# MASONRY

## Association

## of Florida

# Introduction to the Masonry Workshop

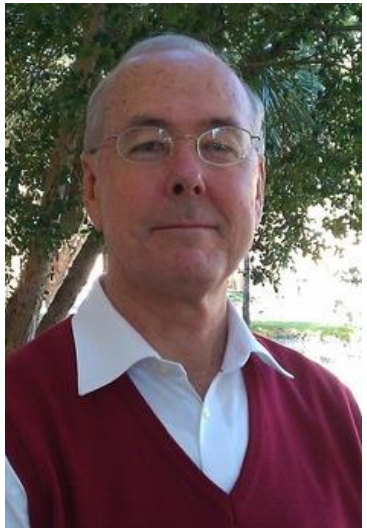
## Day 2

# MASONRY WORKSHOP SCHEDULE
# Day 2

**MORTAR & GROUT**

Jeff O'Leary

A-1 Block



**CODES, ENGINEERING AND REVIEW**

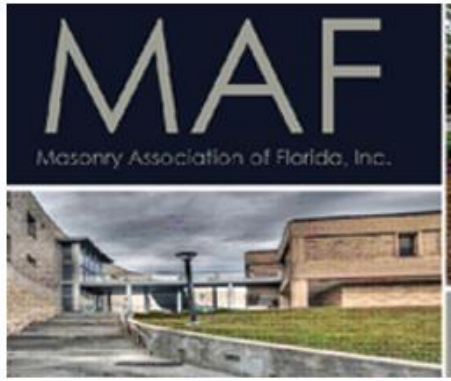
Don Beers

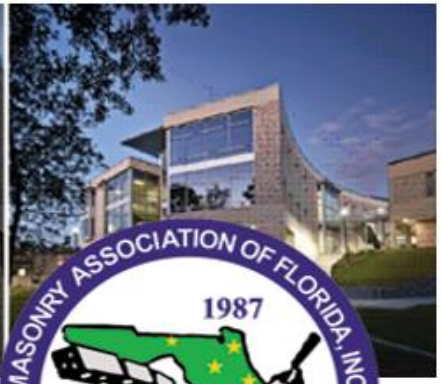
MAF

# Jerry Painter, FASTM

Jerry Painter, is the principle of Jerry Painter Masonry Consulting, LLC. He serves on the Board of the Masonry Association of Florida and is a Past Chairman of MAF. Mr. Painter is a member of ASTM committees C12, C15, C27, E06 and E54. He is the immediate past chair of committee C12 (Mortars and Grouts) and subcommittee C15.05 (Masonry Assemblies) as well as a Board member of C15 (Masonry Units). Mr. Painter is the immediate Past President of The Masonry Society and is on the TMS 402/602 committee (previously known as MSJC). He is a member of Mason Contractors of America Association and is chair of the Technical Committee. Mr. Painter is a nationally recognized masonry industry speaker, seminar instructor and columnist.

# WORKSHOP TABLE OF CONTENTS



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# MASONRY Construction & Inspection Certification Workshop

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Florida CONCRETE MASONRY EDUCATION COUNCIL

## I TABLE OF CONTENTS

## II TMS 402/602-16

TMS 402/602-16 Codes Book (Handout)

White Paper: Increased Design Strength of CMU

## III Florida Building Code - 6th Edition Chapter 21 - Masonry

6th Edition FBC - Chapter 21 - Masonry

MAF Errata to Sections 2107 & 2108 | FBC Corrected to TMS402/602-13 | FBC Corrected to TMS 402/602-16

Summary of Masonry Code Changes in the FBC 6th Edition

# Section X Inspection – Quality Control

| RELATIONSHIP TABLE | | | | | |
|---|---|---|---|---|---|
| | CONCRETE | BLOCK | GROUT | MORTAR | BRICK |
| Product Spec | ACI 301<br>C-94 | C-90 | C-476 | C-270 | C-216<br>C-652 |
| Sampling & Testing | C-31<br>C-39 | C-140<br>C-1314 | C-1019 | C-780 | C-67 |
| Design & Installation | ACI 318 | TMS 402/602 | TMS 402/602 | TMS 402/602 | TMS 402/602 |

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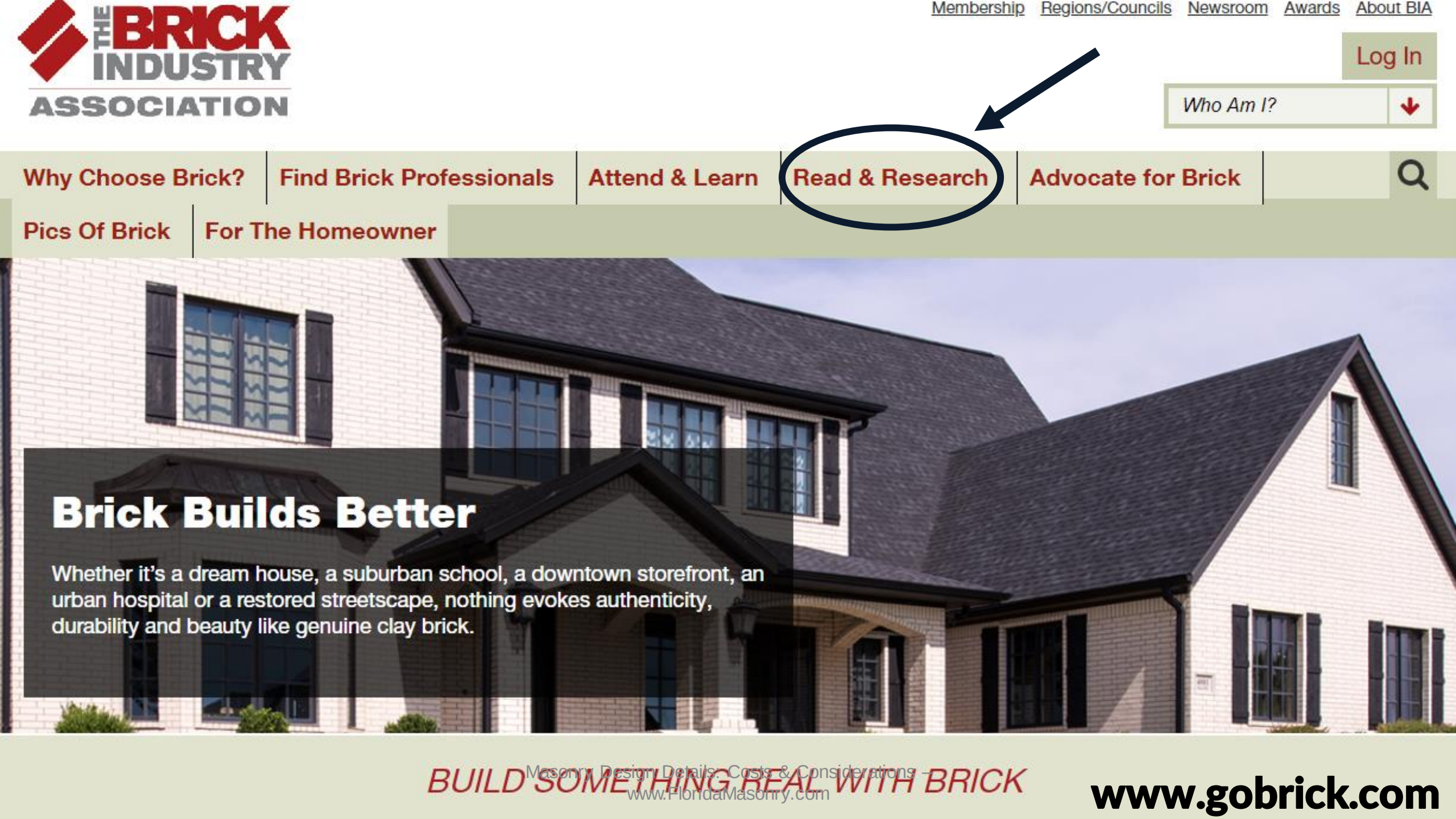
| Design & Installation | ACI 318 | TMS 402/602 | TMS 402/602 | TMS 402/602 | TMS 402/602 |

# Section X - Inspection – Quality Control

"Give a man a fish and you feed him for a day. Teach a man to fish and you feed him for a lifetime."

- Chinese Proverb



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# Read & Research

BIA has published documents that have helped architects, designers, builders and homeowners for decades. And since the U.S. Census Bureau stopped publishing production and shipment information on the brick industry, BIA doubtlessly has the most authoritative market information on clay brick construction. If you have a question about brick, chances are we can answer it in this section.

## Technical Notes on Brick Construction

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Architects, designers, engineers and of course members of the brick industry have depended on BIA's Technical Notes

# Technical Notes on Brick Construction

*Technical Notes on Brick Construction* are FREE bulletins that contain design, detailing, and construction information based on the latest technical developments in brick masonry. Drawings, photographs, tables, and charts illustrate appropriate topics.

*Technical Notes on Brick Construction* are recommendations on the use of fired clay brick. They are explicitly written for fired clay brick which are manufactured:

1) from clay, shale, or similar naturally-occurring earthy substances, and
2) with a firing process that creates a fired bond between the particles of the brick.

*Technical Notes* are available individually online or may be ordered as a set through the Brick Bookstore.

To view BIA's CAD Details on the AEC Info Website, please visit this link.

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Technical Note Index

1 Hot and Cold Weather Construction

This Technical Note defines cold and hot weather conditions related to brick masonry construction and describes the unfavorable effects of these conditions on masonry materials and their performance. It provides information on weather prediction necessary for construction planning and re tnindex commends practices to achieve optimum performance of masonry constructed during periods of extreme temperatures.

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2 Glossary of Terms Relating to Brick Masonry

Glossary of Terms Relating to Brick Masonry

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THE BRICK INDUSTRY ASSOCIATION

TECHNICAL NOTES on Brick Construction

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Index

March 2020

# Subject Index

***Technical Notes on Brick Construction*** is a series of bulletins that contain design, detailing and construction information based on the latest technical developments in brick masonry. Drawings, photographs, tables and charts illustrate appropriate topics. They are available individually or as a set. Registered purchasers of a complete set will receive notification of new or revised editions via email.

*Technical Notes on Brick Construction* are recommendations on the use of fired clay brick. They are explicitly written for fired clay brick manufactured:

1) from clay, shale or similar naturally occurring earthy substances; and
2) with a firing process that creates a fired bond between the particles of the brick.

The properties of fired clay brick and the clay brick masonry made from them were used to establish the recommendations in these *Technical Notes*. Using these recommendations with other products that are not manufactured as outlined above may not result in the same performance associated with fired clay brick masonry. Further, use of these *Technical Notes* for the design, installation and maintenance of construction built with other products may in fact be detrimental to those products and the building on which they are installed. Thus, BIA does not advise the use of these recommendations with other products including but not limited to those claiming to be similar to fired clay brick products such as "fly ash" brick, concrete brick and other unfired or non-clay brick.

**Individual copies are available to view and download free of charge from BIA's website at www.gobrick.com.**

**To view, download or order *Technical Notes*, go to the BIA website at www.gobrick.com and select *Technical Notes*.**

# Numerical Index

Technical Notes on Brick Construction are recommendations explicitly written for the design, installation and maintenance of masonry using fired clay brick. BIA does not advise the use of these recommendations with other products, including but not limited to those claiming to be similar to fired clay brick products.

*Technical Notes* are rewritten to include new technical information. The issue date of a current *Technical Note* is shown between brackets [ ]. Current editions supersede earlier editions.

The designation **Reissued** indicates that the edition of the *Technical Note* shown in brackets [ ] has been thoroughly reviewed and found to be technically accurate. Other editions dated on or after the bracketed [ ] date are still valid; only minor editorial changes have been made. The reissued date appears in parentheses ( ).

Missing numbers have been discontinued.

THE BRICK INDUSTRY ASSOCIATION

# TECHNICAL NOTES on Brick Construction

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## Technical Notes 3 - Overview of Building Code Requirements for Masonry Structures (ACI 530-02/ASCE 5-02/TMS 402-02) and Specification for Masonry Structures (ACI 530.1-02/ASCE 6-02/TMS 602-02)

**July 2002**

**Abstract**: This *Technical Notes* provides a review of the national masonry design standard, ACI 530/ASCE 5/TMS 402, and its accompanying masonry specification, ACI 530.1/ASCE 6/TMS 602. New provisions and revisions of existing standards for masonry design are emphasized. Subjects discussed pertaining to the design standard are: allowable stress and strength design of unreinforced and reinforced masonry, prestressed masonry, empirical design, glass block masonry, masonry veneer, quality assurance, and seismic provisions. Items addressed for the masonry specification are: requirements checklist and submittals, masonry quality assurance and inspection requirements, reinforcement and metal accessories, erection tolerances, construction procedures and grouting requirements.

Key Words: adhered veneer, allowable stress design, anchored veneer, building code, design standard, empirical design, inspection, prestressed masonry, specification, strength design.

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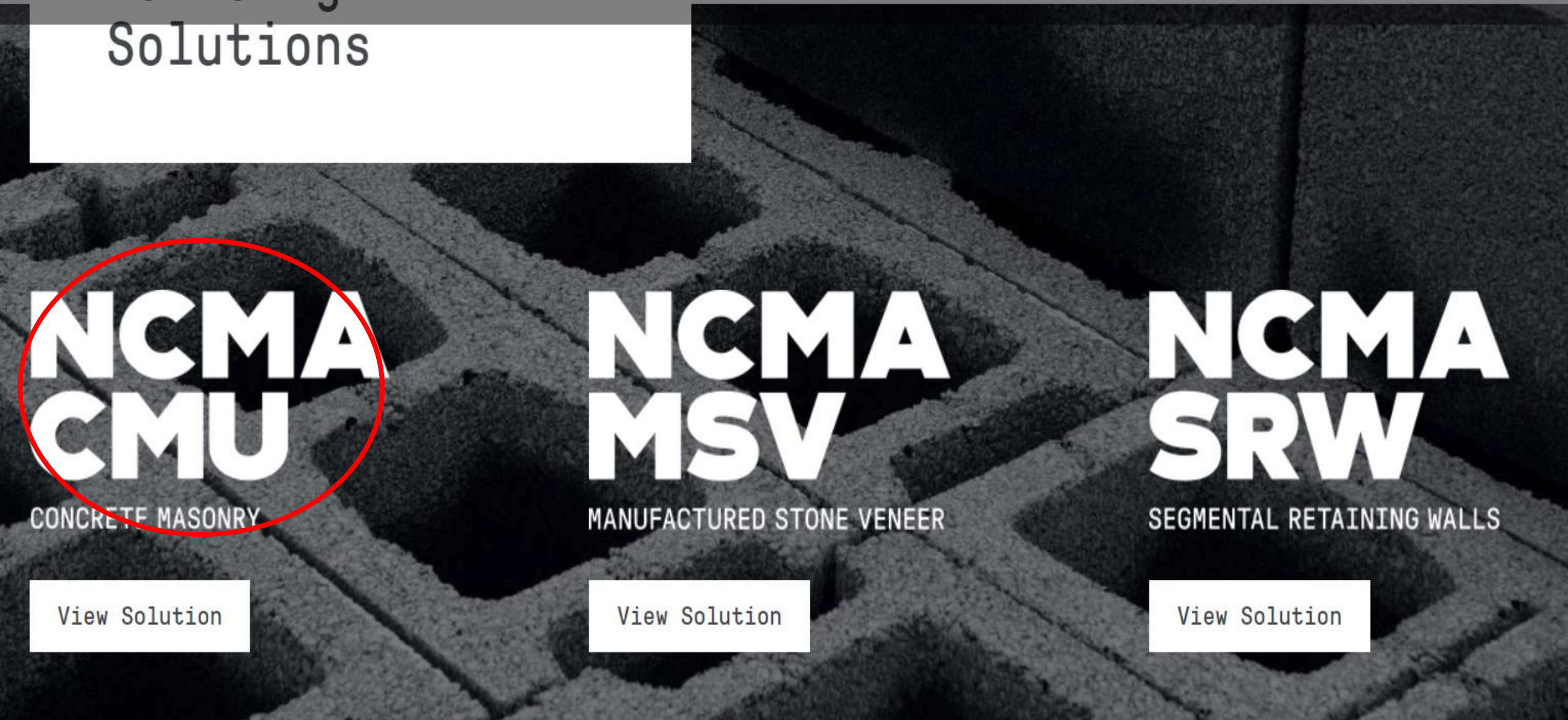
# Building Solutions

www.ncma.org



## NCMA CMU

CONCRETE MASONRY

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## NCMA MSV

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## NCMA SRW

SEGMENTAL RETAINING WALLS

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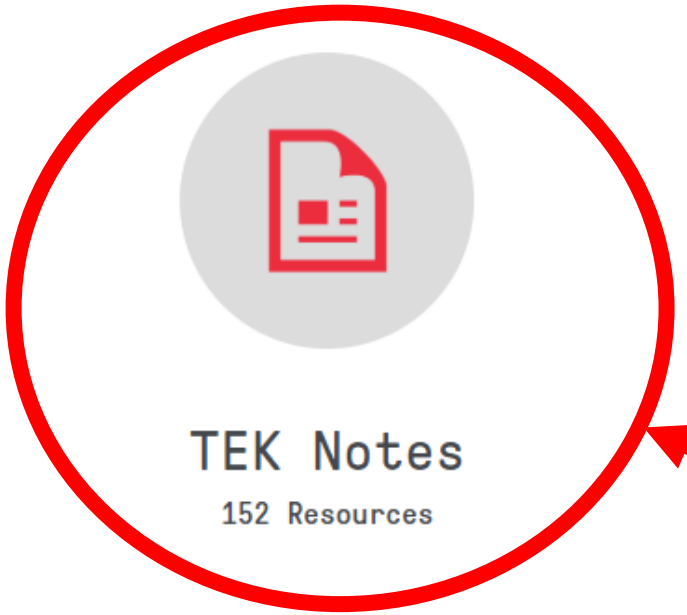


Details
12 Resources

Software
3 Resources

Energy

Manuals & Guides
13 Resources

FAQs
28 Resources

Other Resources
5 Resources

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Index

## TEK Index

TEK 0-0 - INDEX

**PRODUCT:** ACB, CMU, MSV, SRW | **TOPICS:** INDEX

## ASTM SPECIFICATIONS FOR CONCRETE MASONRY UNITS

TEK 01-01F

TEK 0-0 - INDEX

# TEK Index

This index contains a listing of all NCMA TEK Notes with links to each document.

## Section 1 - Codes & Specifications



## Section 2 - Unit Properties

# Section 6 - Energy & IAQ

6-1C R-Values of Multi-Wythe Concrete Masonry Walls

6-2C R-Values and U-Values for Single Wythe Concrete Masonry Walls

6-3 Shifting Peak Energy Loads With Concrete Masonry Construction

6-4B Energy Code Compliance Using COMCheck

6-5A Passive Solar Design Strategies

6-6B Determining the Recycled Content of Concrete Masonry Products

# Resource Results

6-2c | TEK Notes | Search

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Showing 2 results for "6-2c" in TEK Notes

## R-VALUES OF MULTI-WYTHE CONCRETE MASONRY WALLS

TEK 06-01C

TEK 06-02C

# R-VALUES AND U-FACTORS OF SINGLE WYTHE CONCRETE MASONRY WALLS

## INTRODUCTION

Single wythe concrete masonry walls are often constructed of hollow units with cores filled with insulation and/or grout. This construction method allows insulation and reinforcement to be used to increase thermal and structural performance, respectively,

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## TEK Notes

152 Resources

## Details

12 Resources

## Software

3 Resources

## Manuals & Guides

## FAQs

## Other Resources

## Chapter 6 - Anchorage and Connections

CHAPTER 6

**PRODUCT:** CMU

## Chapter 7 - Reinforcement Details

CHAPTER 7

**PRODUCT:** CMU

## Chapter 8 - Earthquake and Wind Details

# Chapter 7 – Reinforcement Details

Includes the following sections:

- Section: 7A – Special Unit Shapes
- Section: 7B – Reinforcing Bar Positioners
- Section: 7C – Foundation Dowel Alignment
- Section: 7D – Corners
- Section: 7E – Reinforcement Intersections
- Section: 7F – Changing Reinforcement Location

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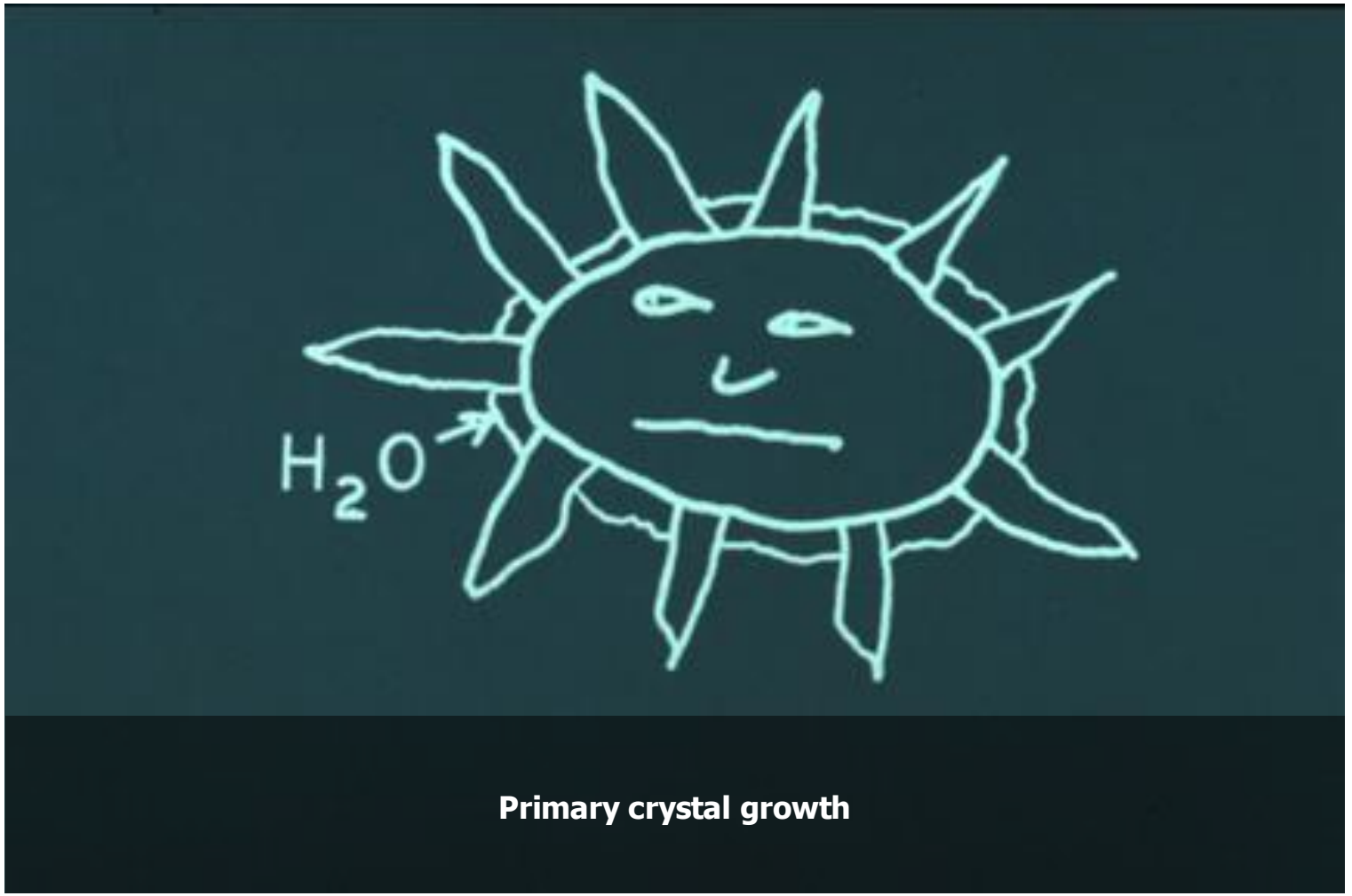
# LET'S START WITH A LITTLE CHEMISTRY

The chemistry of cement

By Don Beers

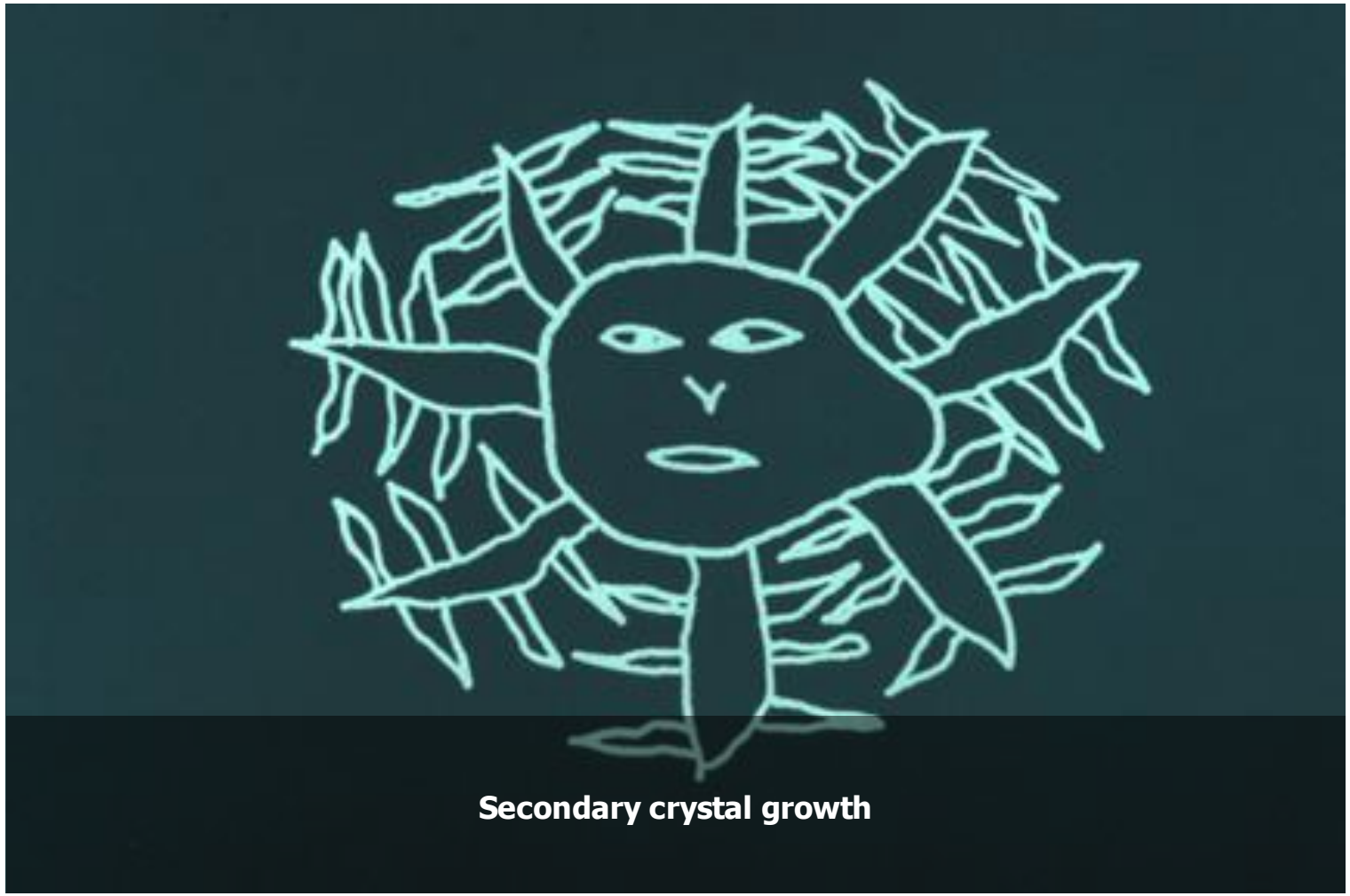
# Cement particle & water

# Chemistry by Beers



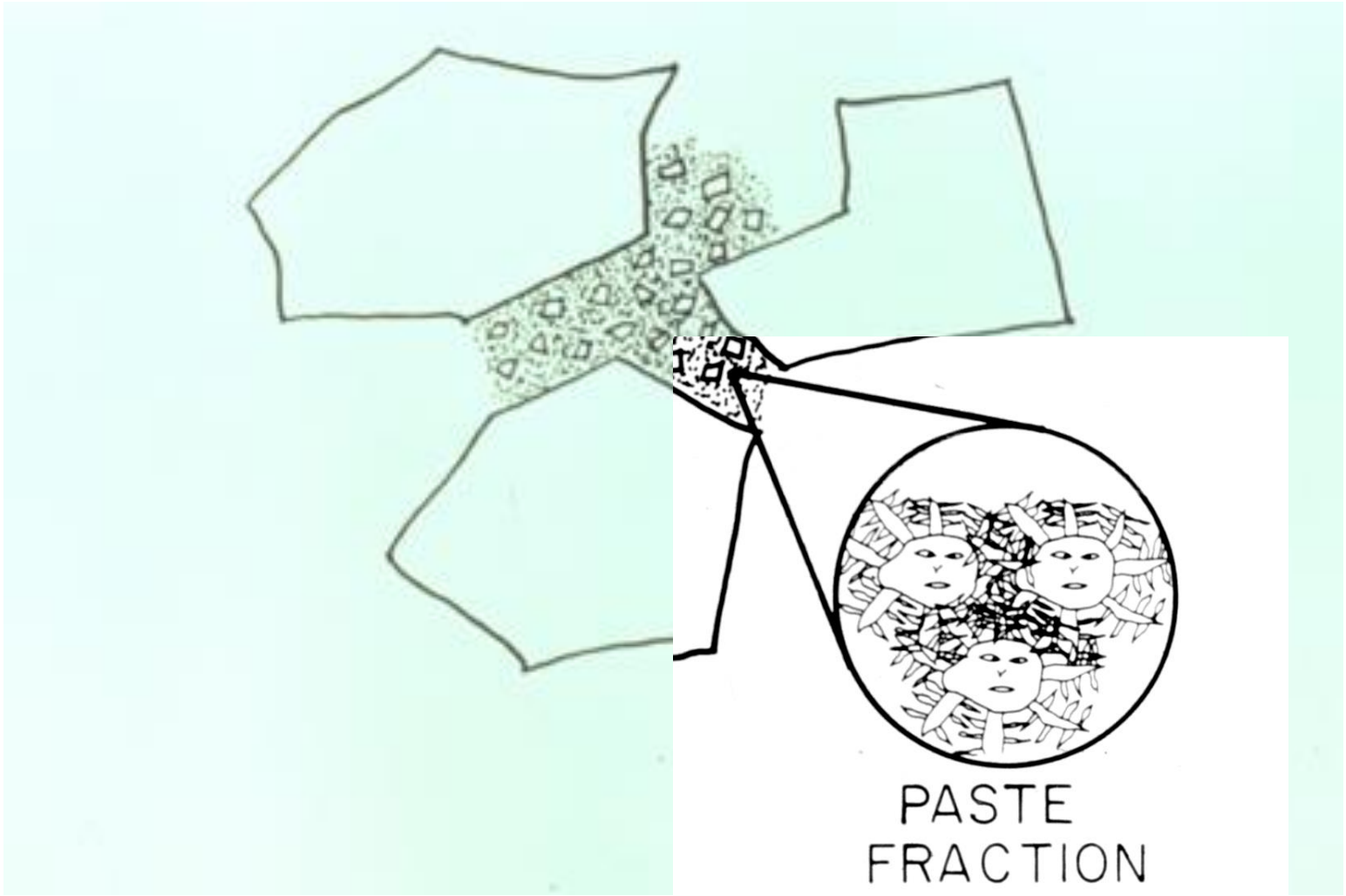

Primary crystal growth

Chemistry by Beers



Secondary crystal growth

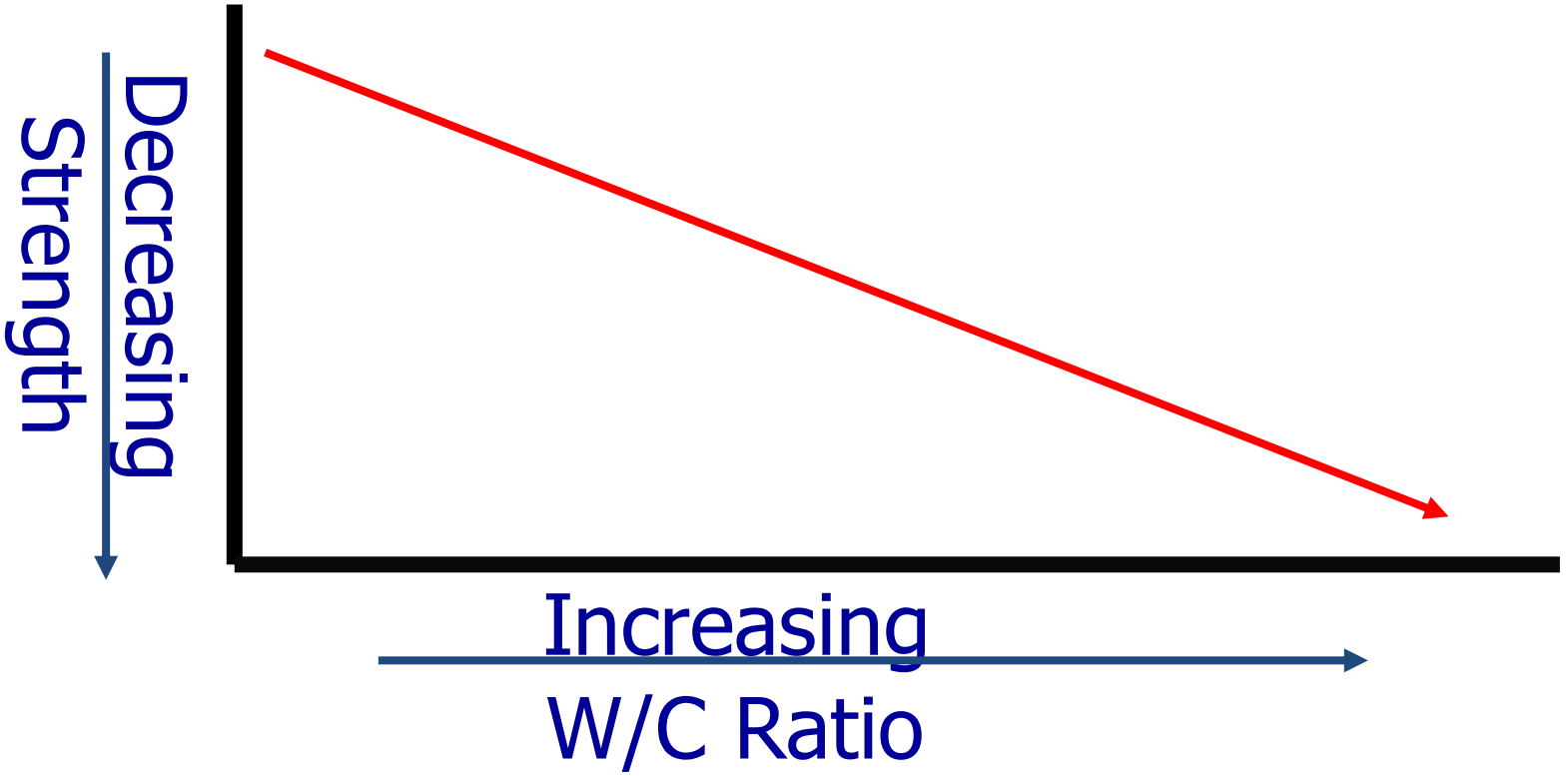
# Chemistry by Beers



# Water/Cement Ratio

**#water/#cement**

2# water/ 10# cement = .2 water/cement ratio



# Are there any questions?