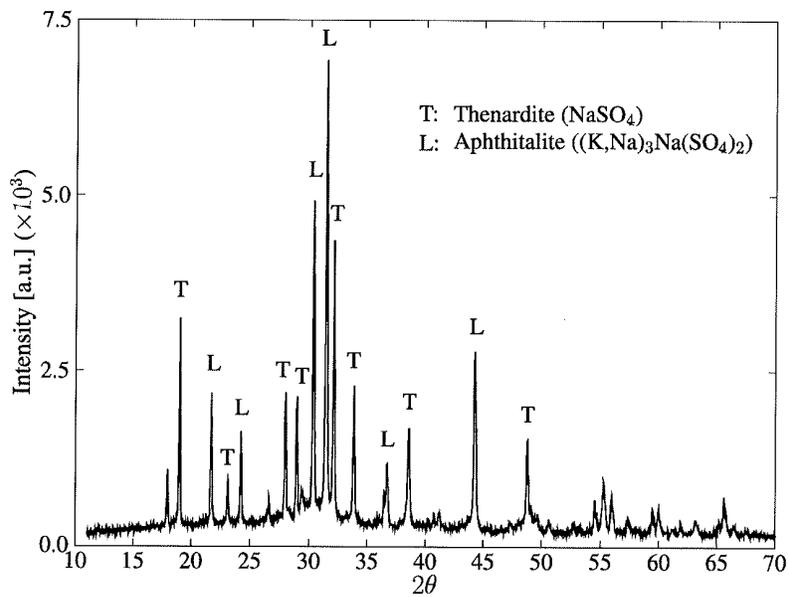


Fig. 6.7 Typical XRD pattern of whitish formation - housing 7

7. MICROSTRUCTURAL INVESTIGATION OF DETERIORATED CONCRETE

Scanning electron microscope (SEM) coupled with energy dispersive X-ray spectrometer (EDXS) is used for the micro structural examination and elementary analysis of deteriorated concrete.

7.1 SAMPLE PREPARATION

Sub-samples were cut out of collected samples and then dried and impregnated with low viscosity resin which serves to restrain against shrinkage cracking and enhances contrast among pores and hydration product. The sample preparation procedures described in section 5.4.1 were followed.

7.2 MATRIX EXAMINATION

Fig. 7.1 presents the micro structure of deteriorated concrete sample at a relatively low magnification of 150. In general, it can be seen that the matrix is very porous. The condition in the interfacial transition zone (ITZ) is the worst with higher than average porosity (the highlighted areas in Fig. 7.1). It is hypothesized that a higher amount of oxidation products might be found in the ITZ. Therefore investigating the ITZ might contribute formulating an understanding of the deterioration mechanism of concrete foundation.

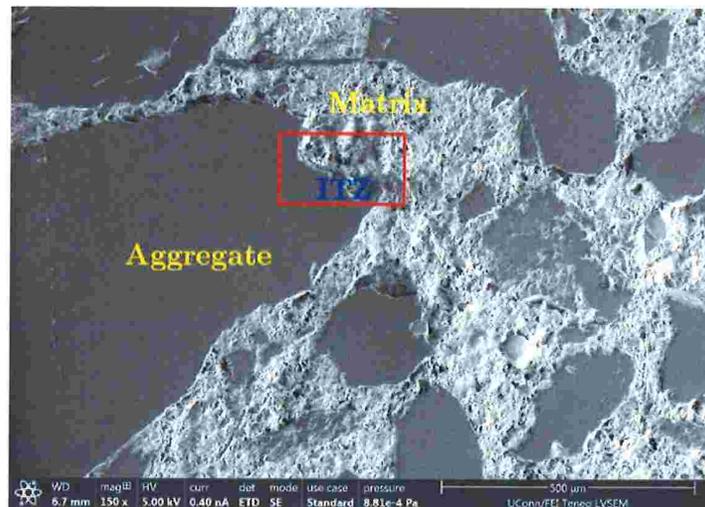


Fig. 7.1 Porous micro structure of matrix

7.3 PYRRHOTITE-BEARING AGGREGATE OXIDIZATION

Sulfate is required for the delayed formation of expansive and thus detrimental secondary minerals. A potential source is the release of sulfate upon oxidation of pyrrhotite contained in aggregate. Previous examination on aggregate has proven the existence of pyrrhotite. In this section, a micro structural assessment of the aggregate was conducted to confirm the oxidization of aggregate. **Fig. 7.2** shows the microstructure of an interfacial transition zone (ITZ) between aggregate and cement paste. Point, linear and mapping EDXS elementary analysis were conducted.

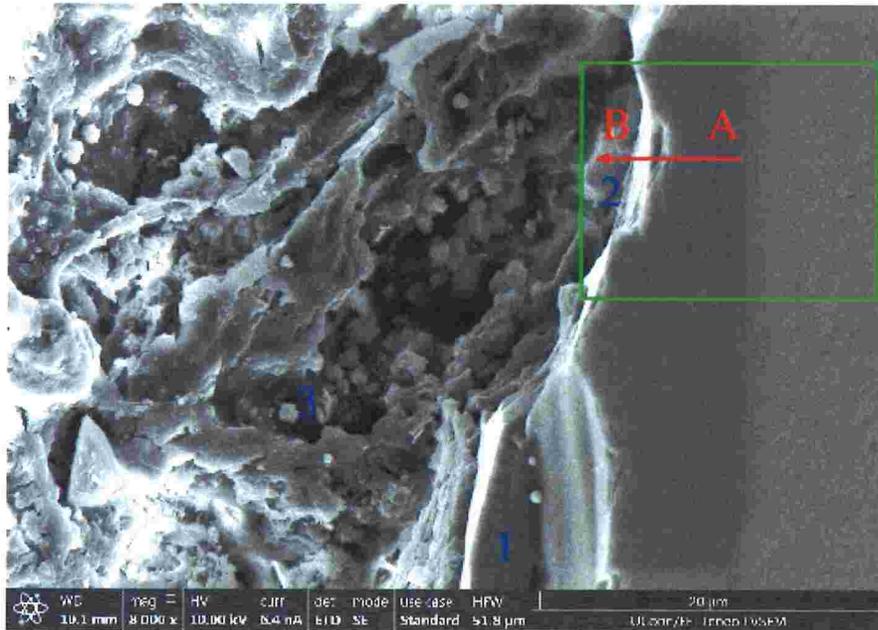


Fig. 7.2 Micro structure of the investigated ITZ

Three random points in the zone of aggregate (point 1), ITZ (point 2) and cement matrix (point 3) were selected and the EDS spectrums of point analysis are illustrated in **Fig. 7.3** through **Fig. 7.5**. It can be seen that at point 1 (**Fig. 7.3**), elemental composition of quartz (SiO_2) is detected with silicon (Si) and oxygen (O). This confirms that the primary mineral of aggregate is quartz. Iron is observed at point 2 (**Fig. 7.4**). This confirms the XRD analysis of aggregate and implies potential pyrrhotite oxidization. Therefore further analysis, such as linear and mapping EDXS, is

performed. It is worth pointing out that no signs of ettringite was found in the cement matrix as demonstrated by the EDS spectrum of point 3 in Fig. 7.5.

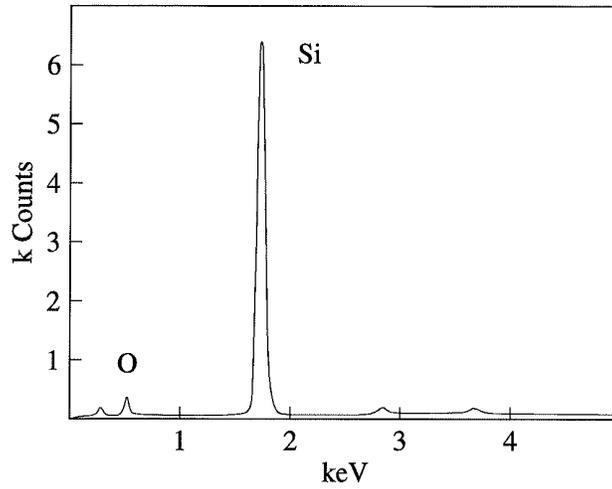


Fig. 7.3 EDX spectrum – point 1

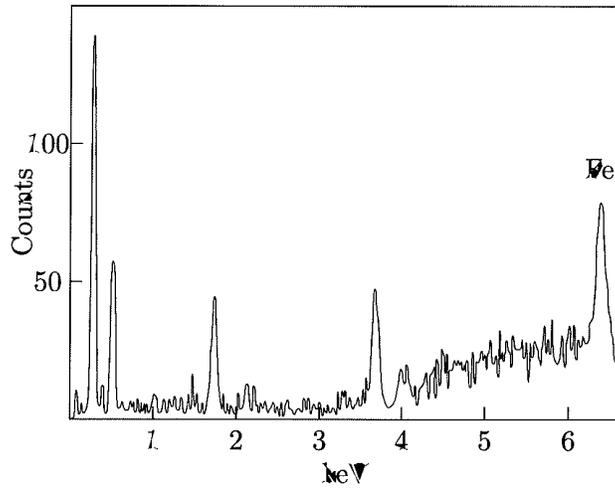


Fig. 7.4 EDS spectrum – point 2

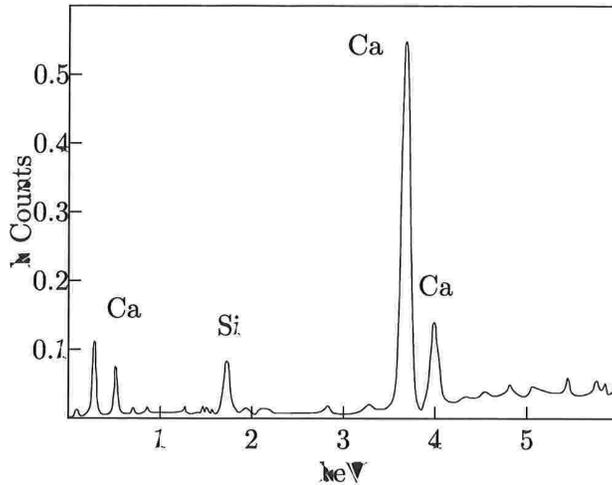


Fig. 7.5 EDS spectrum – point 3

A line at the vicinity of point 2 was picked up for the linear EDXS elementary analysis and the EDS spectrum is shown in **Fig. 7.6**. A decreasing trend of both iron and sulfur elements are detected. The reduction of sulfur is attributable to the release of sulfate after oxidization while the decrease of iron may be explained by the precipitation of ferrihydrite ($\text{Fe}(\text{OH})_3$) which is a predominant sulfide oxidation product under the alkaline conditions in concrete [50]. Therefore oxidation of pyrrhotite is validated.

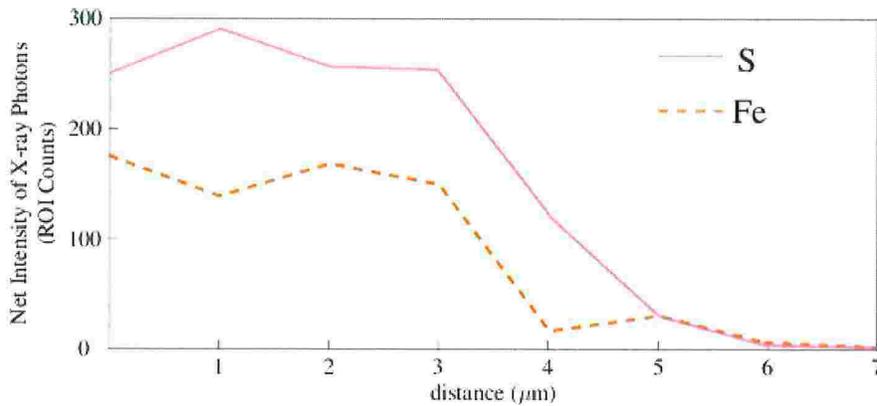


Fig. 7.6 EDS lineal analysis – Line AB from A to B in Fig. 7.2

A zone encompassing point 2 and line AB was chosen for the mapping EDXS elementary analysis to further confirm the occurrence of pyrrhotite oxidation. The result is shown in **Fig. 7.7**. It is observed that iron and sulfur elements are rich at the ITZ between aggregate and cement.

This again confirms the existence of pyrrhotite. Furthermore, the decreasing intensity of iron and sulfur element confirms the oxidation of pyrrhotite.

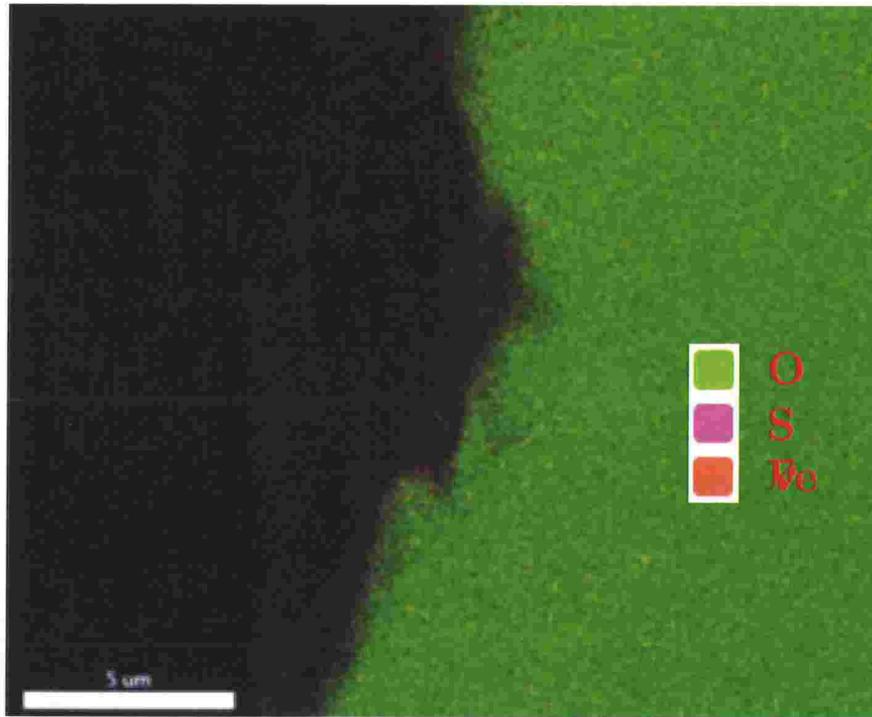


Fig. 7.7 EDS mapping analysis – Rectangular area in Fig. 7.2

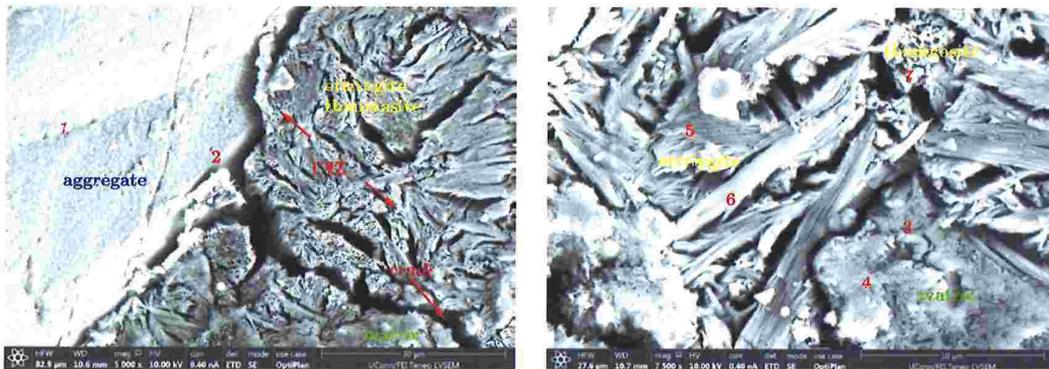
7.4 DELAYED FORMATION OF SECONDARY MINERALS

7.4.1 INTERFACIAL TRANSITION ZONE (ITZ)

The microstructure within the ITZ is examined at a high magnification by SEM as shown in **Fig. 7.8**. Large deposits of needle like crystalline material were observed in the ITZ (**Fig. 7.8b**). A point on the aggregate away from the ITZ and one point at the edge of the aggregate are selected as two representative points for EDX elementary analysis of aggregate. Two random points were also selected for the EDX elementary analysis of matrix. Three random points in the ITZ are selected to assess the minerals within the ITZ. The EDX spectrum for aggregate is displayed in **Fig. 7.9**. Elemental composition of quartz (SiO_2) is detected with silicon (Si) and oxygen (O). This confirms that the primary mineral of aggregate is quartz. Composition of iron

and sulfur are detected at the edge of aggregate (**Fig. 7.9b**) confirms the existence of pyrrhotite as validated by the XRD test in section 7.3.

Fig. 7.11 present the XRD spectrum of the selected points within the ITZ. The EDS spectrums indicate the elemental composition of ettringite, with calcium (Ca), sulfur (S), aluminum (Al) and oxygen (O). It is deleterious to concrete when it is formed after the hardening of concrete due to its expansive nature during formation. Another detrimental mineral found is thaumasite as illustrated in **Fig. 7.12**. Elemental composition of calcium (Ca), silicon (Si), carbon (C), sulfur (S) and oxygen (O) are detected. The carbon may have been supplied by one or a combination of the following (i) calcite present in veins and disseminated through the aggregate (**Fig. 6.2**), (ii) CO₂ trapped in the carbonated surface of the concrete. It must be pointed out that the used EDX spectrometer does not enable analysis of hydrogen (H). The presence of these minerals (ettringite and thaumasite) in the ITZ indicates the delayed formation of these minerals. These secondary minerals may lead to the deterioration of concrete due to the expansive nature upon reaction.



(a) micro structure of the ITZ

(b) close up view of the secondary minerals

Fig. 7.8 Secondary minerals in the ITZ

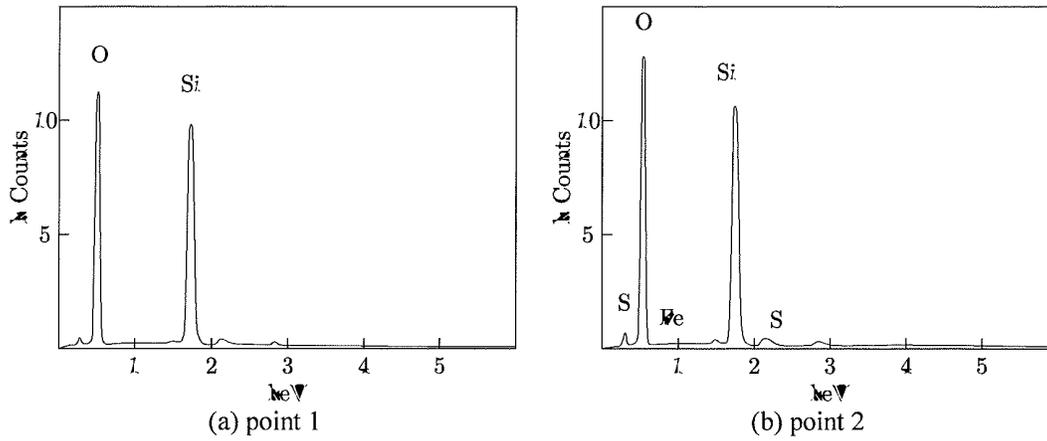


Fig. 7.9 EDS spectrum – aggregate

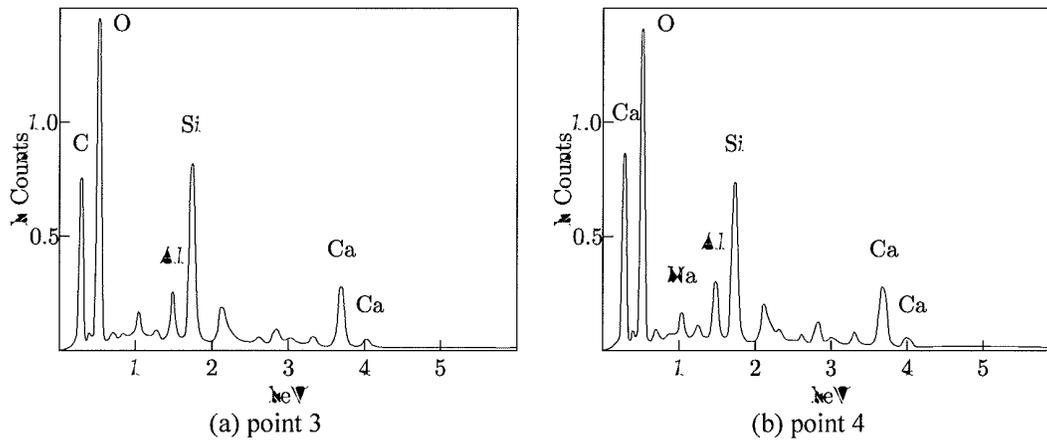


Fig. 7.10 EDS spectrum of matrix

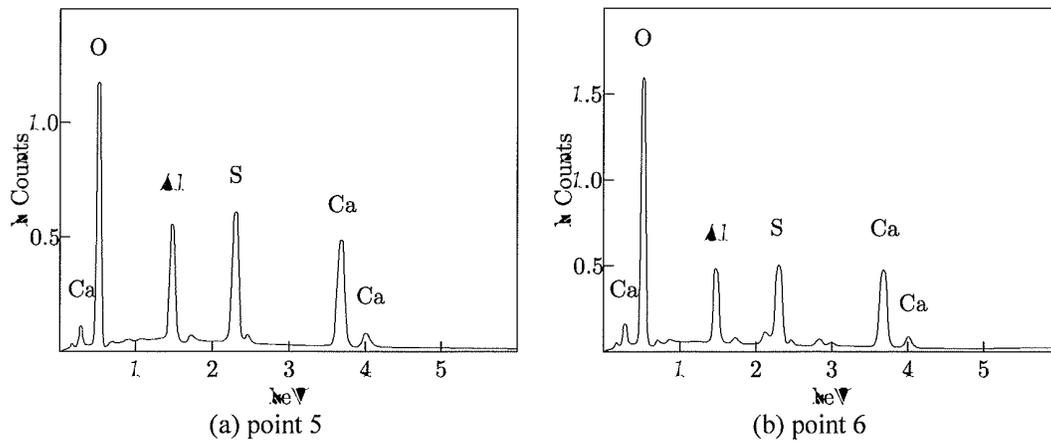


Fig. 7.11 EDS spectrum of secondary mineral - ettringite

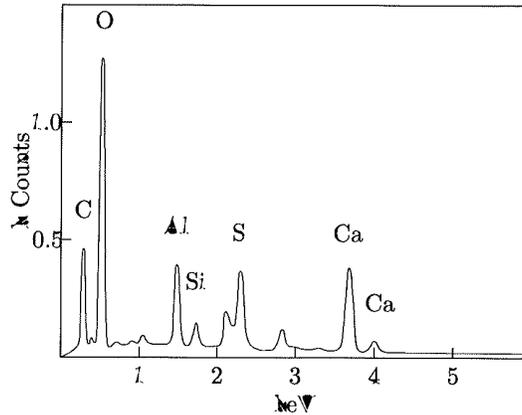


Fig. 7.12 EDS spectrum of point 6 - thaumasite

7.4.2 LARGE VOIDS IN MATRIX

Needle like secondary minerals were observed filling the large voids in the matrix as shown in **Fig. 7.13**. The dark grey phase is quartz aggregate as proven by the EDX analysis of two representative points (**Fig. 7.14**). Filling voids by secondary minerals is often associated with cracking (**Fig. 7.15a**). These cracks are either radially oriented micro cracks or propagate into the cement matrix. EDX analysis indicates that these secondary minerals are a mix of ettringite and thaumasite. The source of sulfate required for the formation of these minerals may be due to the oxidation of pyrrhotite included in the aggregate. More ettringite is observed in the voids of matrix near aggregates that contain pyrrhotite inclusions than occurs near aggregate without pyrrhotite (**APPENDIX G**). Pyrrhotite in aggregate adjacent to open spaces, such as voids in matrix or the porous ITZ, have easier access to oxygen and water thus higher change of oxidization leading to higher concentration of secondary minerals in these areas.

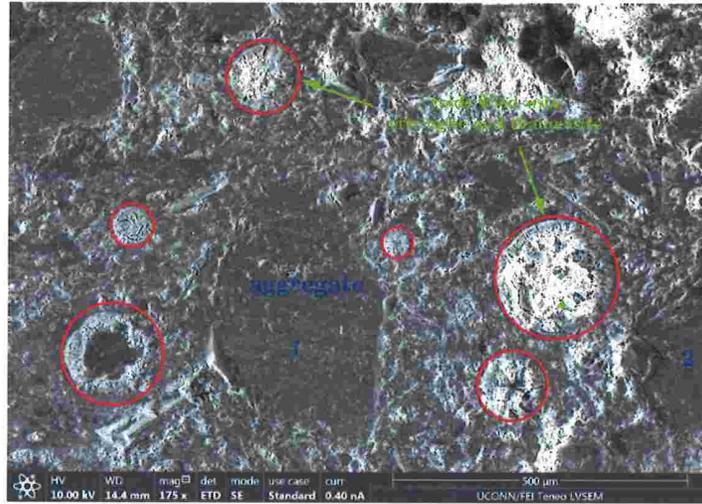


Fig. 7.13 Distribution of secondary minerals

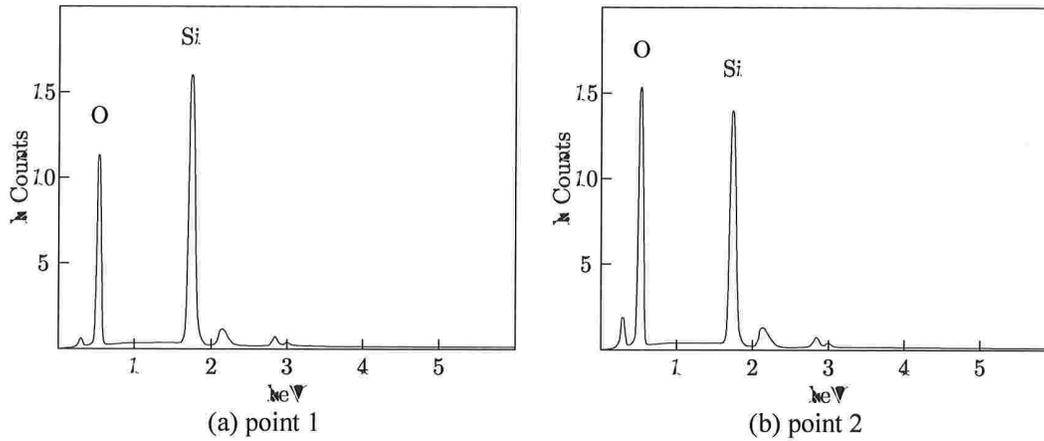
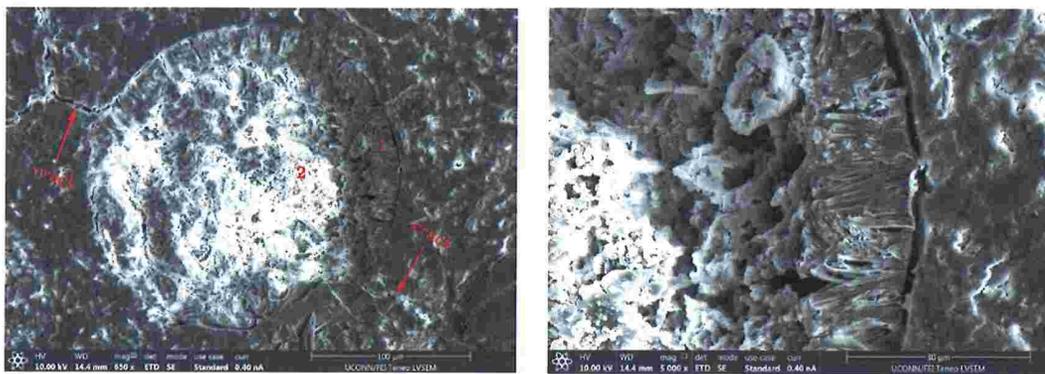


Fig. 7.14 EDX result for aggregate



(a) cracked void filled with secondary minerals (b) close up view of the secondary minerals

Fig. 7.15 Secondary minerals deposited in the large voids of matrix

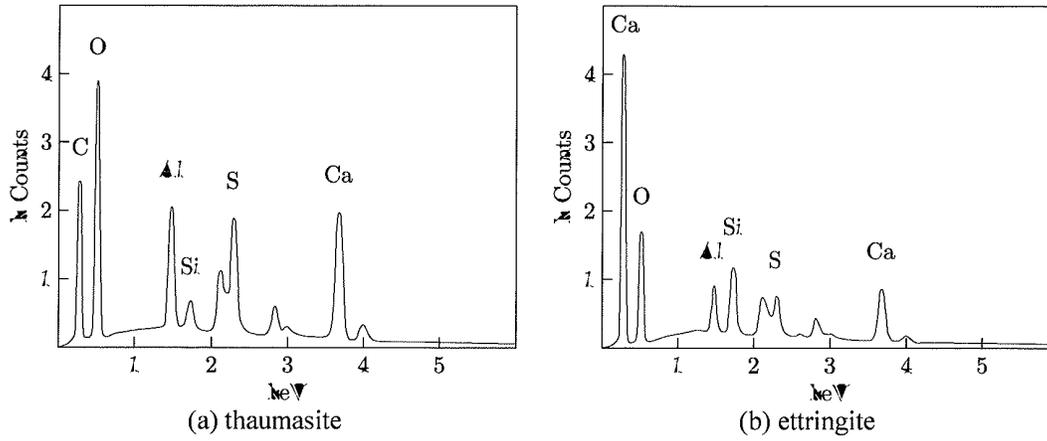


Fig. 7.16 EDX result for the minerals in void A

8. SUMMARY, CONCLUSIONS AND FUTURE EFFORTS

8.1 SUMMARY AND CONCLUSIONS

Based on the mechanical, mineralogical, microstructural and chemical tests on the core samples taken from 7 houses and the visual inspection of 14 additional houses, the primary findings are summarized as follows:

- Aggregates are rich in pyrrhotite (Fe_{1-x}S) and in their oxidization product such as goethite ($\text{FeO}(\text{OH})$), ferrihydrite ($\text{Fe}(\text{OH})_3$) and sulfur (S).
- The whitish deposits at the vicinity of cracking surface is primarily sulfate containing minerals such as thenardite (Na_2SO_4) and aphthitalite ($(\text{K},\text{Na})_3\text{Na}(\text{SO}_4)_2$).
- The matrix is porous with a large quantity of voids and the ITZ is porous. Abundance of secondary minerals such as ettringite ($\text{Ca}_6\text{Al}_2(\text{SO}_4)_3(\text{OH})_{12}\cdot 26\text{H}_2\text{O}$) and thaumasite ($\text{Ca}_3\text{Si}(\text{OH})_6(\text{CO}_3)(\text{SO}_4)\cdot 12\text{H}_2\text{O}$) are present in these open spaces. Cracking is often associated with these open spaces and either within the voids or propagates into cement matrix.

A hypothesis is established: pyrrhotite in the aggregate oxidizes at the presence of water and oxidant (oxygen or ferric ions) which lead to the formation of expansive secondary mineral product such as ferrihydrite and the release of sulfate. The released sulfate promotes the reaction with aluminum containing phases in the cement (tricalcium aluminate ($3\text{CaO}\cdot\text{Al}_2\text{O}_3$)) and results in the formation of expansive and thus deleterious secondary minerals such as ettringite. Furthermore, at the presence of carbon, either from the calcite in aggregate or from CO_2 from environment, another deleterious mineral thaumasite can be formed. Both of these secondary minerals are expansive and might ultimately lead to the premature deterioration of the concrete foundation investigated in this research. The hypothesis is validated by the chemical, mineralogical and microstructural investigation on the pyrrhotite-bearing aggregate, sulfate

containing whitish deposits found at the vicinity of the cracking surface along with the spatial association of secondary minerals with microcracks in the cement matrix.

8.2 FUTURE EFFORTS

Understanding the cause of the early deterioration of concrete foundation walls facilitates future efforts to address some potential concerns as follows:

- What percentage of pyrrhotite contained in concrete aggregate can cause premature deterioration?

This will require reproducing deterioration processes under isolated conditions in the laboratory, tailoring laboratory experiments and test protocols, and coupling of macro- and micro- analysis.

- What methods and investigations are suggested to determine the stage of deterioration?

This will require finding effective test methods and providing recommendations for homeowners and contractors.

- What solutions can be found to reduce and mitigate the pyrrhotite-based deterioration of concrete?

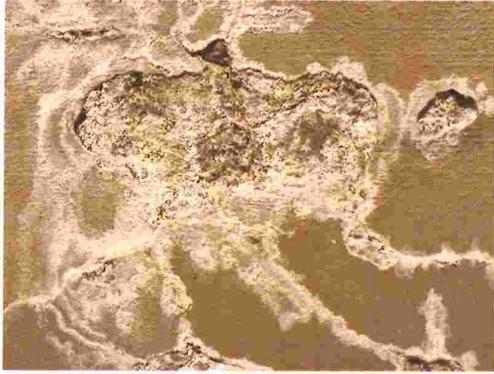
This will require finding mechanical or chemical solutions or a combination of both to address the stage- dependent deterioration.

- Can solutions be found to allow the use of pyrrhotite containing aggregates in concrete mixes for particular purposes?

This will require isolated investigation of mixture design parameters.

APPENDICES

**APPENDIX A: PHOTOS OF THE DETERIORATION OF THE
INSPECTED HOUSES**



(a) whitish powder



(b) brown trace



(c) map cracking



(d) wide crack opening

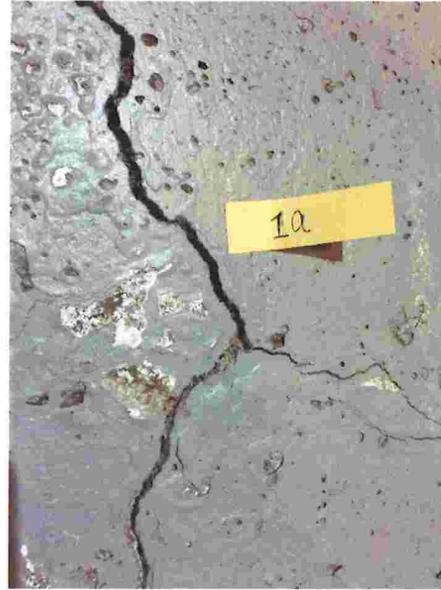


(e) large deformation

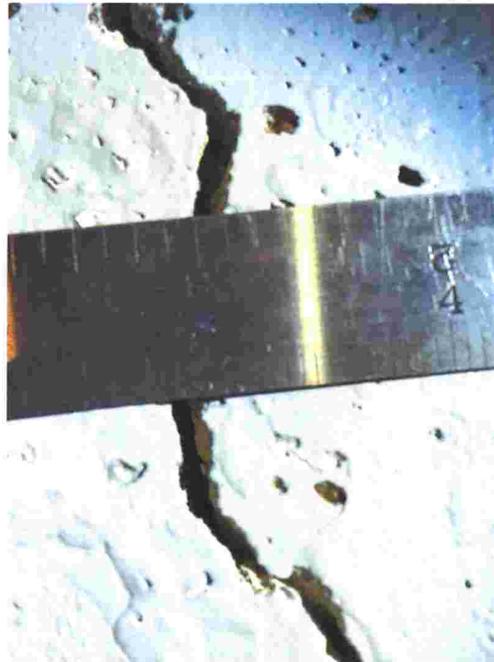
Fig. A- 1 House 1



(a) whitish powder



(b) brown trace



(c) wide crack opening

Fig. A- 2 House 2



(a) whitish powder



(b) brown trace



(c) map cracking

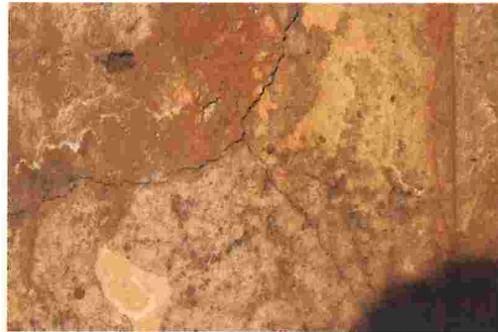


(d) wide crack opening

Fig. A- 3 House 3



(a) whitish powder



(b) brown trace

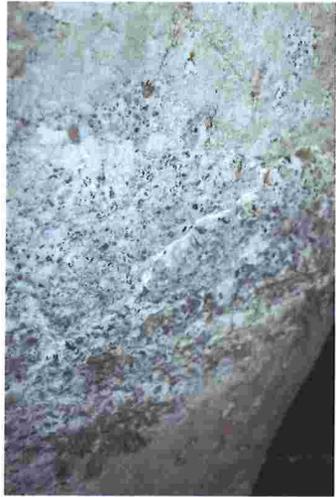


(c) map cracking



(d) wide crack opening

Fig. A- 4 House 4



(a) whitish powder

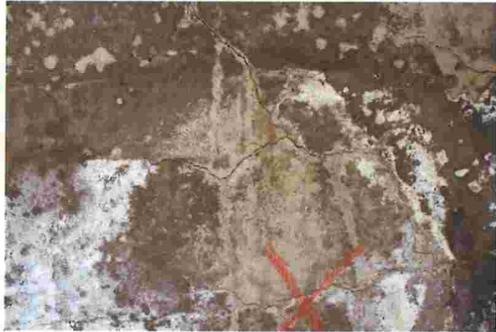
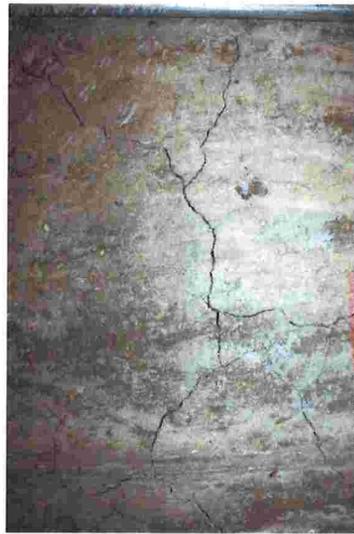


(c) map cracking



(d) wide crack opening

Fig. A- 5 House 5



(a) whitish powder

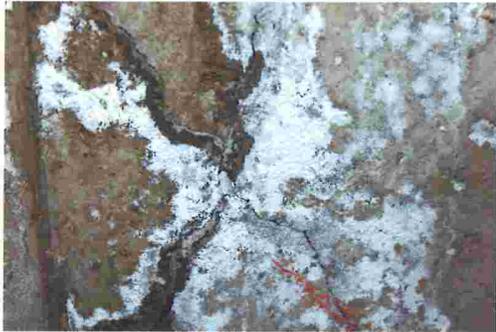


(b) map cracking



(c) wide crack opening

Fig. A- 6 House 6



(a) whitish powder

(b) map cracking

Fig. A- 7 House 7

APPENDIX B: SEM-EDX TEST FOR QUARRY AGGREGATE

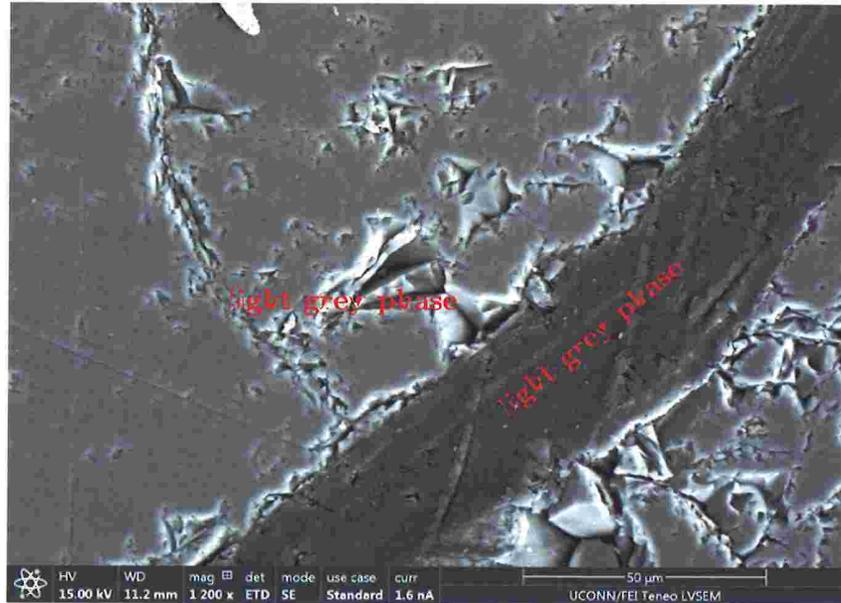


Fig. B- 1 SEM images of the coarse quarry aggregate – Sample 2

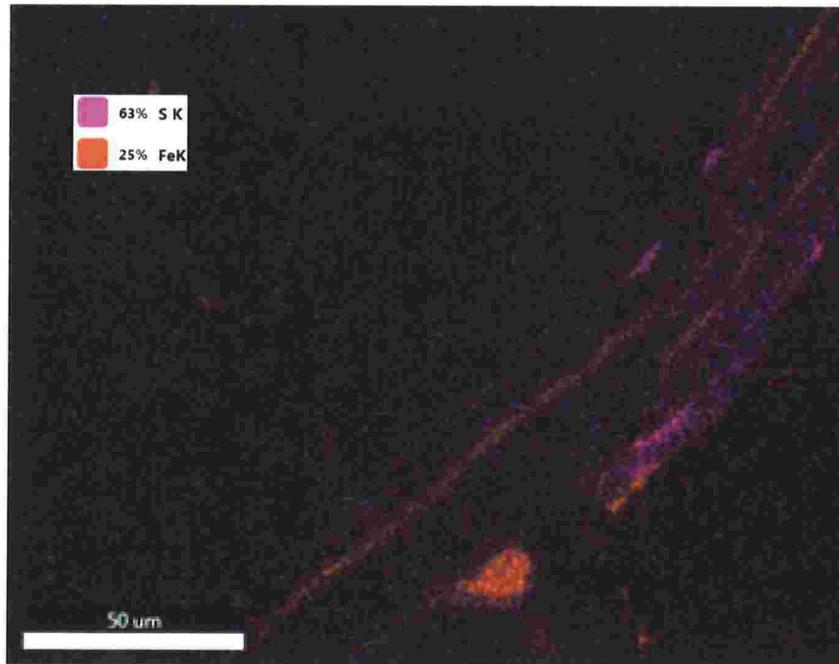


Fig. B- 2 EDX mapping elementary analysis for the interface zone – sample 2

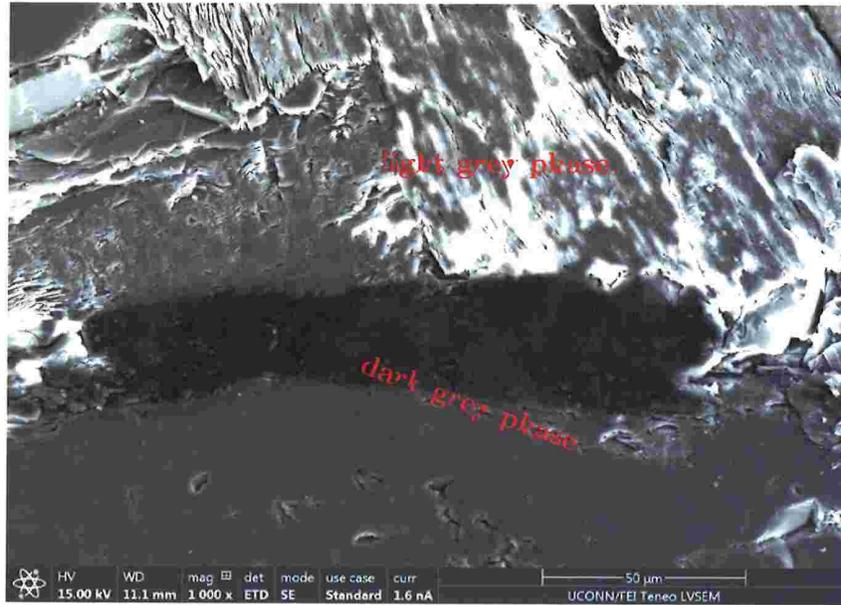


Fig. B- 3 SEM images of the coarse quarry aggregate – Sample 3

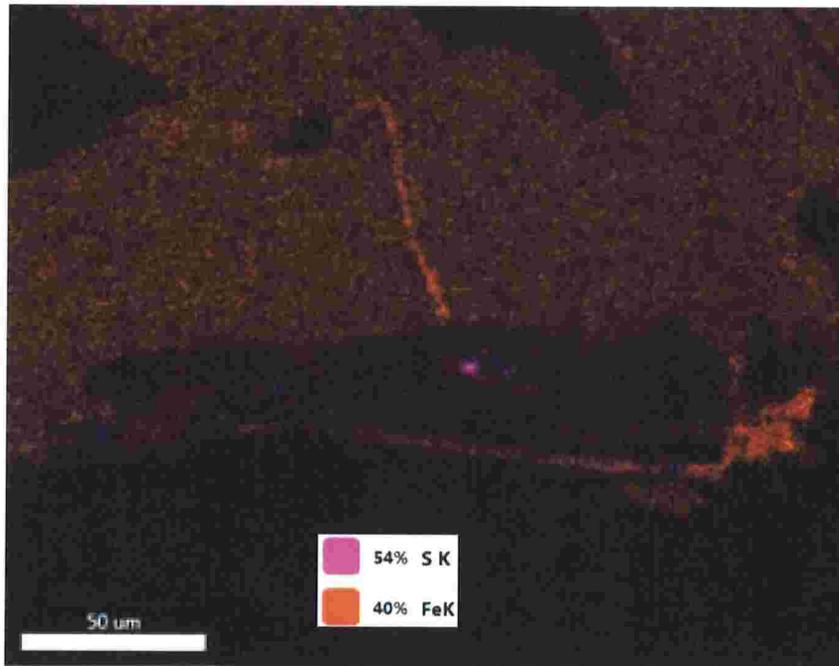


Fig. B- 4 EDX mapping elementary analysis for the interface zone – sample 3

**APPENDIX C: XRD TEST FOR AGGREGATES FROM
DETERIORATED CORE SAMPLES**

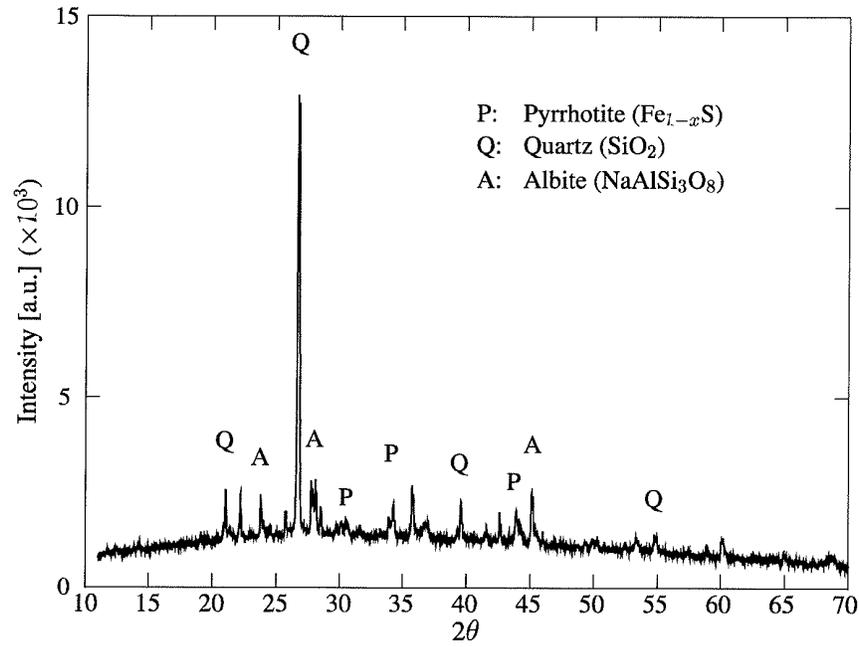


Fig. C- 1 House 1 Sample 1

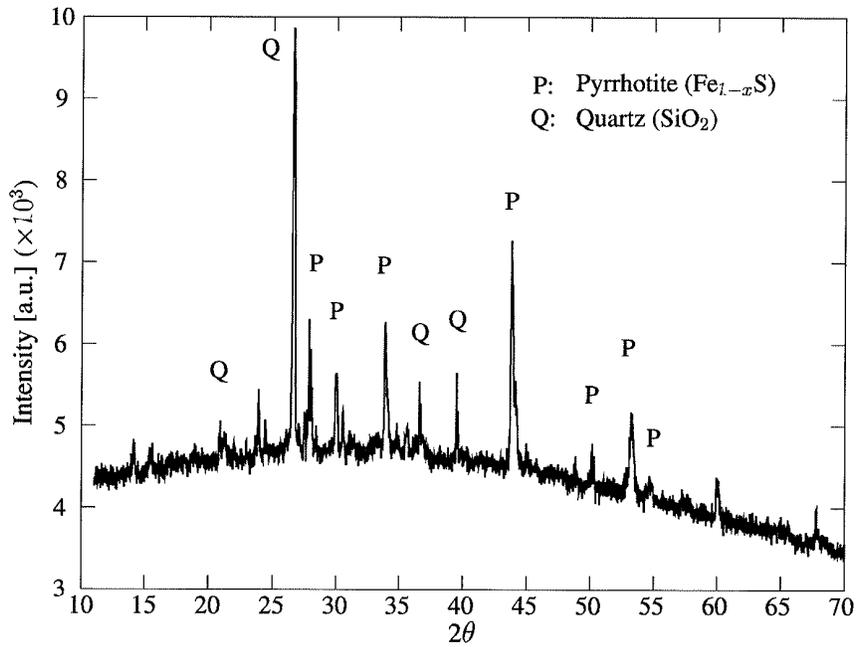


Fig. C- 2 House 1 Sample 2

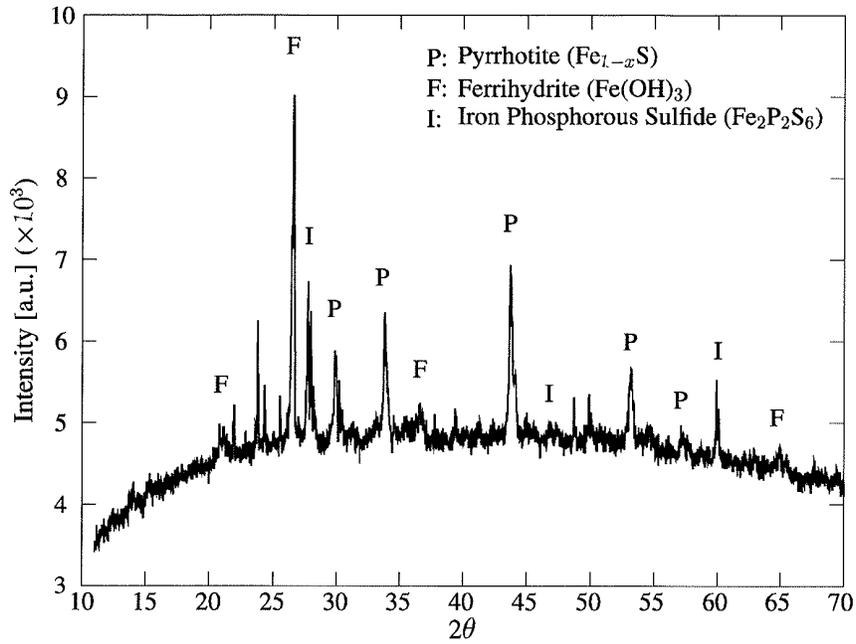


Fig. C- 3 House 2 Sample 1

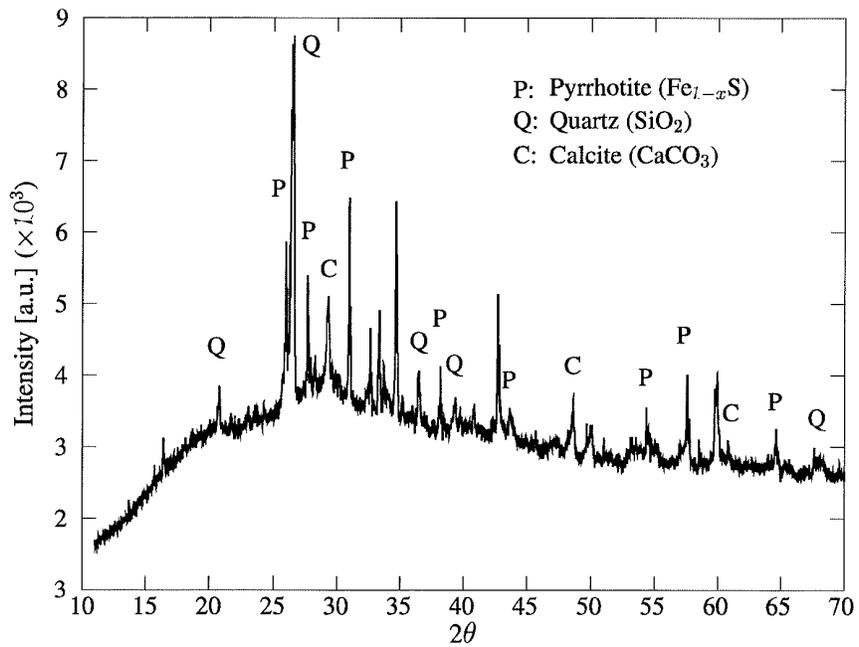


Fig. C- 4 House 2 Sample 2

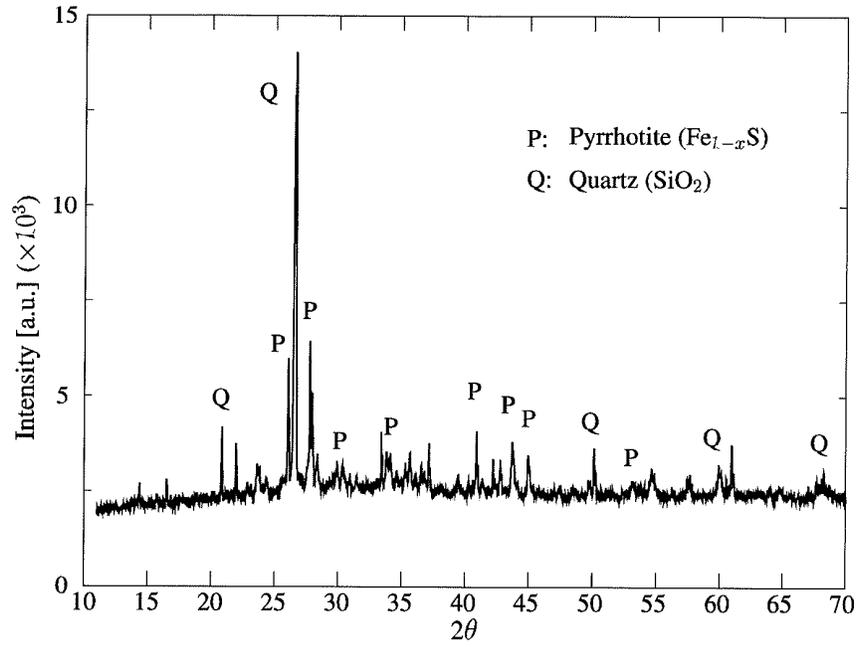


Fig. C- 5 House 3 Sample 1

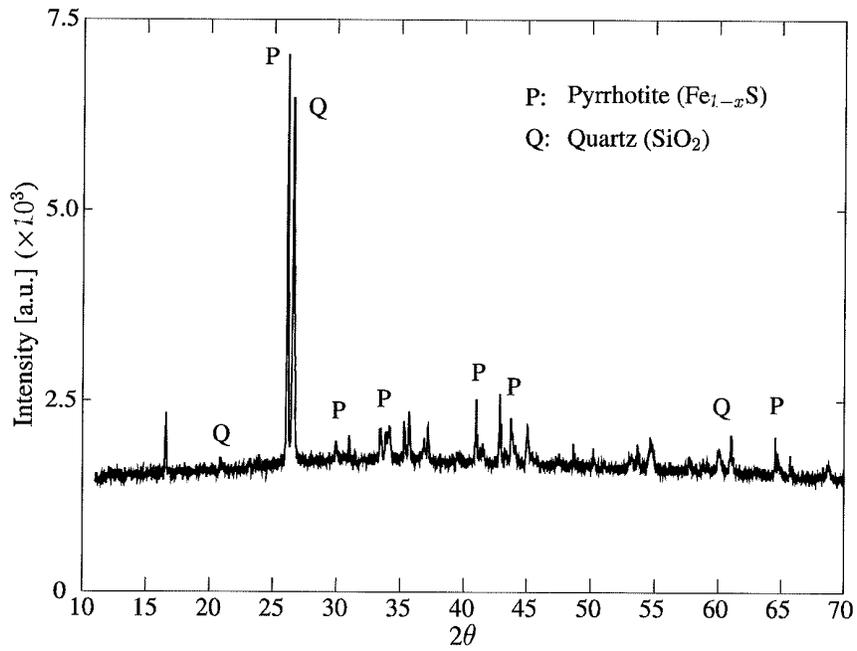


Fig. C- 6 House 3 Sample 2

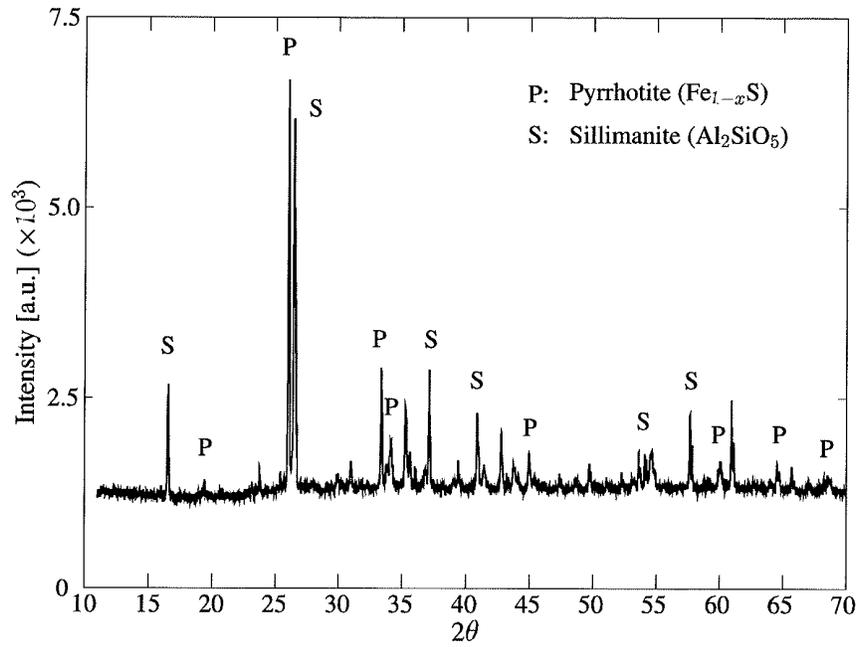


Fig. C- 7 House 3 Sample 3

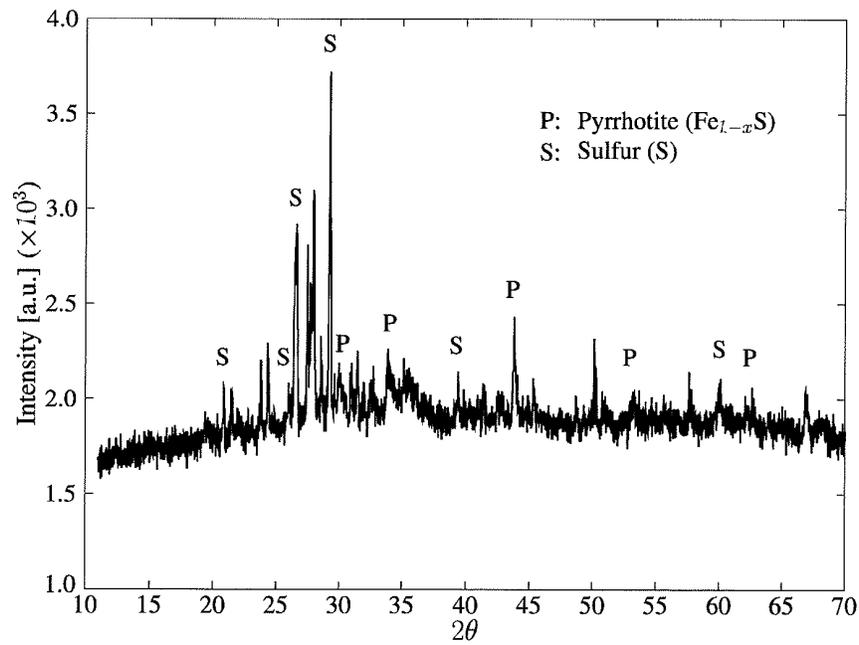


Fig. C- 8 House 4 Sample 1

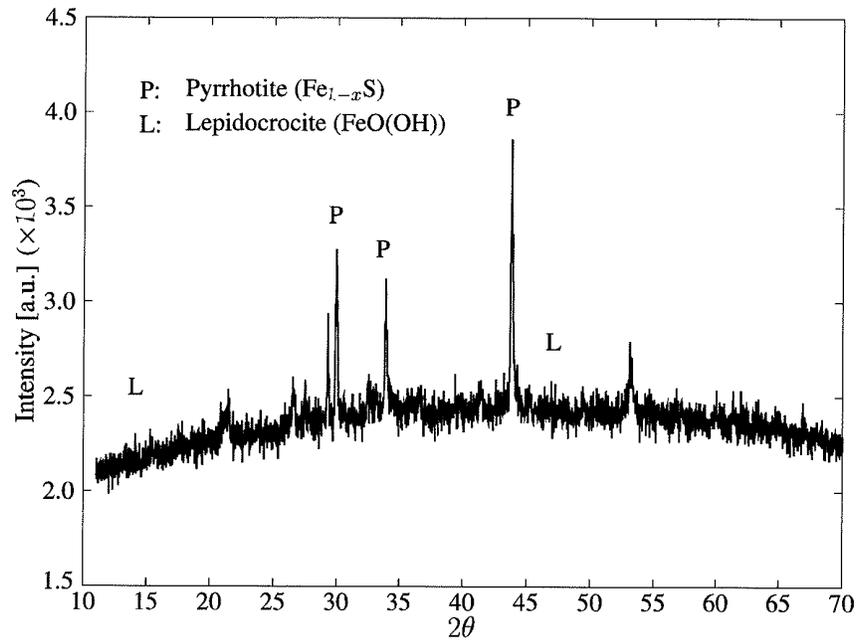


Fig. C- 9 House 4 Sample 2

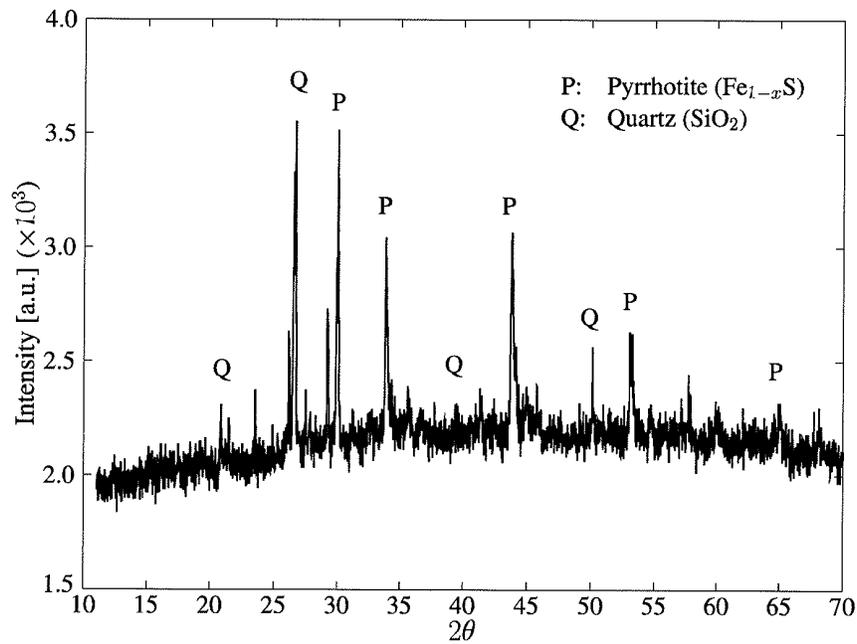


Fig. C- 10 House 4 Sample 3

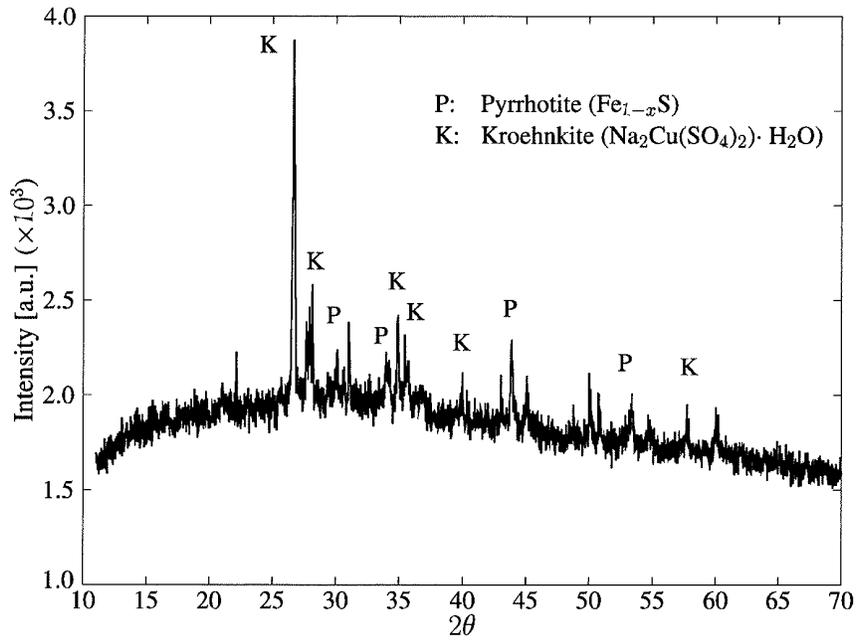


Fig. C- 11 House 5 Sample 1

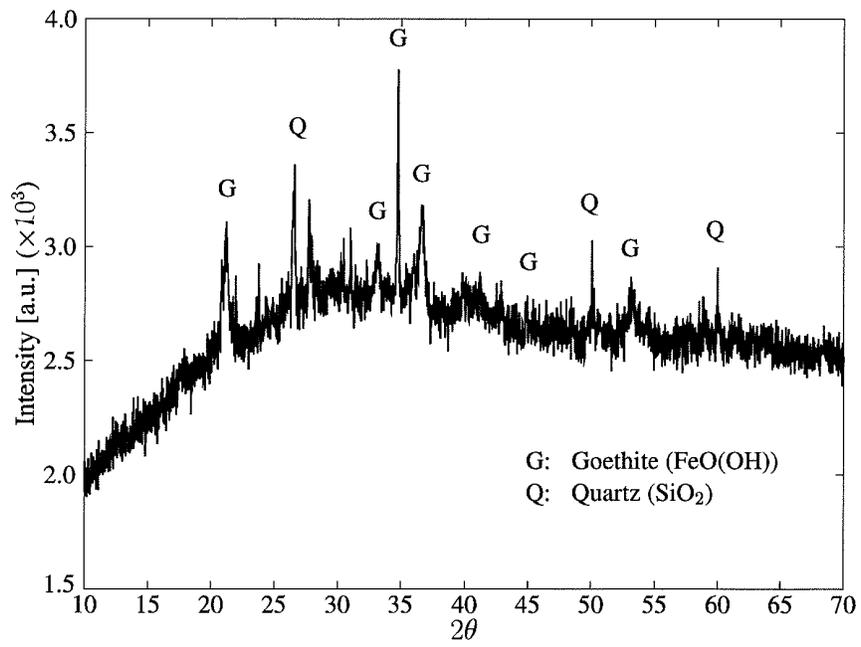


Fig. C- 12 House 5 Sample 2

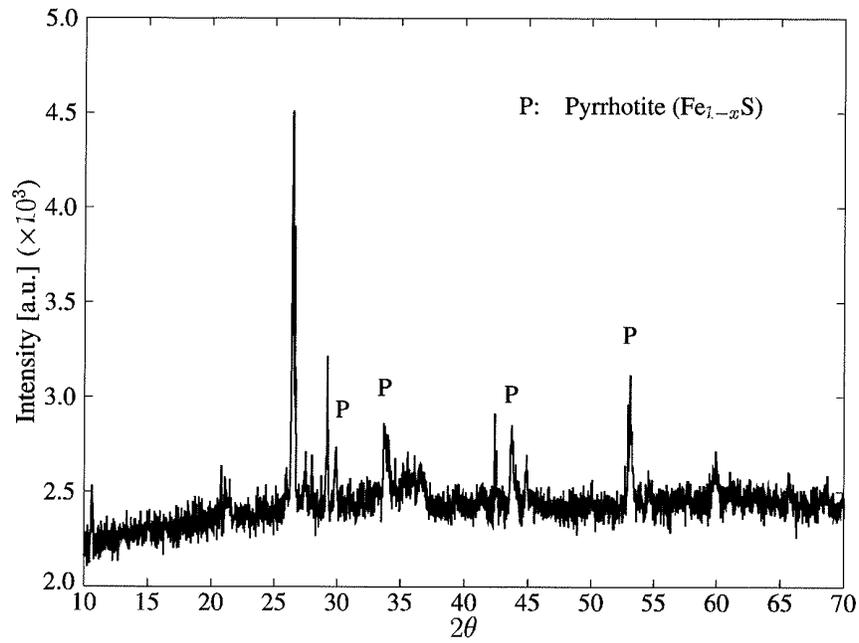


Fig. C- 13 House 5 Sample 3

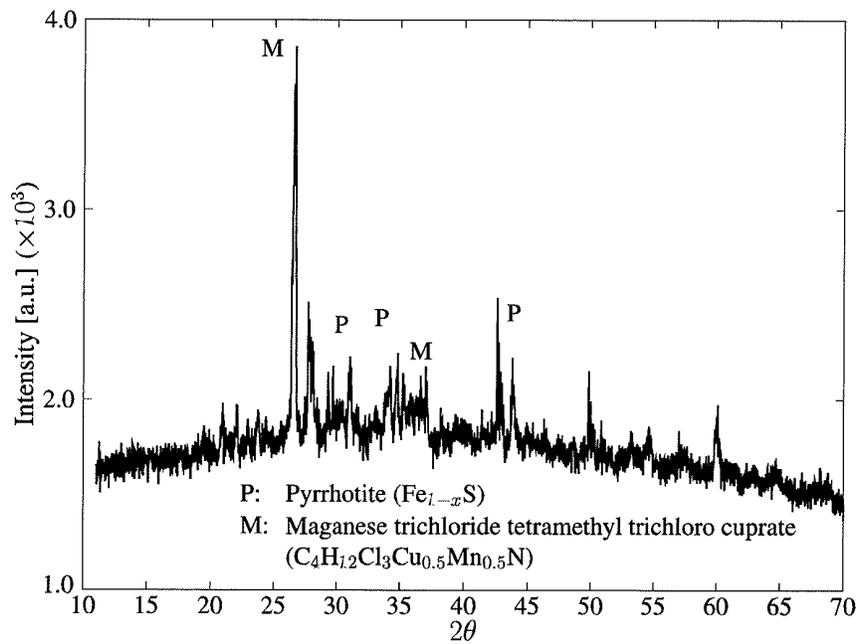


Fig. C- 14 House 6 Sample 1

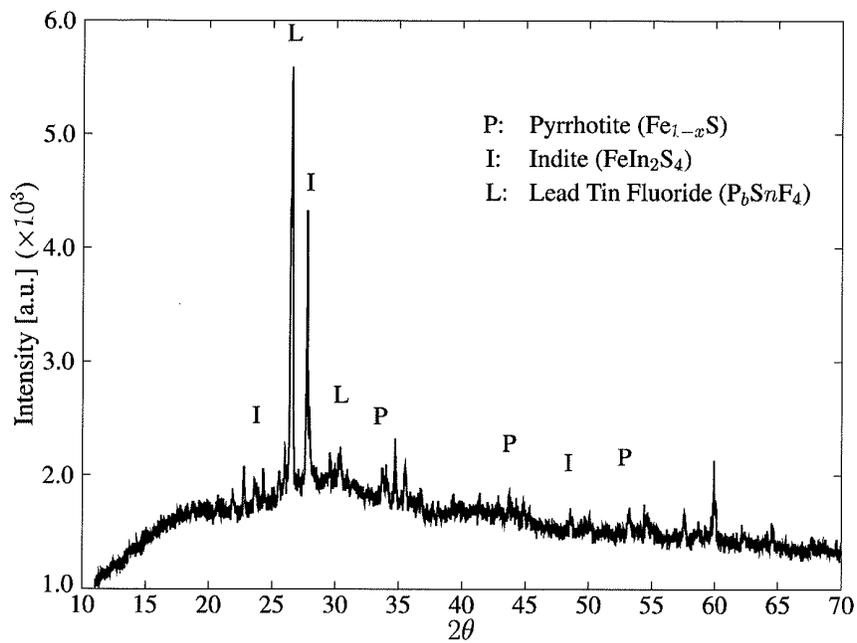


Fig. C- 15 House 6 Sample 2

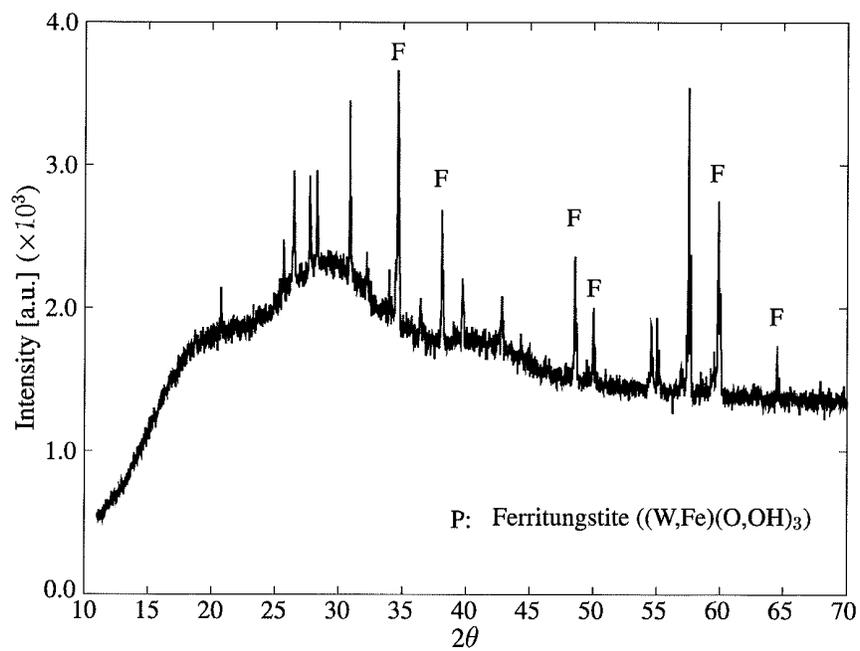


Fig. C- 16 House 7 Sample 1

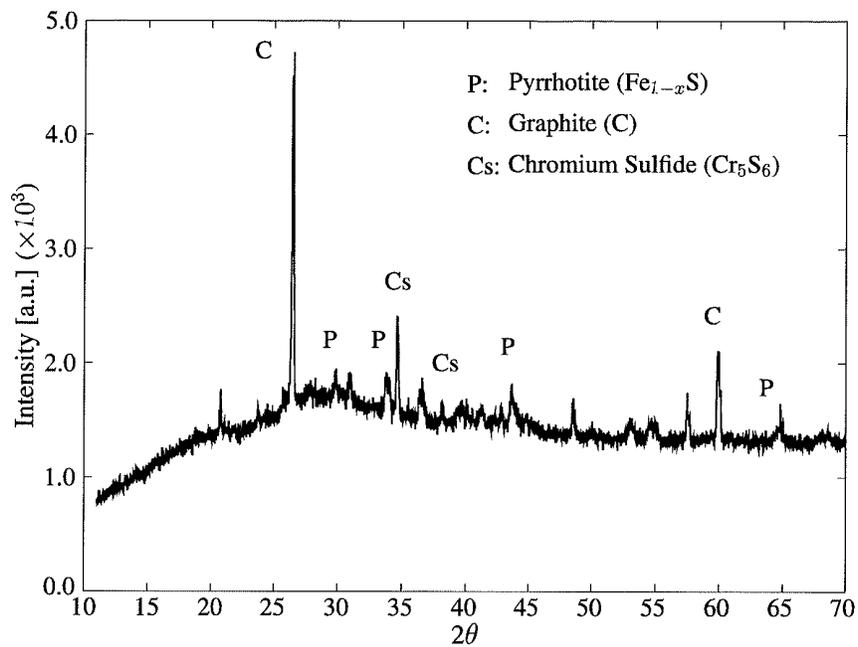


Fig. C- 17 House 7 Sample 2

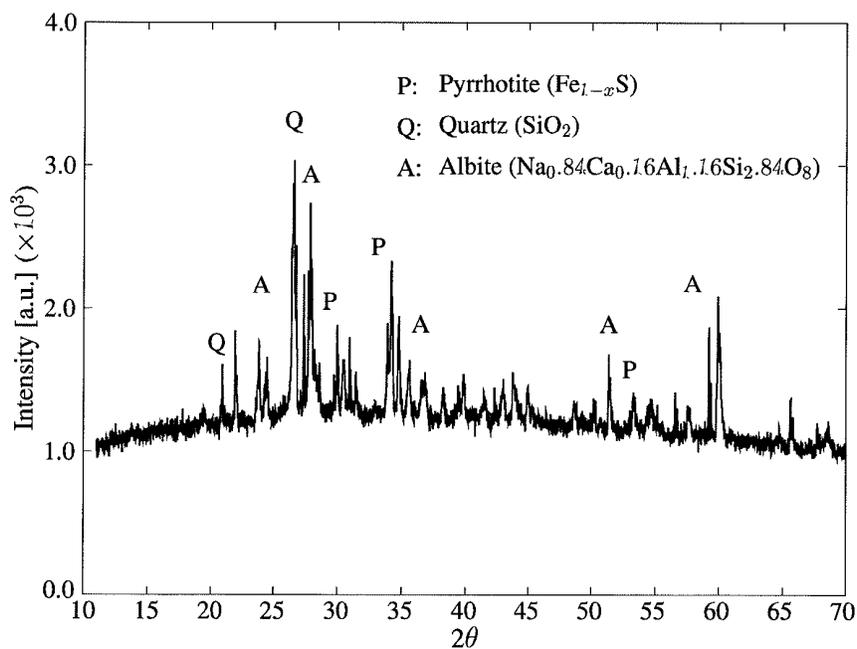


Fig. C- 18 House 7 Sample 3

APPENDIX D: XRD TEST FOR WHITISH POWDER

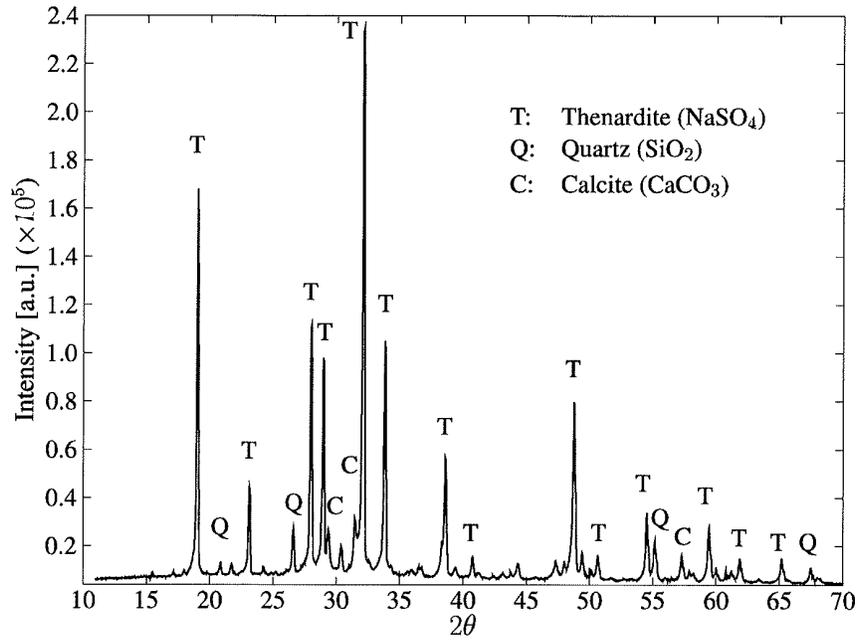


Fig. D- 1 House 1 Sample 1

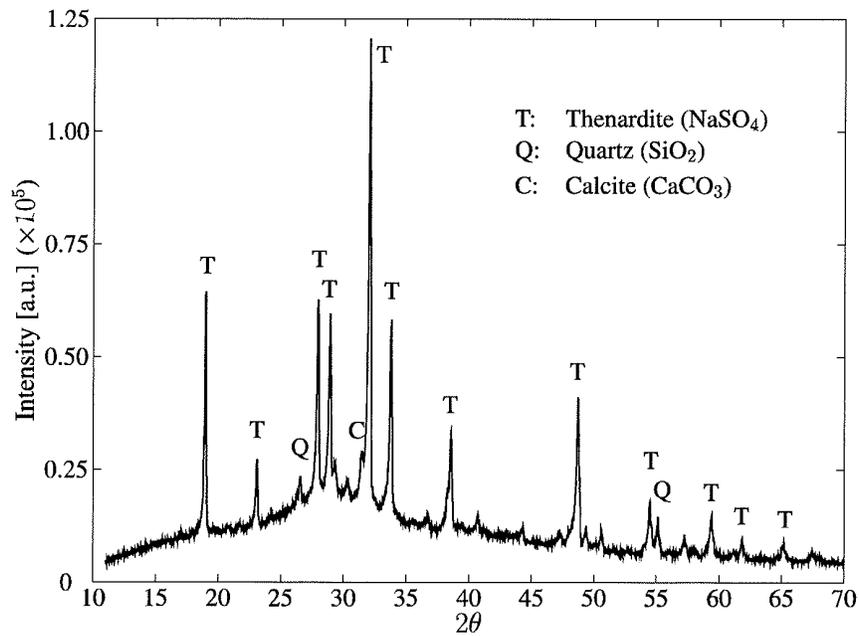


Fig. D- 2 House 1 Sample 2

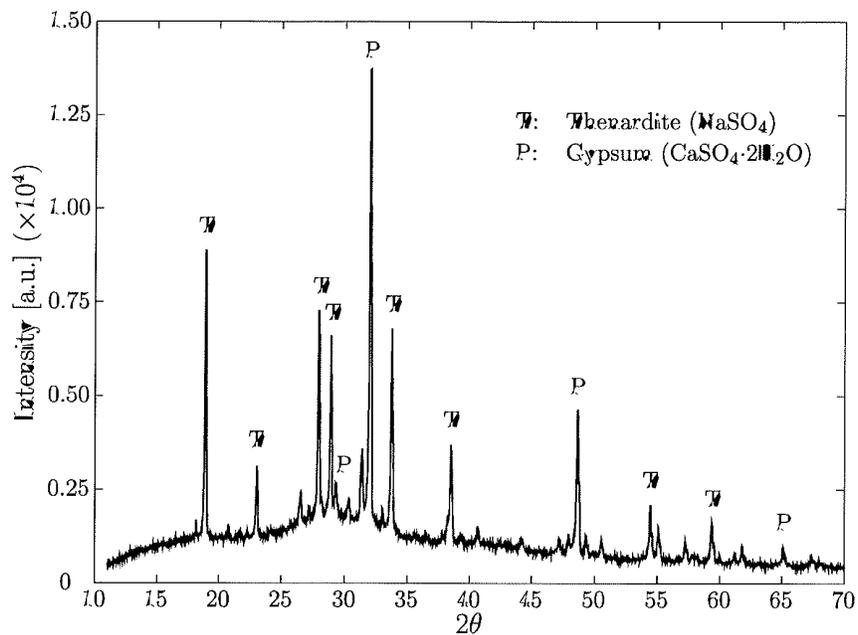


Fig. D- 3 House 1 Sample 3

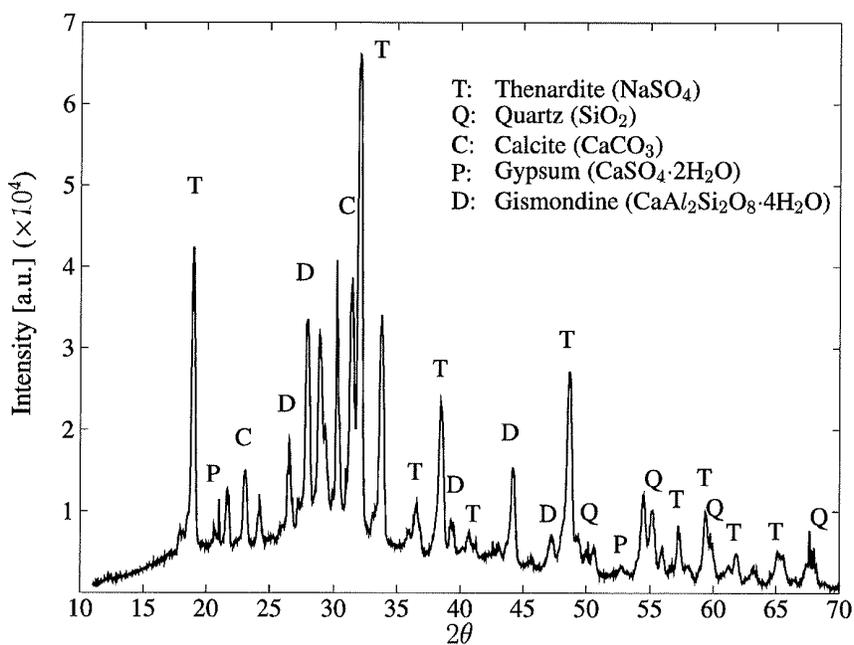


Fig. D- 4 House 2 Sample 1

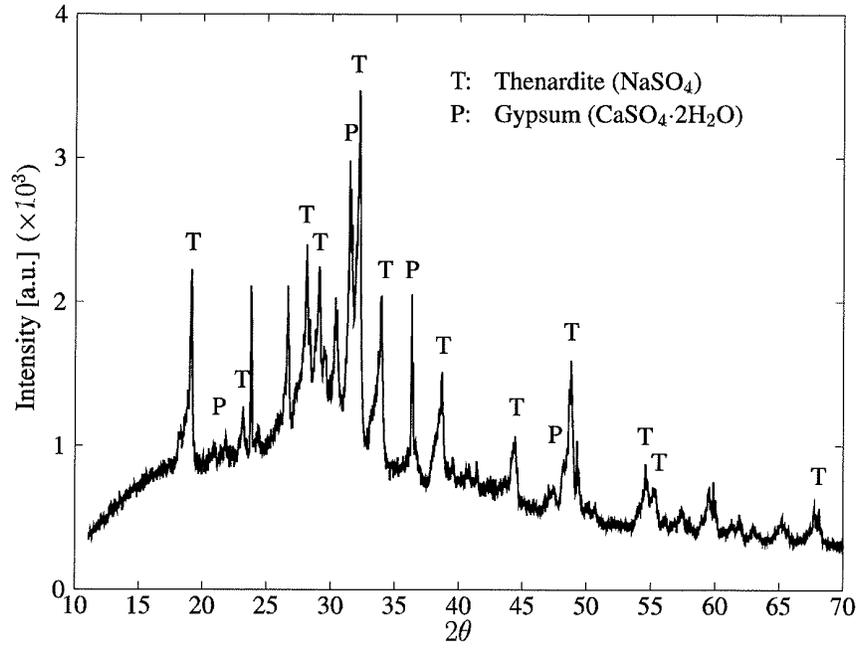


Fig. D- 5 House 2 Sample 2

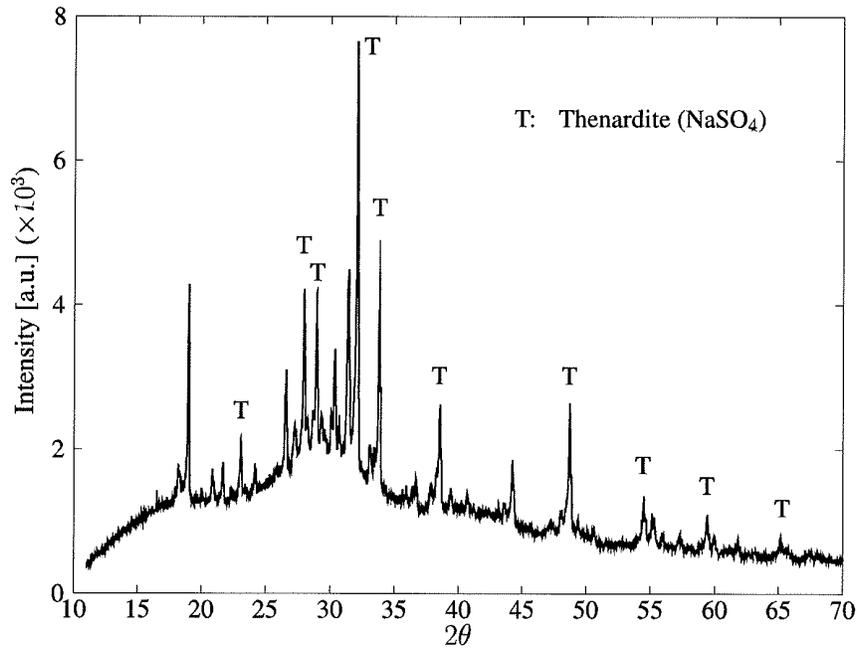


Fig. D- 6 House 2 Sample 3

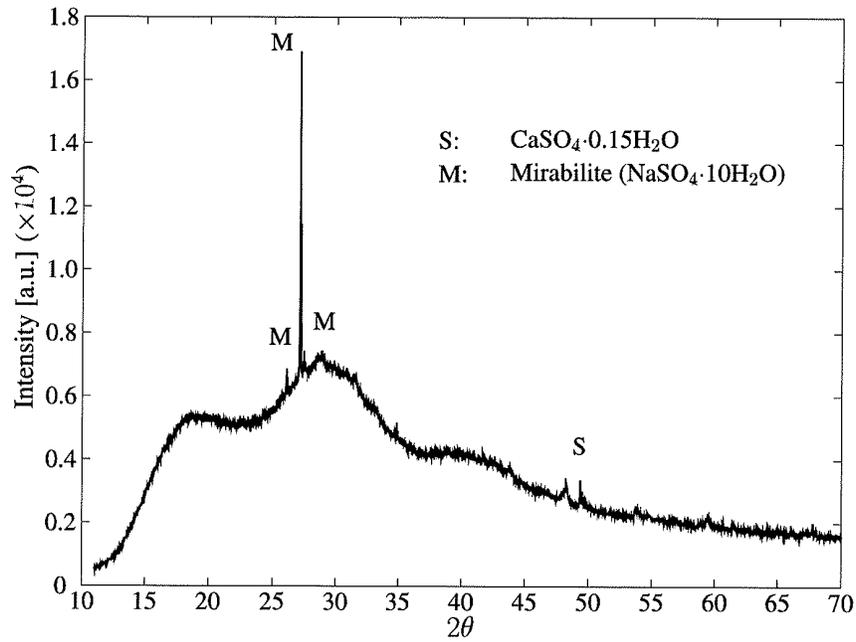


Fig. D- 7 House 3 Sample 1

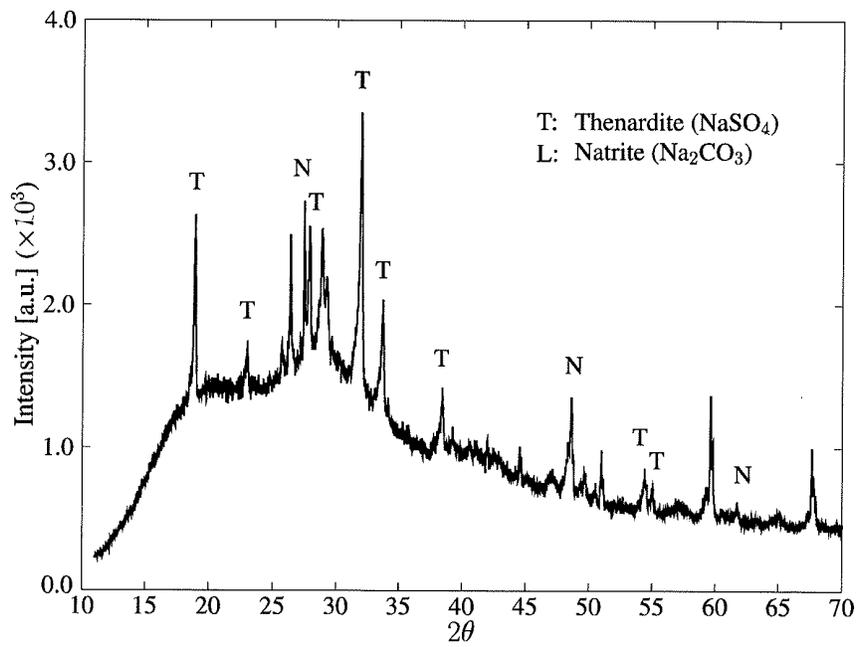


Fig. D- 8 House 4 Sample 1

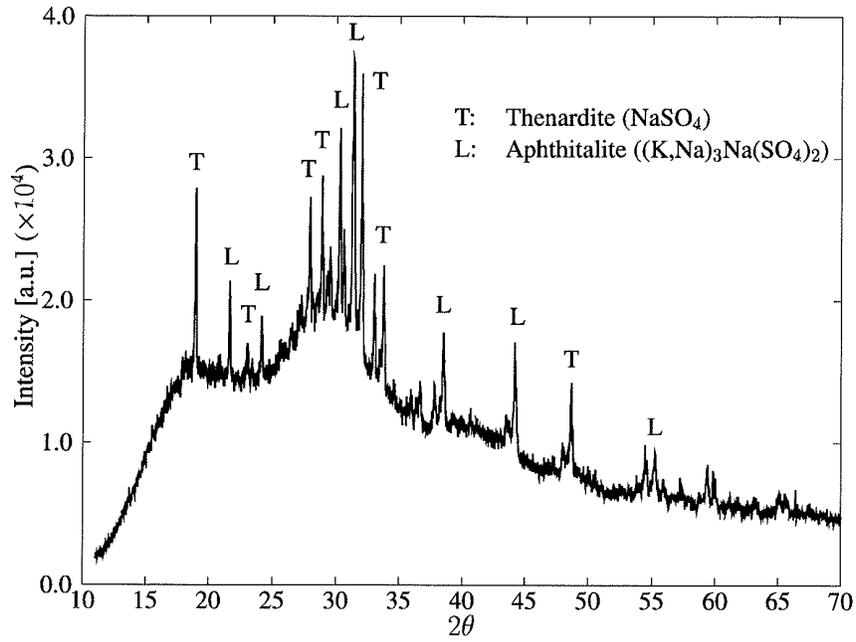


Fig. D- 9 House 5 Sample 1

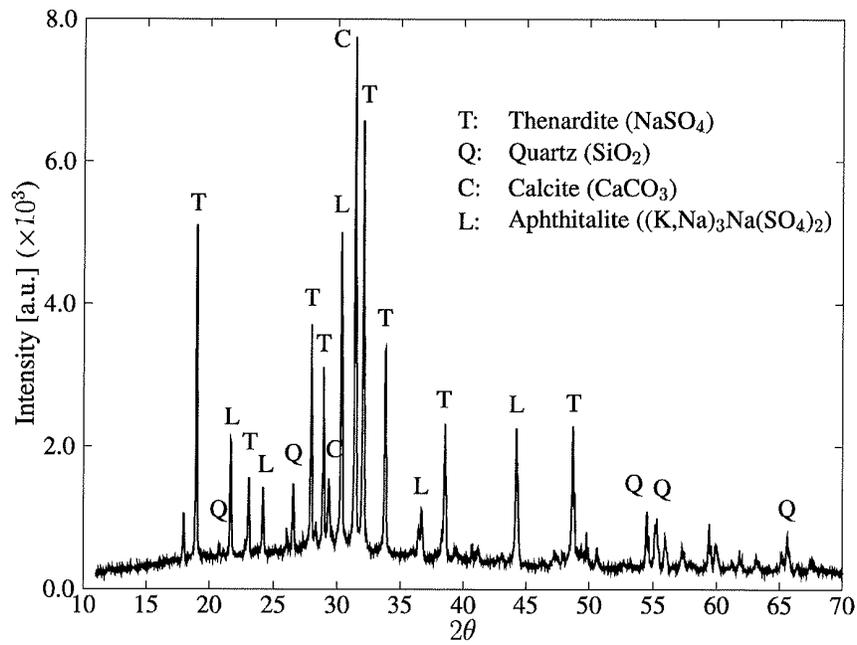


Fig. D- 10 House 5 Sample 2

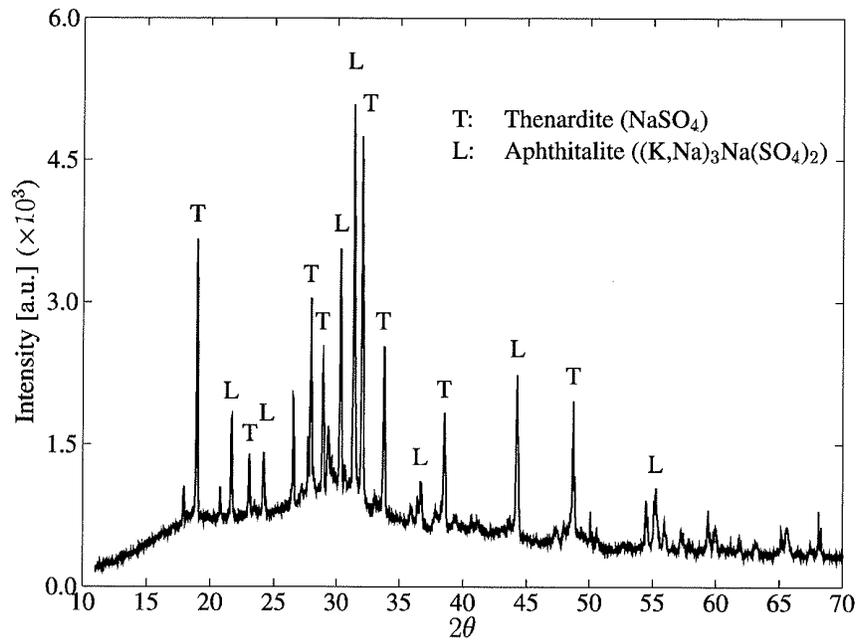


Fig. D- 11 House 5 Sample 3

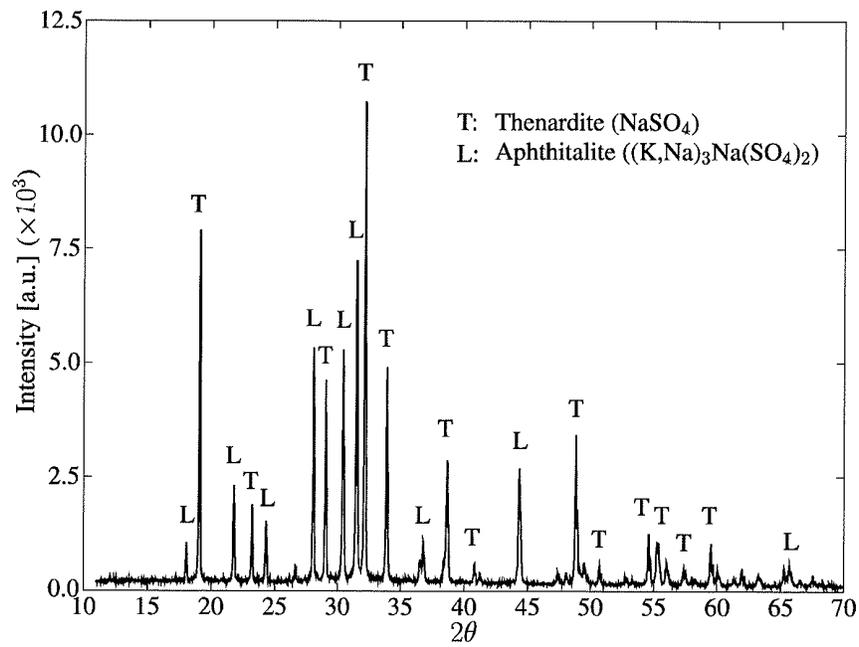


Fig. D- 12 House 7 Sample 1

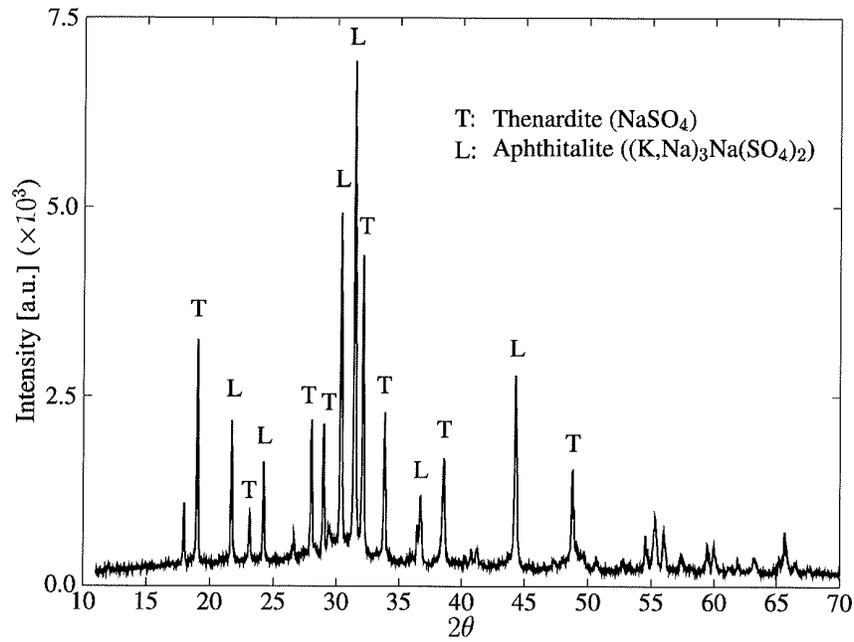


Fig. D- 13 House 7 Sample 2

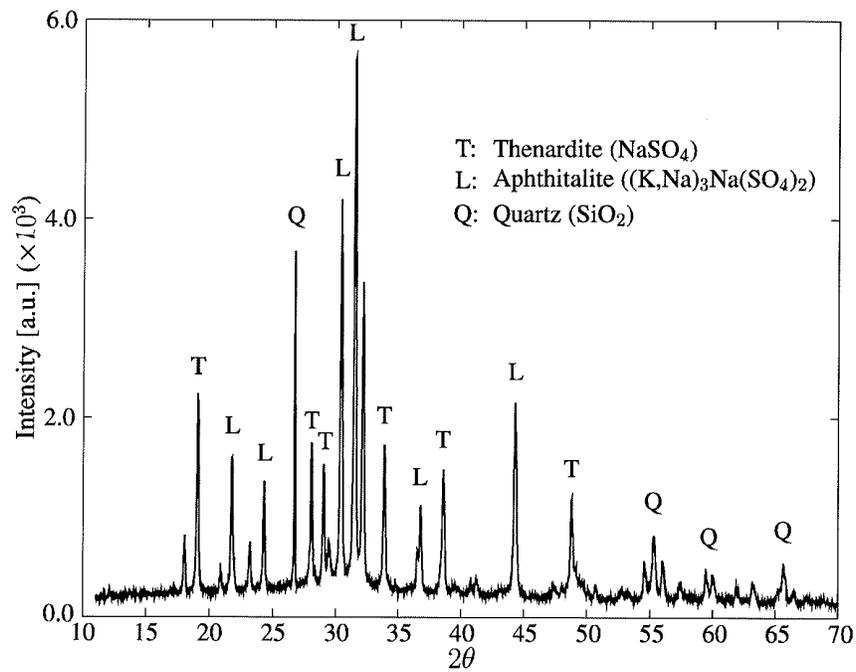


Fig. D- 14 House 3 Sample 3

APPENDIX E: PYRRHOTITE-BEARING AGGREGATE OXIDIZATION

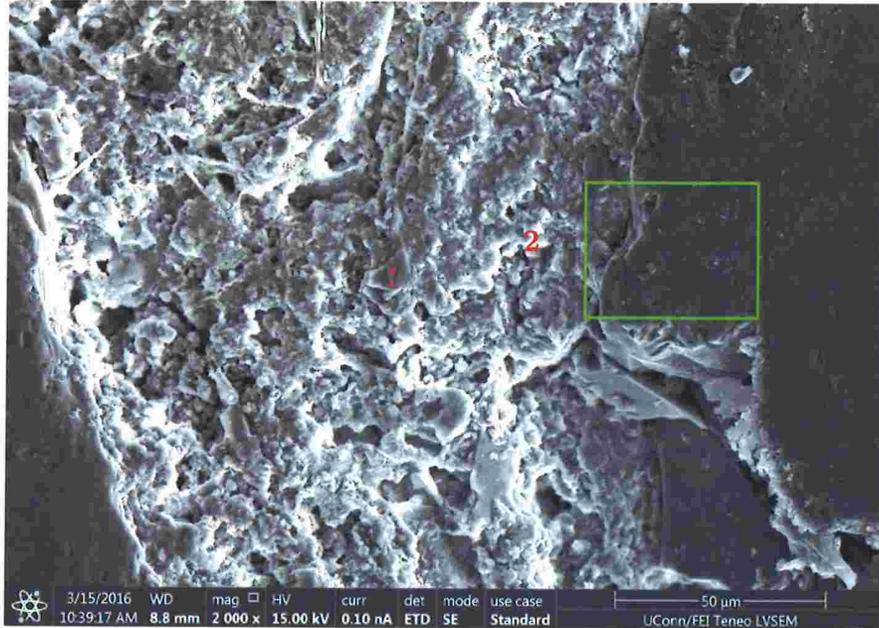


Fig. E- 1 Pyrrhotite-bearing aggregate

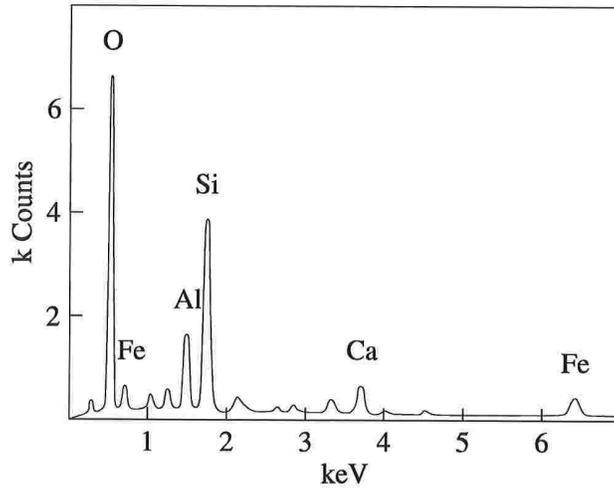


Fig. E- 2 DEX spectrum – point 1

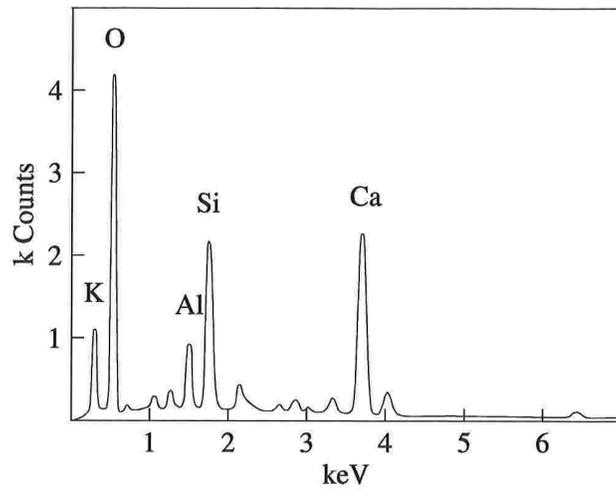


Fig. E- 3 DEX spectrum – point 2

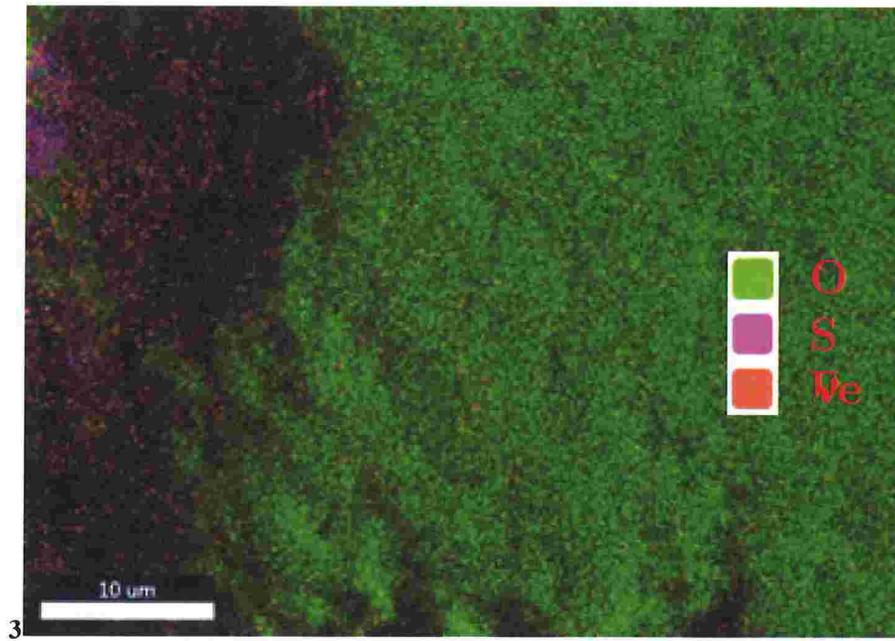


Fig. E- 4 EDS mapping analysis – Rectangular area in Fig. E- 1

APPENDIX F: SECONDARY MINERALS IN ITZ

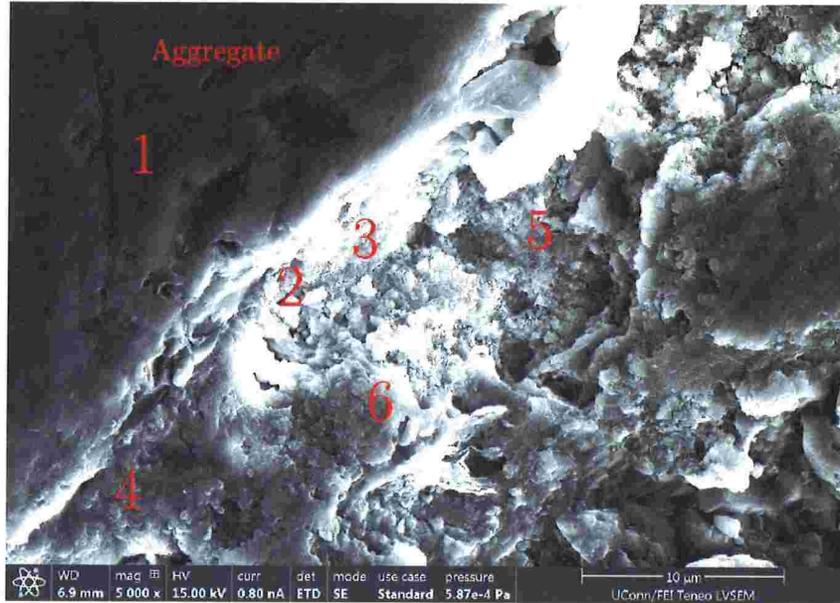


Fig. F- 1 Secondary minerals in the ITZ

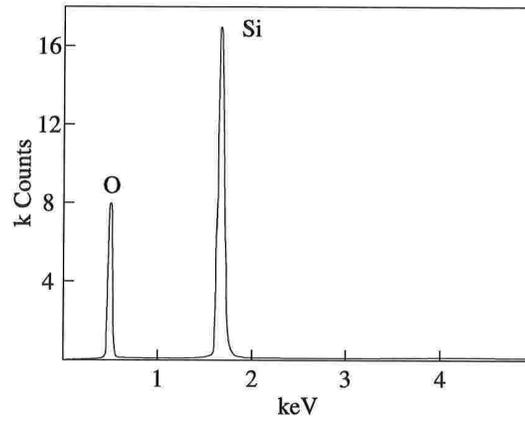


Fig. F- 2 EDS spectrum of point 1 – quartz aggregate

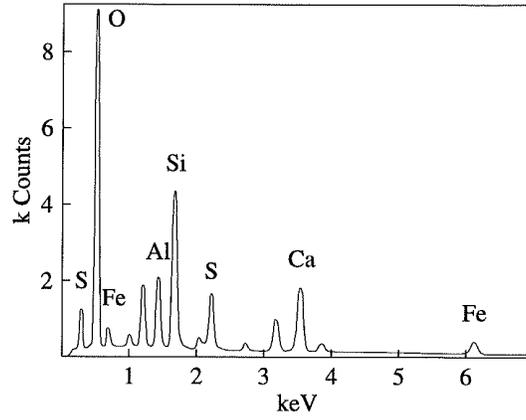


Fig. F- 3 EDS spectrum of point 2 – ettringite

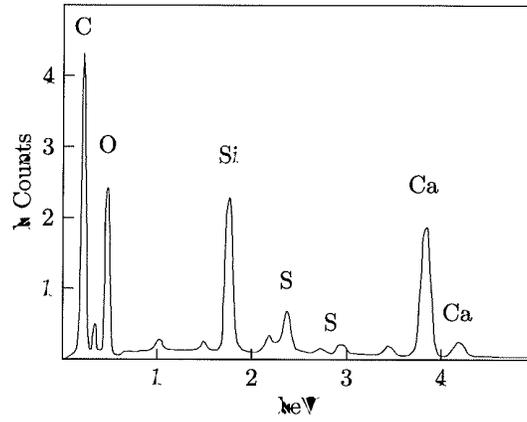


Fig. F- 4 EDS spectrum of point 3 matrix

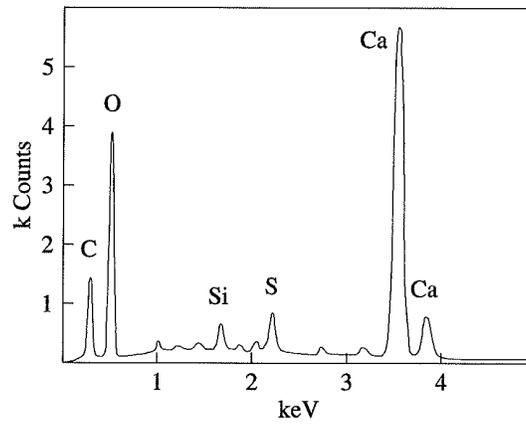


Fig. F- 5 EDS spectrum of point 4 – ettringite

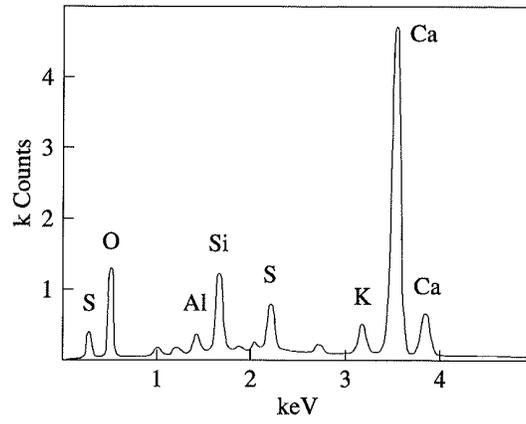


Fig. F- 6 EDS spectrum of point 5 – ettringite

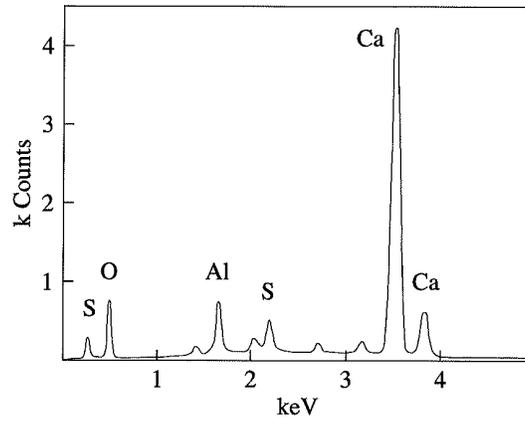


Fig. F- 7 EDS spectrum of point 6 - ettringite

APPENDIX G: SECONDARY MINERALS IN LARGE VOIDS OF MATRIX

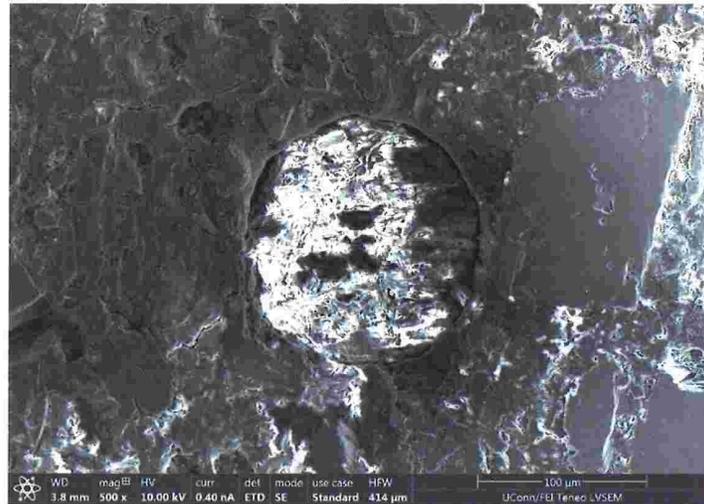


Fig. G- 1 House 1

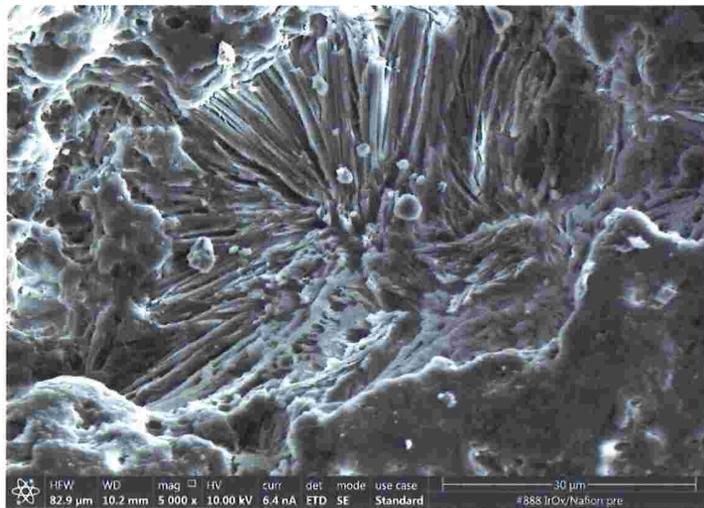


Fig. G- 2 House 2

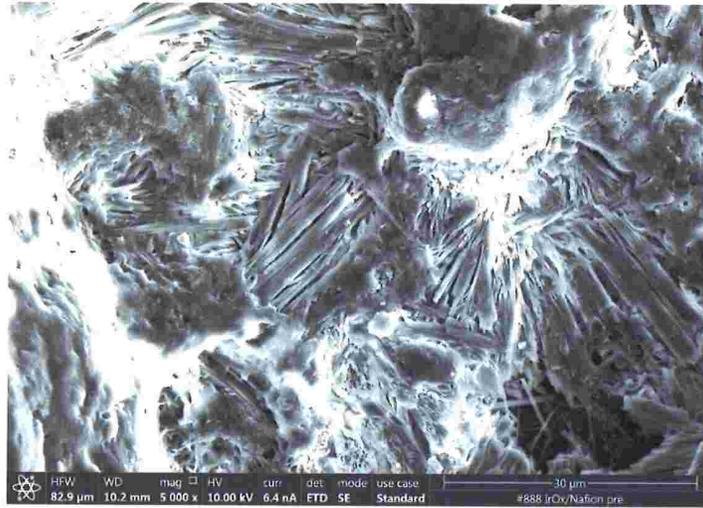


Fig. G- 3 House 3

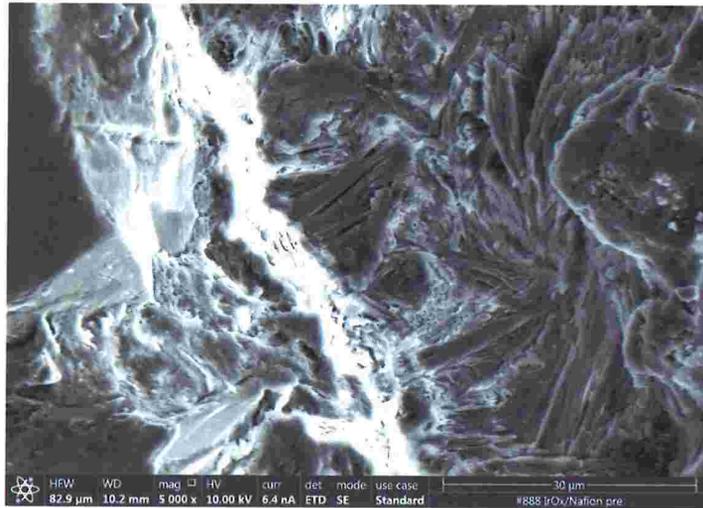


Fig. G- 4 House 4

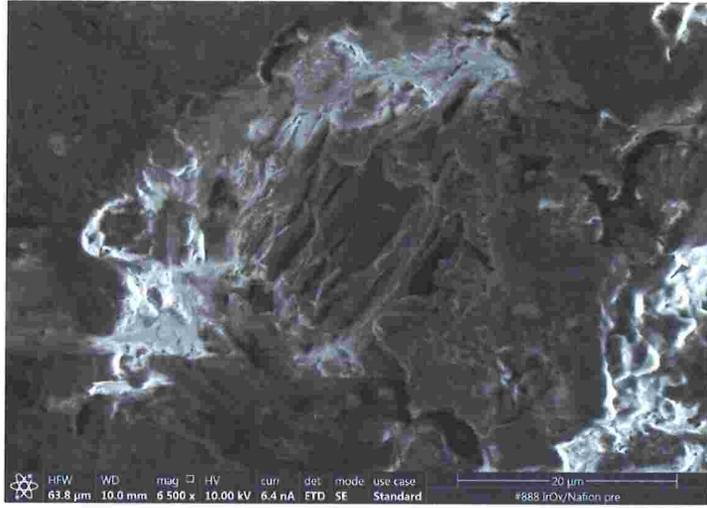


Fig. G- 5 House 5

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TENTH EDITION

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A B
C D
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G H
I J
K L
M N
O P
Q R
S
T U
V W
X Y
Z
GEO BIO

ward; akin to OE *belyrtan* to deceive (1704) 1: abnormal curvature of the spine forward 2: a mating posture of some sexually receptive female mammals (as rats) in which the head and rump are raised and the back is arched downward — **lor-dot-ic** \-'dā-tik\ *adj*

Lord Protector of the Commonwealth (ca. 1653): PROTECTOR 2b

Lord's day *n*, often *cap D* (12c): SUNDAY

lordship \l'ɔrd-'shɪp\ *n* (bef. 12c) 1 a: the rank or dignity of a lord — used as a title b: the authority or power of a lord; DOMINION 2: the territory under the jurisdiction of a lord; SEIGNIORY

Lord's Prayer *n* (ca. 1549): the prayer with variant versions in Matthew and Luke that according to the Lucan account Christ taught his disciples

Lord's Supper *n* (14c): COMMUNION 2a

Lord's table *n*, often *cap T* (1535): ALTAR 2

Lordy \l'ɔrd-'dē\ *interj* [l'ɔrd (God) + -y] (1853) — used to express surprise or strength of feeling

lore \l'ɔr-, 'lɔr-\ *n* [ME, fr. OE *lār*; akin to OHG *lera* doctrine, OE *leornian* to learn] (bef. 12c) 1 *archaic*: something that is taught; LESSON 2: something that is learned: a: knowledge gained through study or experience b: traditional knowledge or belief 3: a particular body of knowledge or tradition

lore n [NL *lorum*, fr. L, thong, rein; akin to Gk *εὐτέρα* reins] (1828): the space between the eye and bill in a bird or the corresponding region in a reptile or fish — **lore-al** \l'ɔr-'ē-əl-, 'lɔr-'\ *adj*

Lore-lei \l'ɔr-'ē-, 'lɔr-\ *n* [G]: a siren of Germanic legend whose singing lures Rhine River boatmen to destruction on a reef

lornette \lɔrn-'yet-\ *n* [F, fr. *lorgner* to take a sidelong look at, fr. MF, fr. *lorgne* squinting] (1803): a pair of eyeglasses or opera glasses with a handle

lorngnon \lɔrn-'yɔn\ *n* [F, fr. *lorgner*] (1846): LORGNETTE

lorrica \lɔ-'ri-kə\ *n*, *pl* -cae \-kē-, -sē\ [L] (ca. 1706) 1: a Roman cuirass of leather or metal 2 [NL, fr. L]: a hard protective case or shell (as of a rotifer)

lori-keet \l'ɔr-'ɔ-kēt-, 'lār-\ *n* [lory + -keet (as in *parakeet*)] (1770): any of numerous small arboreal chiefly Australasian parrots (family Loridae) that usu. have long slender tongue papillae which form an organ resembling a brush

loris \l'ɔr-'ɔs-, 'lɔr-\ *n* [F, prob. fr. obs. D *loris* simpletion] (1774): any of several nocturnal slow-moving tailless arboreal primates (family Loristidae); as a: a slim-bodied primate (*Loris tardigradus*) of southern India and Sri Lanka b: either of two larger related primates (*Nyctechus pygmaeus* or *N. coucang*) of southeastern Asia that are heavier limbed and slower moving

lorn \l'ɔrn\ *adj* [ME, fr. *loren*, pp. of *lesen* to lose, fr. OE *lēosan* — more at LOSE] (14c): DESOLATE. FORSAKEN — **lorn-ness** \l'ɔrn-'nəs-\ *n*

Lor-raine cross \lɔ-'rān-, lɔ-\ *n* (1898): CROSS OF LORRAINE

lorry \l'ɔr-'ē-, 'lār-\ *n*, *pl* *lorries* [origin unknown] (1908) chiefly *Brit*: MOTORTRUCK

lory \l'ɔr-'ē-, 'lɔr-\ *n*, *pl* *lories* [D, fr. Malay *nuri*, *huri*] (1682): any of numerous parrots (family Loridae) of Australia, New Guinea, and adjacent islands related to the lorikeets and usu. having the tongue papillae at the tip and the mandibles less toothed than in other parrots

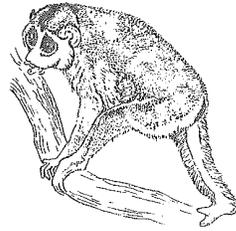
lose \l'uz\ *v* *lost* \l'ɔst\; *los-ing* \l'uz-'ɪŋ\ [ME, fr. OE *losian* to perish, *lose*, fr. *los* destruction; akin to OE *lēosan* to lose; akin to ON *losa* to loosen, L *luere* to atone for, Gk *lyein* to loosen, dissolve, destroy] *vt* (bef. 12c) 1 a: to bring to destruction — used chiefly in passive construction (the ship was *lost* on the reef) b: DAMN (if he shall gain the whole world and ~ his own soul — Mt 16:26 (AV)) 2: to miss from one's possession or from a customary or supposed place 3: to suffer deprivation of: part with esp. in an unforeseen or accidental manner 4 a: to suffer loss through the death or removal of or final separation from (a person) b: to fail to keep control of or allegiance of (~ votes) (*lost* his temper) 5 a: to fail to use: let slip by: WASTE (~ the tide) b (1): to fail to win, gain, or obtain (~ a prize) (~ a contest) (2): to undergo defeat in (*lost* every battle) c: to fail to catch with the senses or the mind (*lost* part of what she said) 6: to fail to keep, sustain, or maintain (*lost* my balance) 8 a: to cause to miss one's way or bearings (*lost* himself in the maze of streets) b: to make (oneself) withdrawn from immediate reality (*lost* herself in day-dreaming) 9 a: to wander or go astray from (*lost* his way) b: to draw away from: OUSTRIIP (*lost* his pursuers) 10: to fail to keep in sight or in mind 11: to free oneself from: get rid of (*diating* to ~ some weight) ~ *vi* 1: to undergo deprivation of something of value 2: to undergo defeat (~ with good grace) 3 of a *timepiece*: to run slow — **los-able** \l'uz-'zə-bəl\ *adj* — **los-able-ness** *n* — **lose ground**: to suffer loss or disadvantage: fail to advance or improve — **lose one's heart**: to fall in love

loset \l'ɔs-'zəl\ [ME, fr. *losen* (pp. of *lesen* to lose), alter. of *loren* — more at LORN] (14c): a worthless person

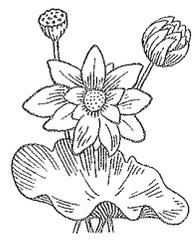
lose out *vi* (ca. 1858): to fail to win in competition: fail to receive an expected reward or gain

loser \l'uz-'zər\ *n* (1548) 1: one that loses esp. consistently 2: one who is incompetent or unable to succeed; also: something doomed to fail or disappointment

loss \l'ɔs-\ *n* [ME *los*, prob. back-formation fr. *lost*, pp. of *losen* to lose] (13c) 1: DESTRUCTION, RUIN 2 a: the act of losing possession b: the harm or privation resulting from loss or separation c: an instance of losing 3: a person or thing or an amount that is lost: as a *pl*: killed, wounded, or captured soldiers b: the power diminution of a circuit or circuit element corresponding to conversion of electrical energy into heat by resistance 4 a: failure to gain, win, obtain, or utilize b: an amount by which the cost of an article or service exceeds the selling price 5: decrease in amount, magnitude, or degree 6: the amount of an insured's financial detriment by death or damage



loris a



lotus 2

that the insurer becomes liable for — at a loss: UNCERTAIN, PUZZLED — for a loss: into a state of distress

loss leader *n* (1917): something (as merchandise) sold at a loss in order to draw customers — **loss-leader** *adj*

loss ratio *n* (1926): the ratio between insurance losses incurred and premiums earned during a given period

lossy \l'ɔs-'i\ *adj* (1946): causing attenuation or dissipation of electrical energy (a ~ transmission line) (a ~ dielectric)

lost \l'ɔst\ *adj* [pp. of *lose*] (15c) 1: not made use of, won, or claimed 2 a: no longer possessed b: no longer known 3: ruined or destroyed physically or morally; DESPERATE 4 a: taken away or beyond reach or attainment; DENIED (regions ~ to the faith) b: INSENSIBLE, HARDENED (~ to shame) 5 a: unable to find the way b: no longer visible c: lacking assurance or self-confidence; HELPLESS 6: RAFT, ABSORBED (~ in reverie) 7: not appreciated or understood; WASTED (their jokes were ~ on me) — **lost-ness** \l'ɔst-'nəs-\ *n*

lost wax *n* (1909): a process used in metal casting that consists of making a wax model, coating it with a refractory to form a mold, heating until the wax melts and runs out of the mold, and then pouring metal into the vacant mold

lot \l'ɔt-\ *n* [ME, fr. OE *hlōt*; akin to OHG *hlōz*] (bef. 12c) 1: an object used as a counter in determining a question by chance 2 a: the use of lots as a means of deciding something b: the resulting choice 3 a: something that comes to one upon whom a lot has fallen; SHARE b: one's way of life or worldly fate; FORTUNE 4 a: a portion of land b: a measured parcel of land having fixed boundaries and designated on a plot or survey c: a motion-picture studio and its adjoining property 5 a: a number of units of an article, a single article, or a parcel of articles offered as one item (as in an auction sale) b: all the members of a present group, kind, or quantity — used with the 6 a: a number of associated persons; SET b: KIND, SORT 7: a considerable quantity or extent (a ~ of money) (~s of friends) *syn* see FATE — a lot 1: to a considerable degree or extent (this is a lot nicer) 2: OFTEN, FREQUENTLY (runs a lot every day) 3: LOTS

lot v *lot-ting*; *lot-ting* (15c) 1: ALLOT, APPORTION 2: to form or divide into lots

Lot \l'ɔt-\ *n* [Heb *Lōt*] a nephew of Abraham who according to the account in Genesis escaped from the doomed city of Sodom with his wife who turned into a pillar of salt when she looked back

lot-ta also **lot-tah** \l'ɔt-'tə-\ *n* [Hindi *lotā*] (1809): a small usu. spherical water vessel of brass or copper used in India

loth \l'ɔθ-, 'lɔθ-\ *var* of LOATH

lothario \l'ɔθ-'thar-'ē-, -'thēr-, -'thār-\ *n*, *pl* -i-ɔs often *cap* [Lothario, seducer in the play *The Fair Penitent* (1703) by Nicholas Rowe] (1756): a man whose chief interest is seducing women

lot-i \l'ɔt-'i-\ *n*, *pl* **ma-lot-i** \mā-'lɔt-'i-\ [Sesotho] (1980) — see MONEY table

lot-ic \l'ɔt-'ɪk\ *adj* [L *lotus*, pp. of *lavere*] (1916): of, relating to, or living in actively moving water (a ~ habitat) — compare LENTIC

lot-ion \l'ɔt-'shən-\ *n* [ME *lotion*, fr. L *lotio*, *lotio* act of washing, fr. *lavere* to wash — more at LYE] (14c): a liquid preparation for cosmetic or external medicinal use

lots \l'ɔts\ *adv* [pl. of *lot*] (1891): MUCH (feeling ~ better)

lotte \l'ɔt-, 'lɔt-\ *n* [F, MF] (1977): MONKFISH

lot-tery \l'ɔt-'tər-\ also **lō-t'rē** *n*, *pl* -tər-ēes often *attrib* [MF *loterie*, fr. MD, fr. *lot* lot; akin to OE *hlōt* lot] (1567) 1 a: a drawing of lots in which prizes are distributed to the winners among persons b: buying a chance b: a drawing of lots used to decide something 2: an event or affair whose outcome is or seems to be determined by chance

lot-to \l'ɔt-'tɔ-\ *n* [It, lottery, lotto, fr. F *lot* lot, of Gmc origin; akin to OE *hlōt* lot] (1778): a game of chance resembling bingo

lot-us \l'ɔt-'təs-\ *n* [L & Gk; L *lotus*, fr. Gk *lōtos*] (ca. 1541) 1 also **lot-foe** \l'ɔt-'fɔs-\: a fruit eaten by the lotus-eaters and considered to cause indolence and dreamy contentment; also: a tree (as *Zizyphus lotus* of the buckthorn family) reputed to bear this fruit 2: any of various water lilies including several represented in ancient Egyptian and Hindu art and religious symbolism 3 [NL, fr. L] a: any of a genus (*Lotus*) of widely distributed upright leguminous herbs or subshrubs b: SWEET CLOVER

lot-us-eat-er \l'ɔt-'ē-tər-\ *n* (1832) 1: any of a people in Homer's *Odyssey* subsisting on the lotus and living in the dreamy indolence it induces 2: an indolent person

lot-us-land \l'ɔt-'lənd-\ *n* [fr. the Homeric land of lotus-eaters] (1842) 1: a place inducing contentment esp. through offering an idyllic living situation 2: a state or an ideal marked by contentment often achieved through self-indulgence

lotus position *n* [fr. the supposed resemblance of the position to a lotus blossom] (1953): a cross-legged sitting position used in yoga in which the right foot is on the left thigh and the left foot is on the right thigh

lotche \l'ɔʃ-\ *adj* [F, lit., cross-eyed, squint-eyed, fr. L *luscus* blind in one eye] (1819): not reputable or decent

loud \l'aud\ *adj* [ME, fr. OE *hlūd*; akin to OHG *hlūd* loud, L *inclutus* famous, Gk *klytos*, Skt *śṛṇoti* he hears] (bef. 12c) 1 a: marked by intensity or volume of sound b: producing a loud sound 2: CLAMOROUS, NOISY 3: obtrusive or offensive in appearance or smell; OBNOXIOUS — **loud-ly** *adv*

syn LOUD, STENTORIAN, EARSPLITTING, RAUCOUS, STRIDENT mean marked by intensity or volume of sound. LOUD applies to any volume above normal and may suggest undue vehemence or obtrusiveness (*loud* shouts of protest). STENTORIAN implies great power and range (an

\ə\ abut \ə\ kitten, F table \ər\ further \ə\ ash \ə\ ace \ə\ mop, mar \ə\ out \ə\ chin \ə\ bet \ə\ easy \ə\ go \ə\ hit \ə\ ice \ə\ job \ə\ sing \ə\ go \ə\ law \ə\ boy \ə\ thin \ə\ the \ə\ loot \ə\ foot \ə\ yet \ə\ vision \ə, ɛ, ɛ, œ, œ, ɛ, ɛ, ɛ, ɛ see Guide to Pronunciation

71 N.Y. Jur. 2d Insurance § 2528

New York Jurisprudence, Second Edition February 2019 Update

Insurance

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Part Two. Insurance Contracts

XXXIX. Insurance Furnished by Fraternal Benefit Societies

E. Beneficiaries and Right to Proceeds

1. Eligibility and Designation of Beneficiaries

b. Particular Persons or Entities, or Classes Thereof

§ 2528. Eligibility and designation of relatives as beneficiaries

Topic Summary Correlation Table References

<p>West's Key Number Digest</p> <ul style="list-style-type: none">• West's Key Number Digest, Beneficial Associations ¶18(2)• West's Key Number Digest, Insurance ¶1244, 1244(1), 3438, 3463, 3464, 3468, 3478 to 3480
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The word "relative," as used in a fraternal benefit society bylaw designating the persons who can be named as beneficiaries in a benefit certificate, is not confined to blood relatives, as in the interpretation of a will, but includes a brother-in-law.¹ However, where the bylaws of a benefit society restrict the designation of beneficiaries to "blood relatives," an aunt of a member by marriage is not included within the term.²

An illegal marriage does not render the parties thereto "relatives" of one another for purposes of a beneficiary-designation limitation of a fraternal benefit society.³

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Footnotes

- 1 Tolson v. National Provident Union, 60 Misc. 460, 113 N.Y.S. 534 (Sup 1908), aff'd, 130 A.D. 884, 114 N.Y.S. 1149 (2d Dep't 1909), aff'd, 198 N.Y. 535, 92 N.E. 1104 (1910).
- 2 Dusenbury v. General Grant Council, No. 128, Junior Order United American Mechanics of State of New York, 96 Misc. 665, 161 N.Y.S. 103 (App. Term 1916).
- 3 Starosta v. Kaszubinska, 165 Misc. 240, 300 N.Y.S. 675 (Sup 1937).

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<u>Liston-Smith v. Csaas Fire & Cas. Ins. Co.</u> , No. 3:16-CV-00510 (JCH), 2016 WL 6246300, (D. Conn. Oct. 25, 2016)	AA25

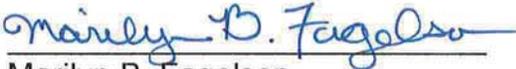
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Eric Bender, "Crumbled Insurance: Comm'r defends change excluding failing foundations," <u>Journal Inquirer</u> (Aug. 30, 2017)	AA29
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Merriam Webster's Collegiate Dictionary (10 th Ed. 1993)	AA142
71 N.Y. Jur.2d Insurance § 2528 (2010).....	AA145

CERTIFICATION

The undersigned attorney hereby certifies, pursuant to Connecticut Rule of Appellate Procedure § 67-2, that on April 1, 2019:

- (1) the electronically submitted brief and appendix have been delivered electronically to the last known e-mail address of each counsel of record for whom an e-mail address has been provided; and
- (2) the electronically submitted brief and the filed paper brief have been redacted or do not contain any names or other personal identifying information that is prohibited from disclosure by rule, statute, court order or case law; and
- (3) a copy of the brief and appendix have been sent to each counsel of record in compliance with Section 62-7; and
- (4) the brief and appendix being filed with the supreme court clerk are true copies of the brief and appendix that were submitted electronically; and
- (5) the brief and appendix comply with all provisions of this rule.


Marilyn B. Fagelson

CERTIFICATE OF SERVICE

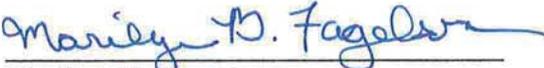
Pursuant to Practice Book § 62-7 the undersigned certifies that a copy of the foregoing was mailed this 1st day of April, 2019 to:

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